Government of Bangladesh

Ministry of Environment and Forests

Bangladesh Forest Department

# Management Plan
# For
# Himchari National Park

Bangladesh Forest Department

January 2015

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**ACF** - Assistant Conservator of Forests
**ADB** - Asian Development Bank
**AIG** - Alternative Income Generation
**ANR –** Assisted Natural Regeneration
**CBC** – Community Based Conservation
**CBD**- Convention on Biological Diversity
**CCF** - Chief Conservator of Forest
**CF** - Conservator of Forest
**CMC** – Co-management Committee
**CMC** – Co-management Council
**CMO** – Co-management Organization
**CPG** – Community Patrol Group
**DCCF**- Deputy Chief Conservator of Forest
**DCF**- Deputy Conservator of Forest
**DFO** - Divisional Forest Officer
**EIA** - Environmental Impact Assessment
**FCC**- Forest Conservation Club
**FD** - Forest Department
**FG** - Forest Guard
**FRH**- Forest Rest House
**HNP**- Himchari National Park
**FRMP** - Forest Resource Management Project
**FSP** - Forestry Sector Project
**GIS** - Geographic Information System
**GoB** - Government of Bangladesh
**IPAC** – Integrated Protected Area Co-management
**IUCN** - International Union for Conservation of Nature
**JFM** – Joint Forest Management
**LDF** - Landscape Development Fund
**MIS -** Management Information System
**NACOM** – Nature Conservation Manage-ment
**NGO** - Non-Governmental Organisation
**NIC** - Nature Interpretation Centre
**WS** - Wildlife Sanctuary
**NSP** - Nishorgo Support Project
**NTFPs** - Non-Timber Forest Products
**PA** - Protected Area
**PF**- Protected Forest
**PF**- Peoples Forum
**PCVA**- Participatory Community Vulnerabi ity Assessment
**PBSA** - Participatory Benefit Sharing Agreement
**PP** - Project Proforma
**PRA** - Participatory Rural Appraisal
**RF** - Reserved Forest
**RIMS** - Resource Information Management System
**RO**- Range Officer
**RRA** - Rapid Rural Appraisal
**TA** - Technical Assistance
**UNDP** - United Nations Development Program
**UNO**- Upzilla Nirbahi Officer
**UP**- Union Parishad
**USAID** - United States Agency for International Development
**VCF**- Village Conservation Forum
**WC** - Working Circle
**WMNC**- Wildlife management and Nature Conservation Division

# Executive Summary

Himchari National Park (HNP) is located by the side of Cox's Bazar-Teknaf marine drive under the jurisdiction of Cox's Bazar range of Cox's Bazar (South) Forest Division. This forest was very rich in floral and faunal diversity. At present it is degraded forest due to over exploitation and habitat degradation.

This management plan has been developed to cover not only the protected area but also the neighboring impact area together these are the focus of the Himchari National Park Co-Management Council (CMC). This plan was prepared in a consultative, participatory process and becomes the defining reference for activities of Forest Department within Himchari National Park and set out guidelines and activities for the impact area for 10 years period **(2015- 2025).**

The long term vision and aim of this plan are: to preserve and rehabilitate remnant forest to restore biodiverse evergreen forest through enhanced natural regeneration for elephant friendly ecosystem develpment; to achieve sustainable natural resource use levels and limit biomass extraction in the remaining buffer and impact zones; to build climate resilient ecosystems in the face of climate change; to promote improved livelihoods for more than 4000 households living surrounding the NP based on sustainable climate change resilient enterprises and services; and to promote nature based tourism based on suitable visitor facilities that provide sustainable income flows for co-management and livelihoods.

The management plan takes into account recent developments towards co-management under the Wildlife (Preservation and Security) Act 2012 and international standards on biodiversity conservation of protected areas. The management prescriptions are given on the basis of zonation i.e. core zone, buffer zone and impact zone.

The management issues and threats were identified on landuse, encroachment, resources use, wildlife habitat degradation and fragmentation and climate change vulnerablity, tourism, wildlife conservation and protection.

The basic principle of this management plan is to a people oriented approach where local stakeholders are organized and represented from their villages and interest groups, along with Forest Department and other government agencies in the Himchari Co-management Council and its executive committee.The plan assessed the present situation of biodiversity, resource protection and management, human interferences, impact zone landscape positions, and based on this analysis sets out priority management actions for a ten year period.

Himchari National Park covers 1,729 ha. Within its immediate impact or landscape area is a further buffer zone of 4,144 ha of reserved forest and another 4,353 ha of largely private lands. It is recommended that 467 ha of good quality forest located on reserve forest land in Himchari block needs to be included in the core zone of the NP instead of being treated as buffer zone.

The boundary of HNP is not well demarcated. Although the NP was notified in 1980, no efforts have so far been made to physically demarcate the boundary in the field. The situation was exacerbated by heavy biotic pressure on the forest and encroachment of forest lands. This resulted in fragmentation of remaining forest, loss of wildlife habitat, and loss of wildlife.

Cox's Bazar region is highly vulnerable to extreme climatic event due to global warming e.g. Cyclones, tidal surges, rain storms, landslides and flash floods already cause losses to people, livestock, crops and natural vegetation; and may intensify over time. The forests of Himchari were moist deciduous with mixed tropical evergreen trees dominated

by *Diptercarpus* spp. (Garjan); now most of the area is mixed grasses and scrub forests. Asian Elephant is the most notable mammal occurring in Himchari National Park, which it uses during migration between other forests. There is a reasonable diversity of other faunal groups, mostly species with a wider distribution, but several sensitive species have been lost since the 1980s due to deforestation. Maximum diversity and stand structure will be ensured to reduce climate vurnerability of the PA.

Non-timber forest products (NTFPs) play an important role in HNP and its buffer-impact zone providing livelihood, employment and income to the forest dependent communities. Unfortunately over exploitation of NTFPs including illicit cutting of fuel wood, bamboo, etc. has resulted in the degradation of the forest and NTFP resources. Use rights in terms of sustainable harvests of both timber and NTFPs should be granted to the local communities who are involved in protection activities through Participatory Benefit Sharing Agreements from reserved forests in the buffer zone (impact area).

Linkages with markets and service providers will be encouraged by the CMC and People's Forum so that poor people currently exploiting the forest and NP can earn higher incomes while reducing natural resource extraction. This may be by intensifying enterprises on their current lands, or by developing new skills and employment such as in small scale industry, tourism, and cottage industries.

There are 35 villages represented within the CMC of HNP, inhabited by approximately 4000 households. A total of 22 stakeholder categories have been identified in HNP area, of which 11 are primary ones. The primary stakeholders are local elites, local FD personnel, forest villagers, forest settlers, fuel wood collectors, betel leaf cultivator, sungrass collector, Rohinga settlers, fishers, bamboo collectors, charcoal producers, and hunters. Secondary stakeholders include farmers, dry leaf collectors, medicinal plant collectors, timber merchants, brick field owners, sand collectors, fodder collectors and livestock grazers.

Protection of habitat against illicit felling, encroachment, and grazing are the primary responsibility of FD working with co-managers. HNP needs additional 26 well trained staff. Co management is based on 65 members Co-management Council and 29 members Co-management Committee, representing all local stakeholders, and including representatives of a People's Forum which itself represents 35 villages. These bodies provide forums to discuss problems and take decisions, and ensure local participation in protecting remaining forest and its regeneration, and promote development of alternative livelihoods to reduce pressure on regenerating forest.

This management plan has specified actions in three zones in accordance with the Wildlife Preservation and Security Act, 2012: core, buffer and landscape/impact zones. During 2015-2025 in the core zone no roads and other infrastructure development will be permitted. Selected existing trails used by encroachers and resource extractors will be designated as visitor walking trails and limited facilities for ecotourism will be developed (such as information boards). Enrichment planting with indigenous forest tree species following the framework method will be taken up in 200 ha of degraded/barren lands where natural regeneration is not coming up due to lack mother trees. In the buffer zone only native tree species will be planted. In all zones where there is degraded/bare land soil conservation measures e.g. localized planting of native trees, bamboo and bushes will be taken up to reduce erosion of stream/chara banks. This will include promoting contour cultivation and restoring vegetation on slopes in encroached areas and in private lands in the influence/landscape zone.

Sapling regeneration and density will be monitored in sample representative areas jointly by the co-management stakeholders (CMC coordinating FD and community patrol groups).

FD will provide/arrange (with outside assistance as needed) suitable training for its staff and co-management stakeholders in protected area management including management of wildlife and nature based tourism, forest restoration, climate change resilience. Links will be made with agencies that can provide training to local people to enhance enterprises without threatening natural resources.

The NP will be publicized in electronic and print media to promote nature based tourism, raise the profile of the HNP, and increase its use as part of formal and informal education.

Private-public partnership will be encouraged to increase eco-tourism by local resources available in Himchari National Park area.

Monitoring and review will be done to assess the effectiveness and efficiency of the activity and achievement of the management plan objectives. The results of monitoring and evaluation may be used to adapt the strategies to improve the management performance.

# Introduction

Himchari National Park (HNP) is located in southeastern Bangladesh, has an area of 1,729 ha (covering three forest blocks), and was gazetted in 1980. HNP is very important due to its proximity to Cox's Bazar, city of tourism. Several waterfalls and streams cascade down towards the sandy beach on the west making it scenically attractive. Once this area was rich in floral and faunal diversity. But unfortunately the scenario has totally changed due to encroachment, illegal felling, and conversion of land into agriculture and betel leaf cultivation. Therefore, this management plan has been prepared to manage HNP sustainably and to restore forest.

This Management Plan recognizes core, buffer and impact zones within a limited landscape. The main focus of forest management under this plan is the rehabilitation, protection and conservation of natural forests and constituent biodiversity. The focus in the impact zone is sustainable use of land and water to achieve conservation on a broader scale. In all cases this will be through involvement of local people and other key stakeholders in co-management, strengthening resilience to climate change, enhancing ecotourism activities and livelihood diversification. This Management Plan is the defining reference for activities of Forest Department and co-management stakeholders within Himchari NP and sets out guidelines and activities for the impact area..

The long-term expectation is to bring the maximum area of HNP under forest cover, to encourage eco-tourism and to maintain this forest and its constituent biodiversity in the best possible condition and thus resilient the climate change.

Specific objectives of the Management Plan are:

(1) Protect and maintain physical, biological and aesthetic features of HNP
(2) Improve food security and resilience of populations to natural hazard including climate change and human-wildlife conflicts
(3) Increasing the revenue generation potential of the park promoting conservation and local development
(4) Realizing and utilizing the Park's potential as venue for ecotourism based on wildlife, recreational, educational, cultural and aesthetic appeal
(6) Improving the BFD's staff welfare, motivation and capabilities.

# PART 1: Current Status of Protected Area

# 1 Description of HNP

## 1.1 Basic facts of HNP

### 1.1.1 Location

Himchari national park (HNP) is located ($21^0$35` To $21^0$44`N and $91^0$98` To $92^0$05` E ) on the outskirts of Cox's Bazar city (Figure 1) extending from Lighthouse para in the north to Rejhukhal in the south with an expansion of around 17 sq.km. It consists of South Mithachari, Jhillonja and Khuniapalong union. It has easy access from Dhaka and Chittagong by air and road. Visitors can access HNP from the Cox Bazar-Teknaf marine drive road that passess along the western boundary of HNP parallel to the beach. It is under the jurisdiction of Cox's Bazar South forest division within Cox's Bazar District.

### 1.1.2 Area

The notified area of HNP is 1,729 ha (4,271.15 acres). It was proclaimed as a National Park from three forest blocks: Bhangamura RF (872 ha), part of Chainda RF (62 ha), and part of Jhillonja PF (795 ha). These three blocks at present comprise four forest beats namely Kolatoli, Chainda, Jhillonja and Link Road beat. The total landscape area of the PA is about 10,517 ha of which 1,729 ha is the core zone (NP) (Table 1), 4,144 ha are reserved forest adjacent to the PA – the buffer zone (Table 2) and 4,353 ha are private land in the impact zone. It is recommended that 467 ha of reserve forest in Himchari block needs to be included in the core zone from the buffer zone area.

**Table 1 Block-wise area of Himchari National Park**

| Range | Beat | Block | PA (area) |
|---|---|---|---|
| | | | Core Area (Ha) |
| Cox's Bazar | Chainda | Chainda | 62 |
| Cox's Bazar | Jhilanga | Jhilanga West (P.F.) | 450 |
| Cox's Bazar | Kalatali | Bhangamura | 872 |
| Cox's Bazar | Link Road | Jhilanga East | 345 |
| | | **Total** | **1729** |

**Table 2 Buffer zone area of Himchari National Park**

| Range | Beat | Block | Area(Ha) |
|---|---|---|---|
| Cox's Bazar | Chainda | Chainda | 224 |
| Dhoapalong | Dhoapalong | Dhoapalong | 1060 |
| Dhoapalong | Khuniapalong | Himchari | 467 |
| Dhoapalong | Khuniapalong | Khuniapalong | 802 |
| Panerchara | Panerchara | Mithachara | 1057 |
| Panerchara | Panerchara | Panerchara | 534 |
| | | **Total** | **4144** |

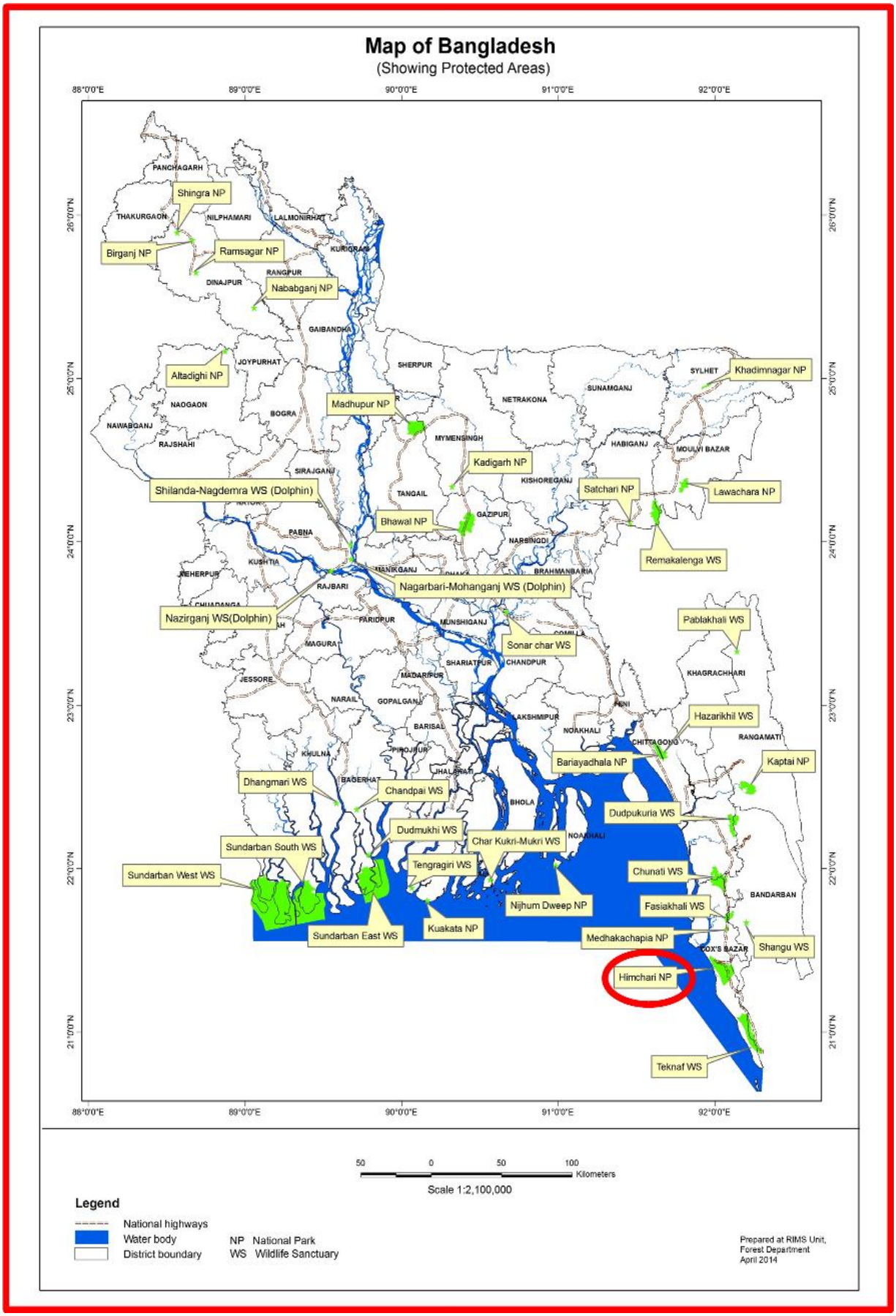


**Figure 1 Location map of Himchari National Park**

### 1.1.3 Boundary

The Himchari National Park is bounded by the following-

**North**: Light house, Forest boundary of Jhillonja PF, Jhillonja BDR Camp, Forest boundary in the Southern side and Cox's Bazar, Ramu road, Cox's Bazar College, Link Road, Beat Office.

**South**: Himchari chara, Khuniapalong Himchari Road upto Baniarchara.

**East**: Baniarchara, Chainda chara, Jhillonja-Chainda Mouza boundary.

**West**: Forest boundary of Jhillonja mouza; C&B office and Residential plots, Bhangamura R.F. boundary; all more or less parallel and facing the Cox's bazaar sea beach.

### 1.1.4 Legal Status and special regulatory provision

Himchari National Park is a Protected Area (PA). Under section 23(II) of the Bangladesh Wildlife Preservation Act 1974 the Government of the People's Republic of Bangladesh proclaimed 1,729 ha of forest to be a National Park on 15 February 1980 by gazette notification number XX/FOR-63/79/89.

### 1.1.5 Historical description of the site

Cox's Bazar Forest division was first constituted in 1920, separating from Chittagong Forest Division. HNP is under the jurisdiction of Cox's Bazar South Forest division which was formed in 2001. This forest was declared as reserve forest in the early 19$^{th}$ century under section 20 of the Forest Act 1927. Himchari forest was renowned for Asian Elephant. There was a regular movement of elephants from Myanmar to Himchari via upper Reju, Dhariardighi, Panerchara, Kuniapalong, and Dhoapalong. Himchari is still home to a limited number of these majestic animals. Once upon a time Cox's Bazar was a fishing village and famous for its Buddhist Rakhain community. But now few Rakhain people live in Cox's Bazar.

## 1.2 Physical Features

### 1.2.1 Geology and Soils

Himchari National Park Lies on soft sandstone hills. Soils in the higher hills are loamy to clayey particularly towards the south and the west. Top soils are rich in humus. The loamy soil provides good conditiosn for tree growth Soils in the high hills drain rapidly. The soils in the valleys are wetter alluvial soils and some vallys are used for rainfed transplanted Aman during the monsoon season.

### 1.2.2 Topography and Land Forms

The hills run from the south-west towards the north-east. The landscape has a broken topography comprising of steep low hills and V-shaped valleys known as charas.

### 1.2.3 Water areas

The many charas or creeks in HNP drain into the Bay of Bengal and Bakkhali River. The main rivers and charas are shown in figure 3 and include Bakkhali, Khaleg, Rejukhal, Borochara, Himcharichara, Panerchara, Majerchara, and Tarabuniachara, there are

several waterfalls (e.g. Himchari and Darianagar) attracting visitors. There is some fishing in the charas and they provide drinking water to local people. They are or were an important habitat for some resident forest birds and wildlife – as a source of drinking and bathing water and supporting dense riparian forest.

### 1.2.4 Physical processes (Erosion and Accretion)

Because of deforestation and hill cutting, erosion and gully formation is very common fin HNP, particularly in the northern part of the park. Due to severe landslide Himchari Waterfall moved more than 100 meters upstream. In the landscape there is sea erosion near Bhangamora, and accretion at the southern end of the area, at Pacher Dip is notable.

## 1.3 Climate

### 1.3.1 Rainfall, Temperature, Relative Humidity

The area has a monsoon climate. Most rainfall occurs during May to September, and peaks in July-August; average annual rainfall is 3,634 mm. Rainfall in Cox's Bazar region is increasing (at about 2.9 mm/year (Figure 2). If the trend continues the average annual rainfall will be 3,836 mm by the year 2050 (Table 3) which may worsen landslides.

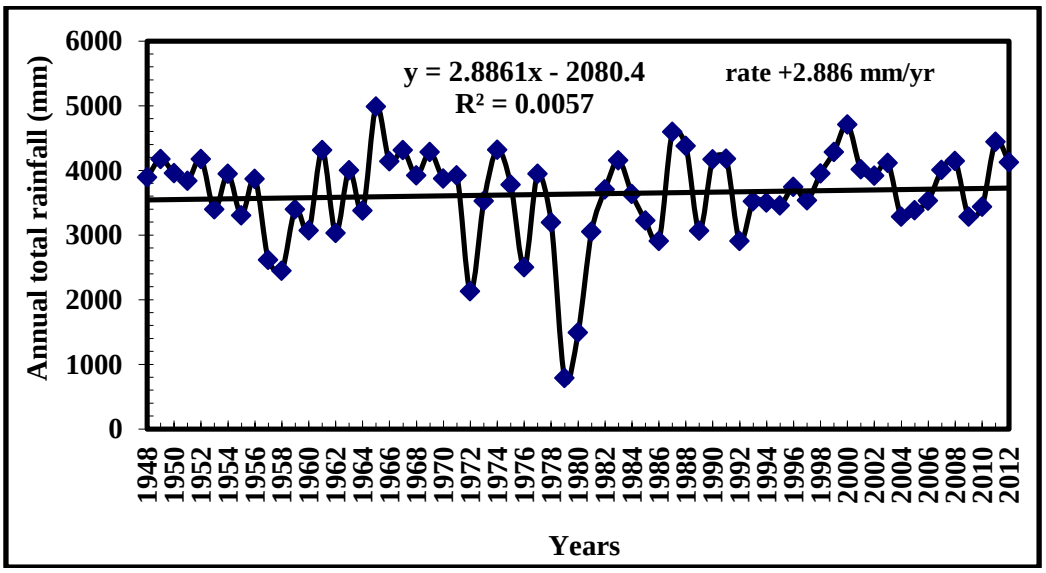


**Figure 2 Trend of rainfall in Cox's Bazar region (Source: BMD 2012, BCAS 2013)**

**Table 3 Projection of annual rainfall in Cox's Bazar region by 2050 (Source: BMD 2012)**

| Year | 1961-2012 | 2030 | 2050 |
|---|---|---|---|
| Avg. rainfall (mm) | 3634 | 3778.38 | 3836.11 |

The temperature varies between 14.3 $^0$C and 31.8 $^0$C. Highest temperatures are during May. Annual average temperature is increasing in Cox's Bazar region (Table 4) which may affect agriculture.

**Table 4 Projection of temperature in Cox's Bazar region by 2050 (Source: BMD 2012, BCAS, 2013)**

| Year | 1961-1990 | 2010 | 2030 | 2050 |
|---|---|---|---|---|
| Temperature ($^0$C) | 25.52 | 25.98 | 26.55 | 26.88 |

Relative humidity is high and varies from 40% to 87%. Pre-moonsoon norwester and cyclone accompanied by high winds and rains do considerable damage almost every year.

### 1.3.2 Climatic Hazards (Cyclone, Flood and Landslide)

Storms with intense local rainfall followed by flash flood and landslide are common phenomena in Cox's Bazar district. The district also experiences frequent cyclones (1960, 1961, 1963, 1965, 1970, 1985, 1991, 1994, 1995, 1997, 2007 and 2009). Extensive damage of forest took place in the cyclones of 1991, 1994 and 1997. Severe landslides occurred in 2008, 2009, 2010 and 2011. The most severe floods locally took place in 1988 and 2004, and affected around 3,382 families. Livelihoods are constrained by damage to livestock, crops and vegetation.

## 1.4 Flora and land uses of PA and Landscape

### 1.4.1 PA forest type and vegetation

Himchari was once very rich in biodiversity. HNP originally comprised of mixed tropical evergreen and semi-evergreen forests dominated by *Dipterocarpus* spp mixed with bamboos, but over time the forests have been substantially destroyed by forest operations and by human encroachment and extraction. Exotic trees were planted after clear-felling of natural vegetation which has adversely changed the forest, although most of these plantations are in poor condition. At present scattered trees along with some bushes, herbs, and climbers cover most of HNP. Morshed and Alam (2010) recorded 83 plant species in this area of which 43 were tree species, 14 shrubs, 9 climbers and 12 herbs (Annex 5). A list of major NTFP has also been given in annex 12.

The main tree species comprise Garjan (*Dipterocarpus* spp.), Chapalish (*Artocarpus chaplasha*), Goda (*Vitex* spp.) Dumur (*Ficus* spp.) Telsur (*Hopea odorata*), Champ (*Michelia champaca*), Bohera (*Terminalia bellerica*), Gotgotia (*Bursera serrate*), Bazna (*Zanthoxylum* spp.) Dhakijam (*Syzygium grandis*). Large trees are mixed with evergreen bamboos (*Bazali* and *Chotoya* spp.) and grasses. The barren hills and slopes have been invaded by sungrass (*Imperata* spp.). A few clumps of Fuljharu (*Thysanolaena maxima*) are also found on the barren steep slopes. Some cane and wild banana is seen along moist banks of the streams.

### 1.4.2 Landscape land uses and tenure

HNP and its landscape area cover in total 10,449 ha (Table 5) of which 1,729 ha is the NP or core zone, 5,247 ha is the buffer zone of other FD lands, and 3,873 ha is the remainder of the landscape /impact zone and largely private lands. Within the core zone designated as a NP however 293 ha is private land. In addition to the vegetation described above, within HNP there is agricultural land, water bodies and settlement, while the landscape also includes areas of river, sea, and aquaculture. Degraded lands cover the highest proportion of land in the total plan area, and out of 1,127 ha of plantation carried out by FD (Annex 3) only 375 ha currently have trees (almost all in the buffer zone). Over the past few decades, land cover has changed significantly due to migration, illegal felling and harvesting, conversion of land to agriculture, and encroachment (see Table 5 and Figure 3).

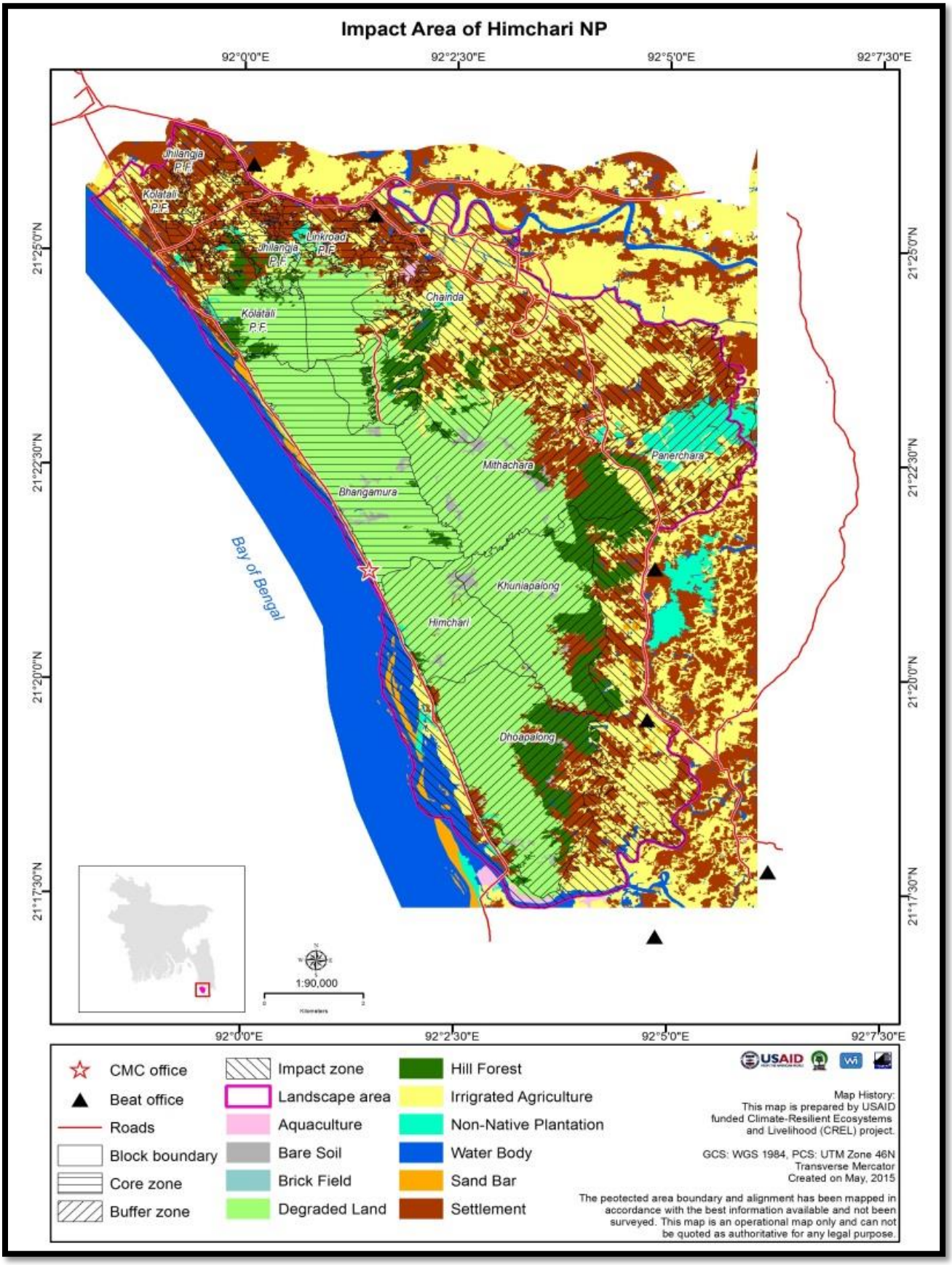


**Figure 3 Land use map of HNP**

**Table 5 Land cover statistics in the landscape area of Himchari NP**

| Landcover | Core(Ha) | Buffer(Ha) | Impact(Ha) | Landscape(Ha) |
|---|---|---|---|---|
| Aquaculture | 1 | 87 | 20 | 21 |
| Bare soil | 25 | 2270 | 21 | 133 |
| Degraded land | 1385 | 686 | 175 | 3829 |
| Hill forest | 132 | 350 | 157 | 975 |
| irrigrated agri | 127 | 167 | 1809 | 2287 |
| non-native plantation | 15 | | 54 | 236 |
| River | | | 108 | 108 |
| sand bar | 4 | 4 | 140 | 148 |
| Sea | | | 184 | 184 |
| Settlement | 327 | 567 | 1518 | 2412 |
| Wetland | 5 | 12 | 166 | 184 |
| Total | 2020* | 4144 | 4353 | 10517 |

***291 ha GIS mapping error will be deducted from core zone

## 1.5 Fauna

Up to the 1980s Himchari had a rich faunal diversity, although this was not well documented. Limited surveys in the late 1980s and in 2014 recorded 125 species of bird within the NP (Annex 6), but most of these were recorded in 1988 with only 59 species recorded in 2014. Notable species present in 1988 include the only sighting in Bangla-desh of Spot‑breasted Scimitar Babbler Pomatorhinus erythrocnemis, and the only nesting record and lowest altitude breeding record globally of Blue Whistling Thrush Myophonus caeruleus. Mammals such as the globally vulnerable Capped Langur Trachypithecus pileatus once were present but have been lost with deforestation, the only mammals regularly seen include common ones such as Golden Jackal and Wild Boar Nevertheless a small number ofglobally endangered Asian Elephant Elephas maximus visit this NP and its immediate landscape which form part of the larger Teknaf to hill tracts landscape used seasonally by this last remnant of mega-fauna in Bangladesh. Restoring habitat to maintain and restore the fauna of this NP is a priority.

## 1.6 Socio Economic Profile

### 1.6.1 Population and settlement

Himchari CMC represents people from two upazilas (Ramu and Cox's Bazar Sadar) inhabiting three unions (Jhillonja, Daskhin Mithachari, Khuniapalong) and Cox's Bazar Pourashabha (town). There are 35 villages within the NP and its landscape (Annex 4). Among those 21 settlements are inside the NP inhabited by over 4,000 households. About one-third of these people settled in the forest after the devastating cyclone in 1991 and the rest accumulated gradually. The total population of the area covered by this plan is about 29,000. Among them 87% are Muslims and the rest are Hindu and Buddhist.

### 1.6.2 Infrastructure and services

The area is well served by public infrastructure and borders Cox's Bazar town, Table 6 summarises this.

**Table 6 Infrastructural properties of Himchari National Park CMC**

| Name | Area/ number |
|---|---|
| Metalled/Pucca road | 25 km |
| Earthen road | 105 km |
| Educational institute | 28 |
| Cyclone shelter cum school | 2 |
| Bazaar | 10 |
| Police station | 2 |
| Kyang | 4 |

### 1.6.3 Livelihood activities and resource uses

Most people of this area live close to or below the poverty line. Around 45% of the population depends mainly on day laborering, 30%cultivate land that they claim, 15% are fishers, and 10% are engaged in other occupations. Despite these occupations, most households depend significantly on forest resources.Most of the people in Cox's Bazar use fuel-wood for cooking taken from HNP and its buffer forests. Hence there are very few mature trees and little natural regeneration, so most land within the NP is now grassland. Types of natural resource uses with their dependency are shown in Table 7.

**Table 7 Resource uses of HNP Areas**

| Name of resources | Reasons for resource exploitation | Users | Dependency |
|---|---|---|---|
| Fuel wood | Household fuel and for sale | Local people, tea stalls, hotel owners | Very High |
| Timber | Commercial and own house building material | Local people, furniture makers | Low |
| Sungrass | Commercial and thatchingown house | Local people | High |
| Other NTFPs* | Commercial and domestic consumption | Local people | High |
| Wildlife | Commercial and domestic consumption | Local people | Low |
| Betel leaf vine cultivation | | Local market | Low |

* Includes bamboo, cane, medicinal plants, fruits, vegetables, dry leaves and other grasses.

## 1.7 Past Management System and Plans

From the creation of a forest department in Bengal in 1865 up to 1990 public forest management meant plans for cutting trees for commercial timber production. Originally by selective logging, later by clearfelling, and from the 1930s with replanting for commercial plantations (see annex 3). In 1990, the Government of Bangladesh decided to end logging from the remaining forests. Moreover in 1980 Himchari was declared a National Park; however no management plan to conserve this protected area has ever been prepared.

# 2 Emerging Issues

This chapter focuses on current issues affecting HNP.

## 2.1 Administration of Forest PA

Himchari National Park is administered directly as Cox's Bazar Forest Range under Cox's Bazar (South) Forest Division. There is no separate NP administrative setup. HNP consists of four beats under Cox's Bazar Forest Range. There is no individual ACF or Range Officer responsible for HNP. Sometimes foresters of one beat are given additional charge of other beats that hinders effective management of HNP. At present FD has 17 lower level personnel (forest guards and plantation workers) working in the PA. For effective management a separate NP management body is needed headed by an ACF, and even under a co-management system some additional staff are needed.Along with current work force, the additional manpower suggested by FD officials is also shown in table 11.

The existing staffs do not have basic facilities. The range office and beat offices are in ramshackle condition. The communications system between staff is poor; there is also lack of fire fighting equipment, which hinders effective protection from fire. Housing facilities of all levels of officials need to be renovated.

## 2.2 Co-management institutions

Traditional top-down management failed to conserve forest PAs, so a new management approach was adopted in 2005 by FD with the help of USAID, namely co-management as a partnership between FD (as legal custodian of the PA) and local communities and other stakeholders. Co-management was introduced in HNP in 2010. Co-management has been officially formalized through a Co-management Council and Co-management Committee, each with fixed membership; this includes representatives from a Peoples' forum (PF) which comprises representatives of all Village Conservation Forums (VCF) set up in each village impacting the PA, as well as Community Patrol Groups (CPG), and Forest Conservation Club (FCC). The component bodies involved in co-management of HNP are shown in Table 8).

**Table 8 Co-management structure of Himchari National Park**

| SL No | Name of Body | Number | Member |
|---|---|---|---|
| 1 | Co-management Council (CMC) | 1 | 65 |
| 2 | Co-management Committee (CMC) | 1 | 29 |
| 3 | Peoples Forum | 1 | 70 (general) and 11 (executive) |
| 5 | Community Patrol Group (CPG) | 5 | 75 |
| 6 | Village Conservation Forum (VCF) | 35 | 1,756 |
| 7 | Forest Conservation Club (FCC) | 2 | 35 |

Co-management was adopted to improve forest conservation through the participation of local community, FD and other stakeholders. There is an issue to limit the roleof local influential persons in the CMC, as they can use this position to exploit forest resources. The prospect of material benefit including payments for workshops, meetings and guarding has and will likely continue to attracted participation and association with FD, rather than volunteering for the good of the environment. Community patrol groups (CPG)

are the most crucial enhancement  forest protection under co-management, but CPG members get little benefit for their efforts (recently only Tk 10 per working day, paid in arrears, and without timely replacement of worn out clothes, footwear, torch, umbrella, or patrol stick. Finding and delivering appropriate incentives for CPG members is a challenge, including rewards of exemplary work.

## 2.3 PA and landscape boundary delineation

When HNP was declared a national park in 1980 the entire area was forested and had few inhabitants. The boundary was verbally defined, but little effort was made to prevent encroachment for cultivation and settlements, and no efforts have been made to physically demarcate the boundaries in the field. The situation worsened with heavy human exploitation and encroachment of forest land. This has adversely affected the ecological boundaries of NP and little suitable habitat is left in elephant movement corridors, or the wildlife the NP was intended to protect. Surveys to rationalize and demarcate all the boundaries of the NP are needed as a basis for defining management actions on the ground.

## 2.4 Forest and habitat management intervention

HNP and its surrounding landscape zone encompass terrestrial, aquatic and forest ecosystems. The original ecosystems (mixed tropical evergreen and semi-evergreen forests) developed as a result of climate, local relief and soils, but these have been substantially altered due to heavy human pressure. Encroachment has resulted in conversion of forest in foothills and low areas into paddy cultivation and settlements. Now the following broad ecosystems (habitat types) exist in HNP and its landscape zone:

- Plantations of trees,
- grasslands and bamboos,
- streams and sea beach/intertidal zone, and
- cultivated fields.

Habitat degradation and fragmentation adversely affects elephants by restricting their movements. Illegal extraction of forest resources prevents regeneration of trees.

## 2.5 Encroachment, illegal extraction and forest destruction

Forestland encroachment for settlements (329 ha) and agriculture (128 ha) has permanently changed just under 25% of the declared PA area, but additional substantial areas are seasonally or periodically used for grazing, fishing, and cultivation of betel and crops. Village elites and political leaders are directly or indirectly associated with grabbing forest lands for homesteads and cultivation. In Himchari NP and landscape Rohingya refugees have since the early 1990s encroached and settled in forest land, and this trend is continuing. Encroachment also involves community infrastructure and institutions such as school, madarasa, graveyard, and mosque. In some cases, encroachment has been regularized by government issuing land ownership documents as khas land. Ways to halt further encroachment need to be found.

Illegal extraction of forest resources is common in HNP. It includes illicit felling, fire wood cutting, illegal hunting of birds, sand, soil and bamboo collection. The main reason is demand for fuel wood/biomass for cooking and lack of cheap alternatives. An estimated 244 persons collect fuel-wood from Himchari PA everyday and by cutting saplings this prevents forest regeneration. The fuel wood collectors often say that they are permitted to do this on the basis of “DFC” (Daily Fuel Collection) system, but FD has ended that system, and in any case it is illegal within a NP.

## 2.6 Existing dependence on and use of forest resources

There are 35 villages within HNP and its influence landscape, inhabited by a reported 8,427 families and 29,066 people. Most of the villagers are poor and they are more or less dependent on forest resources. These large numbers of people collect fuel wood, fodder, sungrass, bamboo, cane, dead leaves, fruits and medicinal plants, and also graze livestock within the PA. For the 21 villages located within the NP dependence on NR within the PA is very high, for other households it is less, CREL surveys indicate that poorer households living within this area earn most of their incomes from collecting wild NR (including some coastal and other resources from the landscape and not inside the PA).

## 2.7 Gender, youth and ethnic communities

Out of the total population within HNP and its influence landscape (29,066 people) 48% are male and 52% are female. Among them 87% are Muslims and the rest are Hindu and Buddhist. The rate of education of the villagers is 23.4 %. About 30 % of the total population depends on agriculture, 15% on fishing, 45% on day laboring, and 10% on other occupations. The only ethnic community within the area covered by this plan is a 'Rakhain' village of 75 families in Panerchara beat; this fishing community has its own culture and traditions, is Budhist, and has affinities with similar communities along the Patuakhali and Chittagong-Cox's Bazar coast, and Arakhan coast of Myanmar.

## 2.8 Ecotourism and education/information

HNP is immediately south of Cox's Bazar the main mass tourism destination in Bangladesh. With about 5 lacs visitors per year to Cox's Bazar, there is great potential for responsible tourism to HNP to generate livelihoods for local communities and revenue for conserving and resgtoring habitat, but this is not being achieved at present. This coastline and the waterfalls and hills of the western edge of HNP are major attractions for visitors and easily accessed by road from Marine Drive running south out of Cox's Bazar. At present all visitor pressure is located at Himchari waterfall and Darianagar area, which are leased by FD on a yearly basis as a commercial enterprise to local enterpreneurs, who then charge tourists entry fees. At present this can hardly be labeled nature based tourism and does not meet international standards of eco-tourism. There is intense visitor pressure visible but the leaseholders (who collect entry fees) either do not retain data or are unwilling to share this information with FD and CMC. Short term leasing, failure to set conditions on protecting the environment, limiting visitor numbers, and failure to put back resources into basic facilities or interpretive displays are the reasons for ramshackle condition of foot trails, shelters and picnic spots at Himchai and similar facilities and the rest house at Darianagar. Continuous erosion and landslide has shifted Himchari waterfall around 300 m and now it looks like a drain, while foot trempling erosion affects the heavily used short trails.

There are several other potentially attractive sites in HNP and its landscape: at Chainda, Borochara waterfall, Adim guha of Darianagar, Kolatoli Sea beach, Jhau plantation along the coast. In addition if they chose to the Rakhain community of Panerchara and Buddist temple could earn an income from well managed eco-tourism.

There are 13-trained eco-guides in HNP, but with no planning of nature based tourism away from the leasehold viewpoints, they have no way to earn an income from these skills. FD officials have suggested that the existing leasing system (1 year) should be changed to long term leasing (around 5-6 years), but this will not provide an incentive to invest in facilities nor will it set conditions on where visitors go and how to limit environmental damage, nor will it involve the local communities or link visitor revenue back into

patrols and giuarding, nor will it enable a move to more sustainable eco-tourism in other parts of the NP.

## 2.9 Existing carbon stock (by land cover)

A forest inventory in early 2014 measured condition of lands within the NP and their carbon stock Table 9 depictes the status of forest and carbon stock of HNP: degraded forest has abundant saplings indicating good scope for regeneration but very few trees, even the remaining forest holds a relatively low carbon stock compared with other forest PAs, all of which confirms the generally degraded condition of forest in Himchari NP.It has been found that only average 52.8 $CO_2$ Mg $ha^{-1}$ are available in Himchari National Park indicating poor forest cover condition (Table 9).

**Table 9 Stock of $CO_2$ (Mg/ha) at different land cover classes in HNP (Source: Latif et al. 2014)**

| Land cover type | Area (ha) | Nos. Seedlings $ha^{-1}$ | Nos. Saplings $ha^{-1}$ | Nos. Live trees $ha^{-1}$ | $CO_2$ Mg $ha^{-1}$ |
|---|---|---|---|---|---|
| Degraded forest | 1,379.1 | 2,546 | 3,939 | 60 | 29.4 |
| Forest | 130.7 | 3,183 | 0 | 1,027 | 117.3 |
| Settlement | 309.6 | 133 | 133 | 387 | 120.1 |
| Average | | 1954 | 1391 | 491 | 52.8 |

## 2.10 Conflicts and resolution

A total of 22 stakeholders are identified in HNP area, 11 are primary stakeholders. The primary stakeholders are local elites, local FD personnel, forest villagers, forest settlers, fuel wood collector, betel leaf cultivator, sun-grass collector, rohinga settlers, fishers, bamboo collector, charcoal producers, and hunter. Secondary stakeholders are farmers, dry leaf collectors, medicinal plant collectors, timber merchant, brick field owner, sand collector, fodder collectors and livestock grazing. In addition several government agencies take up activities within the landscape and some have enven taken land within the PA. Different sectors of the government have very weak relationship and coordination between themselves. Each impacts or hinders the activities of others. Past illegal allocation of forest land to individuals for private use after recording those lands as khas land has brought a serious complication to the management of Himchari National Park. Table 10 summarizes the sources of conflict and solutions to be taken up under this Management Plan in HNP.

**Table 10 Sources of conflict with their resolution in HNP**

| Sources of conflict | Resolution |
|---|---|
| Land disputes | By arranging local salish through local UP member and chairman with the help of local elites, meeting with land administration. |
| Encroaching forest land | FD and local influential people make negotiation |
| Tree Felling | Forest cases and awareness building |
| To establish influence in the locality | Salish |
| Human- wildlife conflict | Due to destruction of wildlife habitat, elephants often raid settlements and agricultural fields in search of food. Habitat restoration and prevention of further encroachment the NP and buffer forest lands; deterants in agricultural lands and settlements; Awareness building among local settlers about how to encourage elephants back to the forests. |
| Rohingya | Identify official and unofficial refugees, Government decisions on how to handle this environmental crisis in the entire Cox's |

| | |
|---|---|
| | Bazar – Teknaf area are urgently needed, any rehabilitation, humanitarian aid, or employment development needs to be linked with commitments not to extract from the NP and alternative fuel sources; Government should invite UN and NGOs to come forward in this effort. |
| Inter-departmental conflict | Allocation of forest land for settlement recording as khas land. Co-ordination with the administrative authority should be improved to stop the settlement of forest land. Linked with the CMC the relevant government agencies will form a small coordination sub-committee to reduce competition and overlapping initiatives |

## 2.11 Climate change impacts on vegetation, fauna and ecosystem services

Climate change has become a burning issue in the recent years. A participatory community vulnerability assessment in Himchari in 2013 identified the following hazards in HNP: cyclone and storms, heavy rainfall associated with landslide, flash flood and water logging, a declining water table, and unusual tides and salinity intrusion. At the village level adaptation measures were identified, and priority interventions for Himchari CMC are shown in annex (7-8).

The same hazards have a great impact on vegetation, fauna and ecosystem of HNP. Change in vegetation alters the ecosystem and forest types. Frequent cyclones with heavy rainfall causes severe damage to vegetation particularly trees. The root system of vegetation is the natural barrier to prevent soil erosion and helps to retain water in the soil through infiltration process. Forest helps regulate water flows from hills, spreading the flow over the year, but at present this ecosystem service is severely compromised in HNP. In the absence of forest, heavy rainfall causes landslides and rapid surface run-off, but in the dry season there is a shortage of water in all waterfalls (Himchai, Borochara), Rejukhal, and Bakkahli River. Due to deforestation and degradation expected ecosystem services of HNP are weak - provisioning services (food, fresh water), regulating services (cyclone and storm regulation, water purification), supporting services (soil formation, nutrient cycling), and the remaining services are extremely vulnerable to climatic stresses.

## 2.12 Management constraints

In summary the main issues and constraints are:

- Infringement of forest lands by a mix of government agencies (District administration, Army, BGB and local elites,)
- Illegal extraction of forest produce (e.g. fuel wood and small timber)
- Encroachment and illegal settlements involving local people and immigrants (refugees)
- Grazing
- Agricultural activities within the PA including betel leaf cultivation
- Timber extraction is also encouraged by 16 illegal saw mills within the immediate landscape)
- Climatic risks and associated hazards storm, cyclone, soil erosion
- Limited resources (funds, equipment, trained personnel) among FD and CMC engaged stakeholders to manage and protect the NP.
  s

# 3 Institutions

## 3.1 Forest Department

Forest Department (FD) has formal responsibility for the protection, conservation and development of HNP. To complement limited resources co-management has been adopted with active involvement of local communities in supporting protection of remaining forest. Nevertheless for more effective management of the NP a PA-specific team of FD is needed (Table 11). FD team will also need sufficient modern equipment (Table 12).

**Table 11 Existing and recommended man power in HNP**

| Rank | HNP Office | Himchari | Chainda | Ring Road | Kalatoli | Jhilonga | Total | proposed | Difference |
|---|---|---|---|---|---|---|---|---|---|
| ACF (HNP office) | 0 | | | | | | 0 | 1 | 1 |
| Forest Ranger (HNP office) | 0 | | | | | | 0 | 1 | 1 |
| Office assistant/computer operator (HNP office) | 0 | | | | | | 0 | 1 | 1 |
| Beat Officer/ Sr Forester ( 1 in each beat office) | 0 | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 0 |
| FG (4 in each beat+2 in HNP office) | 0 | 2 | 1 | 3 | 3 | 1 | 10 | 22 | 12 |
| Mali (2 in each beat+1 in HNP office) | 0 | 2 | 1 | 0 | 0 | 2 | 5 | 11 | 6 |
| Boatman | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| Care taker (HNP office) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Total | 0 | 5 | 4 | 4 | 4 | 4 | 21 | 43 | 22 |

**Table 12 proposed equipment for HNP**

| Name | No. unit |
|---|---|
| Digital Camera (1 in each beat office+ 2 in HNP office) | 7 |
| Binocular (1 in each beat office+ 2 in HNP office) | 7 |
| GPS (1 in each beat office+ 2 in HNP office) | 7 |
| Torches | 37 |
| Desktop computer and printer (1 in each beat office+ 2 in HNP office) | 7 |
| Laptop computer (For ACF) | 1 |
| Rifle ( 1 for each FG) | 16 |
| Double cab Pick up (HNP office) | 1 |
| Motor bike 100 cc (1 in each beat office+2 in HNP office) | 7 |
| Rain coat | 43 |
| Solar | 4 |

### 3.1.1 Management pattern

HNP is currently overseen by the Divisional Forest Officer (DFO) Cox's Bazar South Division who is overall responsible for management, protection and development works. The Range Officer (RO) Cox's Bazar Range is in charge of the HNP and there are four beats each managed by a forester, responsible for the field activity. The RO is ex officio member secretary of CMC.

### 3.1.2 Roles and responsibilities

The DFO is overall responsible for the management of the PA including administration, protection and improvement of the resources and conservation of biodiversity, environmental management, preparation of budget, and control over all activities within his jurisdiction.

The Range Officer (RO) is the key person who is responsible for overall activities of the PA. He will maintain liaison with other related government departments and local NGOs and other organizations for smooth implementation of co-management activities. The Forester in Charge of a Beat is responsible for protection and other field activities within his Beat.

## 3.2 Co-management structure

Co-management organization (CMO) consists of the following types of bodies:

- Co Management Committee (CMC)
- Co-management Council
- Peoples Forum
- Village Conservation Forum

**3.2.1 Structure and roles & responsibilities of Co Management Committee (CMC)**

The CMC is the executive body of the Co-Managemetn Council.

- DFO and Upazila Nirbahi Officer (UNO) are the advisors of the CMC

The respective Range Officer (RO) serves as the Member- Secretary;

- People belonging to the respective categories\groups elect members for the CMC according to the quota mentioned in government order;
- All members are elected for 2-year tenure except the nominated (ex-officio) members and no person can be a member for more than 2 consecutive terms; -
- The members of the CMC elect one chairperson, one vice-chairperson one treasurer among themselves; -
- The maximum number of members of the committee is 29.

Responsibilities of the CMC are:

- To scrutinize the activities of VCF, PF and CPG;
- To enable voluntary work in forest conservation and management;
- To facilitate effective conservation of natural resources;
- To ensure effective participation of all the stakeholders in forest management;
- To help in the implementation of adopted development activities;

### 3.2.2 Structure and roles & responsibilities of Co-management Council

To establish participatory PA management through co-management, the council has been formed with the full support and active participation of all relevant stakeholders in HNP and its landscape. Different categories of stakeholders select/ elect their own representatives for the Co-management Council. The categories are: Civil Society (maximum 5 persons), Local Administration (maximum 3 persons), Forest Department (maximum 8 persons), Local Government (Union Parishads, maximum 5 persons), Local Community (maximum 39 persons largely from the People's Forum and Community Patrol Groups, but including other members of civil society and any minority groups), and representatives from other Government bodies (maximum 5 persons). The Local Member of Parliament, Upazila Parishad Chairman and Divisional Forest Officer are the advisors of the council. The UNO and the respective Range Officer serve as the Chairman and Member Secretary of the Co-management Council (as well as the CMC). The Co-management Council can have a maximum of 65 members, of which at least 15 must be women.

### 3.2.3 Structure and roles & responsibilities of Peoples Forum (PF)

The HNP Peoples Forum is formed by election of representatives from all villages with Village Conservation Forums within the HNP landscape area. All key stakeholders should be represented, particularly women, youth, low income households, and important resource user groups. Thirty-three percent of the members of the Peoples Forum will be women.

The PF represents local users of natural resources, its main role is to ensure that local livelihood issues are taken into account in the preparation and implementation of this and subsequent PA management plans and in annual work plans prepared under this plan. It recommends and supports initiatives for protecting the natural resources of the PA including conserving biodiversity, assists the FD and CMC in restoring forest, establishing nature tourism activities, and in other management activities of the PA.protected area. It has a lead role with the CMC in preparing and implementing annul work plans for sustainable resource use and climate resilience in the HNP landscape area, including coordinating VCFs.

### 3.2.4 Structure and roles & responsibilities of Peoples Forum (PF)

The Village Conservation Forum (VCF) is an inclusive grassroots tier inthe co-management institutions, where the poor villagers can ensure direct participatory representation in a democratic co-management process. It offers equal opportunities to all inhabitants of a village, including women and ethnic minorities, to discuss, criticize and propose relevant activities for take up by the stakeholder bodies in co-management. At present 35 VCFs exist for HNP and again may be formed where a village is found to impact on the NP. The steps to form a VCF are:

- Organize village meeting to describe the objective of the census;
- Household census to identify the position and condition of the village people;
- At the time of census, clearly describe the power and responsibilities of the VCF, PF, and CMC, and that 50% of VCFmembers should be women;
- Form VCF with all households interested to be involved;
- Elect Peoples Forum representatives (one man, one woman) from the VCF.

Responsibilies of the VCF are:

- To monitor and discuss the implementation of any activities and development initiativevs in HNP and its landscape, and suggest to PF and CMC where improvements can be made;
- To select laborers for any type of activities organized by CMC or FD inside the PA, coordinated with PF, CMC and FD;
- To control anti-conservation activities and tTo inform the CMC if any such type of activities happen in their village;
- To give comments and recommendations for CMC activities through PF, if they are not satisfied by the answer of the CMC they can raise the question in front of Divisional Forest Officer (DFO);
- VCF may form its own committee to look into issues and make suggestions;
- VCF can ask CMC to provide the project proposal and financial document of CMC for inspection if they have any question or confusion;
- VCF is mandated to meet at least four times in a year, but may meet more often according to the necessity of community

## 3.3 Training and capacity building

To develop skills and capacity among the HNP landscape communities, many of whom are poor with limited capacity to take up better earning occupations and enterprises, several government and non-government organizations (NGOs) are active in the area. Some NGOs work on social welfare, some work on economic solvency, some work on climate change, some work on livelihood programs. NGOs are now the leading training and capacity building institutions servinglocal peoplesee Table 13 for details.

Local level BFD staffs, CMO members, resource users groups as well as other local stakeholders are needed to facilitate with trainings on various subjects and skills such as; organization building, leadership and management for newly formed co management institutions, AIGA, sustainability and resilience covering all activities under sustainability and resilience programmed, responsible nature-based tourism management and implementation, human-wildlife conflict mitigation for the conservation natural resource and biodiversity of HNP.

A provision for budget should be kept for forest case and other disputes dealing.

Again for the strengthening of CPG the following instrument is needed to provide-

- Shoe
- Raincoat
- Uniform
- Cold clotth
- Torch light
- Cap
- Honorium and transportation

**Table 13 NGOs with training and capacity building programs**

| Name of NGO/CBOs | Area | Capacity building program |
|---|---|---|
| NACOM | Around the HNP area | Climate change, Biodiversity Conservation, VCF Formation, |
| CODEC | Around the HNP area | Livelihood activities |
| NONGOR | Around the HNP area | Activities related to rehabilitation of drug addicted people |
| Marine Life Alliance | Himchari, Pecherdweep | Marine biodiversity conservation with a focus on turtle conservation. |
| GONOSASTHO | Around the HNP area | Health and sanitation |
| HELP | Around the HNP area | Child labor prohibitation program |
| RIC | Link road, Chainda | Help aged people, water and Sanitation |
| COAST | Kolatoli | Micro credit |
| Grameen Bank | Link road, Chainda | Micro credit |
| BRAC | Around the NP | Education, Credit, Nursery, Seed |
| ASA | Jhilongja, | Micro credit, Group formation |
| SHED | Chainda | Nutrition of woman |
| CARE | Link road | Livelihood Support, Water and Sanitation, Nutrition. |
| Proshika | Kolatoli | Micro credit |
| MUKTI | Around the NP | Micro credit, Livelihood activities |
| MEGHNA | Link road | Micro credit |
| PULSE | Kolatoli | HIV and Sex Workers Health Care |
| Mercy Mankind | Link road | Social Welfare |
| ANONDO | Around the NP | Education and Micro credit |

Capacity building for sustainable CMO:

CMOs are the main vehicle to support Government for improved management of the Himchari National Park. CMO's functional and financial capacity needs to build for their active role in management and conservation. Functional and financial capacity refers to legitimacy of the organization, functional capacity for improved management, organization has good governance and capacity for inclusiveness, has the capacity to prepare participatory and adaptive management plan and resource mobilization capacity for sustainable funding to implement the plan.

Ultimately, it has to continue to deliver valued services or benefits through protecting and sustaining biologically significant eco-systems and improving the lives of people dependent on the area. In this connection system need to introduce for enhancing CMO capacity on regular basis so that they will able to contribute in the PA management. CMO leaders need to know the modern management system that are implemented in other countries through study tour and cross visit, attending and participating in workshops and symposium, need to build leadership capacity, able to enhance knowledge on NRM and climate change through training.

# 4 Values of the PA

## 4.1 Ecosystem values

An ecosystem is defined as 'a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit', and ecosystem services as "the benefits people obtain from ecosystems". Ecosystem services have been categorized into provisioning, regulatory, supporting and cultural services. Based on this classification, the ecosystem services of HNP are those shown in Table 14.

**Table 14 HNP ecosystem services**

| Service Type | Services |
|---|---|
| Provisioning Services | Timber, Fuel wood, Thatching materials |
| Regulatory Services | Climate regulation<br>Disease regulation<br>Water regulation<br>Water purification |
| Supporting Services | Soil formation<br>Nutrient cycling<br>Primary production |
| Cultural Services | Spiritual,Tourism, aesthetic<br>Educational |

As noted earlier due to severe degradation the ecosystem services provided by HNP are considerably less than would be expected were forest to be in good condition. Similarly the intrinsic value of the ecosystem (non-human services) depends on the wildlife and flora of the NP. Although severely degraded, the NP still has some biodiversity value with for example 126 bird species recorded so far (although some notable species have been lost). Asian Elephants are still widely distributed in the area, although numbers very likely have declined. These elephants are part of a larger population scattered over the Chittagong Hill Tracts and down through the Teknaf Peninsula, and contiguous with populations in adjacent parts of India and Mynmar. Elephants are of high conservation importance as they are considered to be globally endangered, with few populations remaining that may be viable long term. Unfortunately elephant movement corridors into and out of HNP now have been largely cut off due to habitat degradation and fragmentation.

## 4.2 Socio-economic values

A number of communities including ethnic minorities reside within and around HNP, and depend on remaining resources there for their livelihood opportunities. NTFPs such as bamboo, cane, and grass are now the main products of economc value, but also most of the people in the area use fuel-wood collect from the forest for cooking.

## 4.3 Ecotourism values

HNP has very high potential for tourism due to its easy access and proximity to Cox's Bazar. HNP provides a welcome short drive from Cox's Bazar and attracts tourists wanting a break from beach and town. The main attractors are Himchari waterfall, Borochara waterfall, views over the hills, and Adim guha of Darianagar, Kolatoli sea beach, and Jhau plantation on the coast, Rakhain village, and a Buddist temple. With better visitor facilities and publicity, more tourists can be expected to visit HNP.

# 5 Threats

A number direct and indirect threat has been identified in HNP through focus group discussion. These are given below-

**Direct threat (*severity ranking)**

- Forest land encroachment, agriculture, Pan baroj, Housing, Illegal settlement (1)
- Transfer to other department, Army, Navy, RHD, Police, BDR, TNT, establishment religious institution (1)
- Illegal tree felling and timber trade (2)
- Fuel wood collection (3)
- Forest fire (4)
- Sungrass collection/cultivation (5)
- Soil collection (6)
- Coal making (7)

**Indirect threat (*severity ranking**)

- Fuel wood (1)
- Saw Mill (2)
- Furniture (3)
- Brick field (4)
- Poverty (5)
- Natural calamities (6)
- Weakness in law enforcement (7)
- Destruction of habitat for wildlife, especially Asian elephant.

* Highest severity start from ranking number 1

## 5.1 Resource extraction

Collection of fuel wood and house building materials is widespread within the PA and is as major threat to the biodiversity of HNP. Local people also collect dry leaf and sungrass, and wild plants for food. Cutting fuelwood prevents regeneration of canopy trees, understory trees, pioneers and shrubs. All these contribute to forest degeneration and poor abundance of these exploited species. From focus group discussion it has been found that about 1585 person entered the HNP regularly.

## 5.2 Livestock

The introduction of livestock in PAs is prohibited according to the Wildlife Act (2012), but livestock grazing is common and destructive, particularly by preventing natural forest regeneration. Livestock, mainly cattle grazing is widespread within the PA.

## 5.3 Encroachment

The boundaries of HNP are not maintained and encroachment for cultivation and settlements has taken place. No efforts have been made to physically demarcate the boundaries in the field in the face of heavy human pressure.

Forest land encroachment for settlements (329 ha), agriculture (128 ha) is widespread inside the PA. Forest land is encroached slowly starting with grazing and NTFP collection. Often village elites are directly or indirectly associated with forestland grabbing to establish homesteads and cultivation. Institutional infringement in forest land is common in the buffer zone, for example to establish school, madrassa, graveyard and mosques. In some cases, the encroachment has been regularized in the buffer area by issuing land ownership documents as khas land. This phenomenon of forestland infringement is continuing and needs to be stopped immediately.

## 5.4 Human- wildlife conflict

Asian Elephants are the keystone species in the area as their influence on the habitat determines habitat quality for other species, due the impact of elephant browsing as well as their role with regard to seed dispersion. Fragmentation of elephant habitat, food scarcity and increased human activities within the NP pose serious challenges for elephant conservation and human elephant conflict management in HNP. Due to destruction of their habitat and settlement in their migration corridors, elephants increasingly attack settlements and agricultural fields in search of food. The other impact of wildlife experienced by people is mainly crop damage due to wild boar, monkeys and birds. Due to habitat destruction the elephant corridors have been fragmented and the movement of elephant disturbed.

## 5.5 Poaching

Although not widespread, the local hunt /trap some wildlife, the important species sought are jungle fowl, Matura, sometimes deer and birds. It is reported that sometimes people from distant places come to the forest for bird hunting. Therefore, pose a threat to the wildlife of the sanctuary as their population is now highly reduced.

## 5.6 Conflict between conservation and development

For ecotourism development and sustainable and effective management of the HNP some infrastructure development work is needed. Improper development work may cause disturbance wildlife and damage habitat. All the development work should be done near the road side or boundary of the PA to reduce disturbance impact on the forest.

# PART 2: Analyses of Current Management Practices and Future Program

# 6 Objectives of PA management

## 6.1 General policy framework

As a signatory party of the CBD Bangladesh has developed a National Biodiversity Strategy and Action Plan (NBSAP). According to NBSAP (GoB 2004) and National Forest Policy (1994) the primary objective of Bangladesh' biodiversity conservation policy is "to establish conditions to conserve, and wherever necessary, to restore the biodiversity of Bangladesh as an essential component to ensure the wellbeing of the present and future generations, and equitable sharing of benefits". This involves maintenance and improvement of environmental stability for proper functioning of ecological systems, and ensuring the preservation of the unique biological heritage of the nation as an asset for the benefit of the current and future generations. Co-management is one of the widely accepted approaches for protected areas management."

## 6.2 Objectives

The main purpose of this management plan is to increase as far as possiblethe area of HNP under biologically valuable forest cover and restoreits supported biodiversity in such a way that key species of the area are preserved, while ensuring ecosystem services for the benefit of local populations and future generations to ensure sustainable livelihoods and resilience to environmental hazards, including climate change. Potentially in the long term HNP could be a show case of a well conserved ecosystem benefiting nature based tourism, education and science. Within this perspective, the following management objectives are proposed for Himchari National Park:

**(1) Protect and maintain physical, biological and aesthetic features of HNP**

- Regulate further encroachment and changes in land use through zoning and zone demarcation of the area, taking into account scope to restore forest, and existing urban /settlement encroachment;
- To maintain elephant corridors
- Restore tropical evergreen forest in 775 ha of HNP based on assited natural regeneration and enrichment planting with keystone tree species.
- Control invasive species, especially exclude livestock and other domestic animals from regenerating areas and vulnerable habitats;
- Effective forest protection through joint activities of FD and communities.
- Reduce dependency on the PA by improving livelihood of forest extractors based on alternative enterprises.
- Reduce human-elephant conflict by enforcing landuse planning and zoning, promoting lookout systems and planting of unpalatable crops, and effective compensation measures.

- Research, surveys and monitoring of biodiversity resources to understand ecological values, processes and threats;

**(2) Improve food security and resilience of populations to natural hazard including climate change**

- Promote resilience to climate change through adapted crops and restoring tree cover;
- Improved watershed management in the PA as well as in the impact zone through soil and water conservation measures aimed to reduce landslides and rapid runoff.

**(3) Improve revenue sharing for local communities and local development**

- Change current contracted (leased out) entry fee collection for a system run transparently by the CMC;
- Ensure as per FD policy in PAs that 50% of income from visitors and other sources is used by the CMC for local benefits;
- Promote (re-investment in tourism development.

**(4) Realizing and utilizing the Park's potential as venue for tourism**

- Develop tourism infrastructure (information facilities, observation shelters, nature trails, picnic sites);
- Promote HNP in Cox's Bazar;
- Support local and private initiatives in tourism development;
- Control negative impacts of tourism (pollution, animal disturbance, noise disturbance).

**(5) Integrating National Park into local and regional development process, especially surrounding local communities to ensure wider acceptance of the Park's values**

- Create awareness among stakeholders including local resource users as well as key actors determining land and resource use, involving also local educational institutes;
- Enhance co-management and benefit sharing
- Strengthen incentives for community involvement in protecting and restoring forest and wildlife.
- Training for local stakeholders in co-management and ecotourism.

**(6) Improving the FD's staff welfare, motivation and capabilities**

- Enhancing office and accommodation facilities for FD staff;
- Improving logistics and mobility;
- Improving field equipment (uniforms, arms, GPS);
- Training (law enforcement, co-management, and ecotourism

# 7 PA and landscape zonation

## 7.1 Zoning of landscape area

For better management HNP and its landscape are divided into three zones i.e. Core zone, Buffer zone and landscape zone / Impact zone (Figure 4).

### 7.1.1 Core zone

The entire forest area that was declared as National Park in the official gazette is designated as core zone due to its potentially high conservation value and its proximity to intertidal-/beach areas. The total area of core zone 1729 ha. However, within this 327 ha have already been encroached to urban use and 127 ha for agriculture. With only 132 ha of remaining forest in this area, the target is to protect this area and restore biodiverse hill forest in 775 ha located in core zone as shown in Fig 3 over the ten year period including 200 ha enrichment plantation, 200 ha ANR, 350 ha (identified in core zone for elephant habitat improvement area, see annex 11) habitat improvement work in degraded forest areas (including in 5 ha chara, 4 ha sand bar) and habitat restoration work in 25 ha bare soil. Forest management in this zone will focus on conserving remaining natural forest trees and bringing back native forest in priority areas. This will be achieved by strengthened joint patrolling to prevent illicit removal of wood and forest produce, poaching, encroachment, grazing and fire; and by encouraging natural processes for regeneration. The visitor use of the core zone will be regulated to allow low impact tourist activities in terms of hiking and wildlife watching; high impact visitor activities such as motorized transport and group picnic will not be allowed.

### 7.1.2 Buffer zone

Himchari National Park has 4144 ha of FD lands around it forming the buffer zone. Within this area are 467 ha – area within NP of good quality native hill forest which will be incorporated into the core zone and managed in the same way. The remainder of the buffer-zone is largely degraded and deforested so far as possible it will be put under sustainable tree-based use to reduce human pressure on HNP and complement it. Forest restoration work will be done in 100 ha of degraded lands in between Mitachara and Kuniapalong to connect the proposed elephant habitat improvement work area in core zone (see annex 11). Due to habitat destruction, elephant movement has been reduced. Habitat improvement in buffer zone is important for elephant corridors maintenance.Social forestry, following the FD rules and norms, will be established with local households on condition that they not only restore tree cover but also participate in community patrols to protect the NP and its regenerating forest, organized by the CMC. 50 ha of vacant forest lands without adequate rootstock will be taken up for long-rotation plantations of native species. The management of the buffer zone will focus on bringing existing plantations under co-management practices and restoring native forest/plantations of native trees to the area. Local stakeholders will be identified and agreements signed for secure use rights conditional on protecting habitat.

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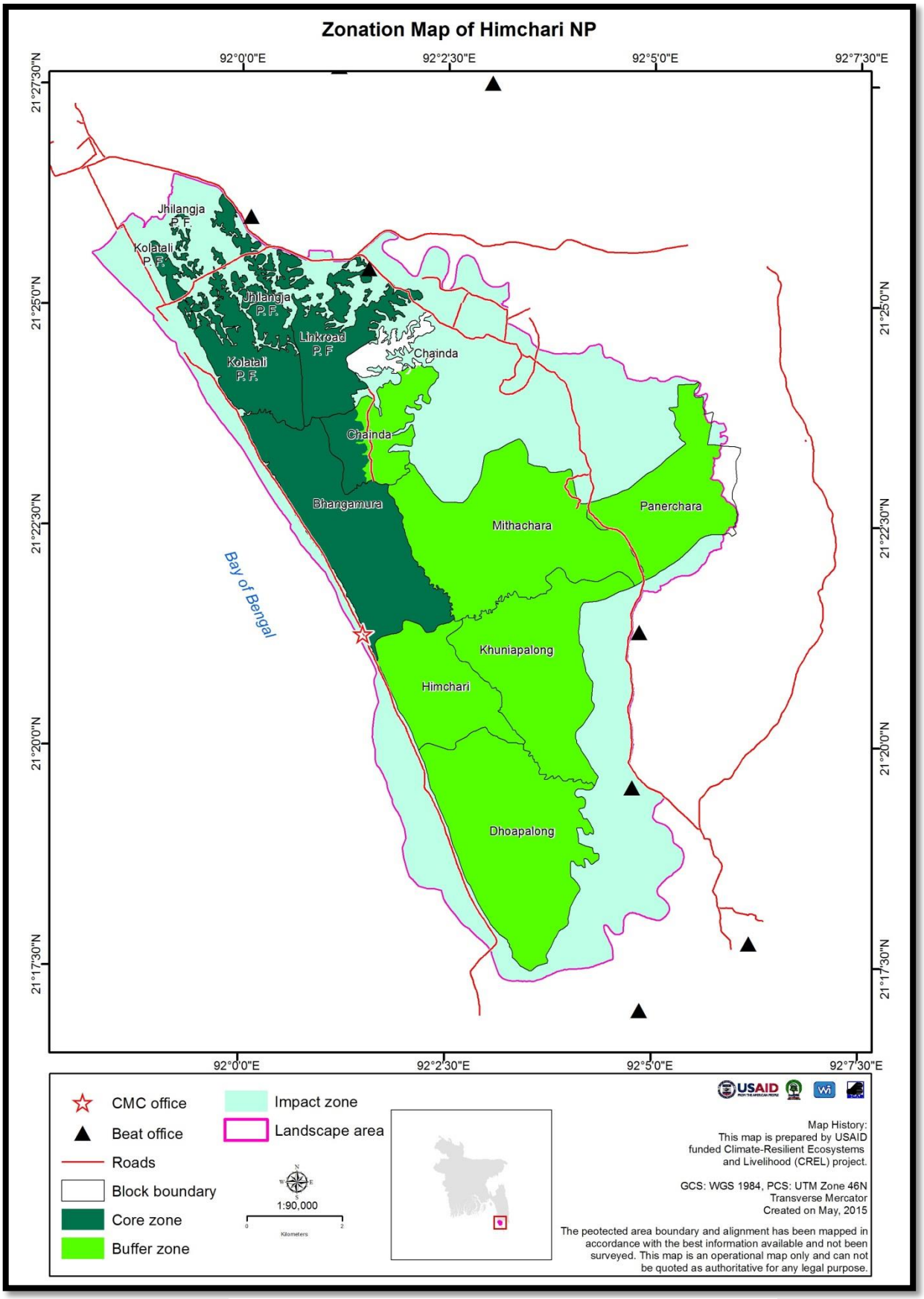


**Figure 4 zoning map of HNP**

### 7.1.3 Impact zone/ landscape zone

The areas outside FD lands that impact on the PA and where local communities live form the remaining landscape zone The focus here is on ensuring sustainable natural resource use that is resilient to climate hazards and stresses, and achieving support from communities for conservation based on diversified livelihoods that make use of fuel, timber and other products from sustainable sources in the village areas and in the buffer zone. To connect one protected area to others, it is important to maintain elephant corridors. Forest restoration from Himchari to Mithachari via Kuniapalong a forest cover upto upper Reju block is necessary for elephant movement

## 7.2 Boundary delineation

The non-disputed or completely encroached boundaries of the NP will be identified on the ground with GPS and marked with permanent signs and concrete pillars; as will be a practical boundary bordering Cox's Bazar urban area and a boundary for the natural forest in the buffer that will be merged into the PA. The GPS data will be preserved. The benefit of natural features like rivers, streams/charas, ridges, roads, etc. will be taken during demarcation. Concrete pillars or other markers (e.g. metal), trenches, mounds, etc. will be fitted in place at all important and turning points and will be labeled. Signs will be installed at main current or potential access points. A regular annual maintenance program will be necessary for boundary pillars.

## 7.3 Actions to address encroachment and tenure issues

A database will be generated of settlements and number of settlers within the core and buffer zones. Annual update of the database will be carried out. Satellite imagery and other sources will be used to monitor and update maps every two years showing areas of encroachment for crops or other purposes. FD, CMC and DoE will take up a coordinated program, as DoE is engaged in combating hill cutting. Scattered encroachers spreading over the PA core area will be rehabilitated in the buffer zone through social forestry. Existing laws and provisions will be strictly enforced in the face of any large scale new encroachments.

# 8 Management actions

## 8.1 Management of PA (conservation priority area)

### 8.1.1 Rules and norms

The main objective is to protect, rehabilitate or restore and maintain tropical forest in the PA by encouraging natural regeneration.

In the core zone all forms of human interference (felling, agriculture, killing or capturing wildlife, fires and cattle grazing) are illegal.In practice these rules will be strictly enforced in the remnant forest area and in the areas designated for forest restoration. In the remainder of the PA elephants and other wildlife will be protected from hunting or disturbance, forest fires prevented, and grazing zoned to limited areas.

### 8.1.2 Restoring habitat and ecosystems

Around 1,385 ha of HNP is in degraded condition. To reverse this habitat will be restored through Assisted Natural Regeneration (ANR), and enrichment planting of key forest trees. In addition small works to conserve soil and water such as check dams on streams or slope stabilization may be undertaken. Trees species indigenous to HNP in the past will be planted.

- ANR will be implemented in areas where there is natural rootstock or natural regeneration of tree seedlings occurs - 200 ha will be identified and implemented for ANR over ten years as described in section 7.1.1.
- As most of HNP lacks mature forest trees, enrichment planting with indigenous wide crowned fruit bearing tree species (that will encourage spread of seeds and hence seedings) will be carried out using Thali model (Figure 5 A) and fence plantation (Figure 5 B). Fence plantation will be raised in patches of one ha each. Thali plantation may also be protected through fencing in several patches. Around 200 ha of core zone will be brought under enrichment planting. In Thalli plantation recommended spacing is (5m*5m) and in case of fence plantation spacing will be (3m*3m). Protection against illicit felling, Fuel wood extraction, encroachment and burning, plant succession will progress over a period towards semi-evergreen forests.
- To stabilize chara banks from erosion native trees, bushes and bamboo will be planted.
- For slope protection or where landslide occurs frequently, gully plugging is recommended and plantation with fibrous root species like sungrass and woody climber, bamboo, broad leaf tree species will have to be done.
- Habitat restoration work will be done in 25 ha bare soil areas (see section 7.1.1 and figure 3)
- Habitat improvement work will be done for elephant habitat imrprovement in 350 ha areas areas (see section 7.1.1 and annex 11 ).
- Establishment of an arboretum
- Establishment of an Orchid house.

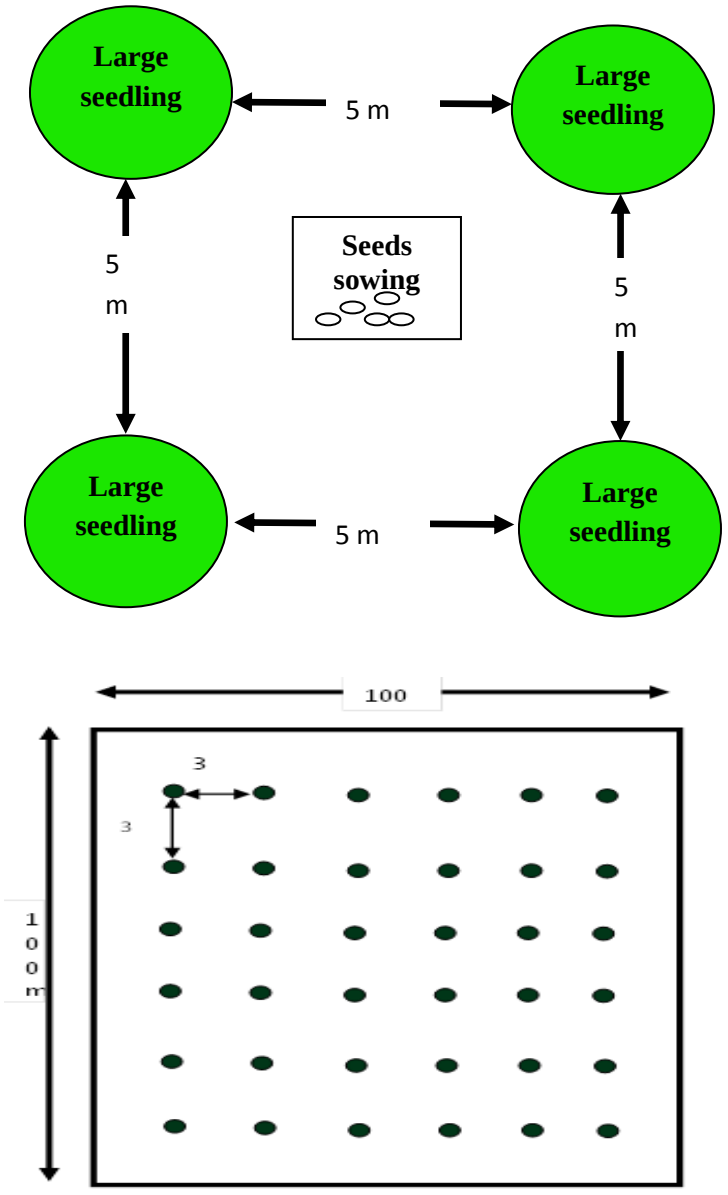


**Figure 5 A. Thali plantation B. Fence plantation**

### 8.1.3 Wildlife Conservation and Recovery

The measures in section 8.1.2 are described to restore habitat for forest dependent wildlife. As Asian Elephant is one of the flagship species for HNP, areas in between sites already used by elephants will be restored as a priority by planting elephant-preferred vegetation: bamboo, wild banana, bhuikumra, chalta, kanthal, dumu and other spp. (*Ficus* sp.), chapalish, gilla lata. By adopting a mixed enrichment/ANR approach in these areas tree regeneration is expected to improve. Water sources used by elephants will be protected from human use and surrounding slopes protected. Human use of elephant movement corridors will be prevented Attempts will be made to restore forest cover along streams and their slopes as corridors.

IUCN has taken a project to indentify the **elephant corridors** of Bangladesh. Most of the corridors are in Cox'sbazar, Chittagong and Chittagong Hill Tracts. They have identified 12 numbers of corridors which start from Cox'sbazar south to Kaptai via Cox'sbazar north and Chittagong Forest Division. These corridors connect most of the Wildlife Sancturies and National Parks within the areas. The list of the corridors has been shown in annex 13. There is scope to restore populations of forest dependent birds through ANR and enrichment planting. Enrichment will focus on fig trees (genus Ficus - dumur, bot, etc.) and other native forest trees with small fruits. Old trees including those that are dead or dying have twisted boles, furrowed bark or natural cavities are an important part of forest ecosystems supporting many invertebrates and hole nesting birds, and will be preserved. The CMC will raise awareness that hunting is illegal.

### 8.1.4 Action to improve Climate Change resilience

To improve climate change resilience two measures will be taken. Existing and regenerating tree cover will be linked together, and restoration will target a combination of streams and slopes above those streams in specific micro-watersheds within the PA to conserve soil and water. Invasive species will be controlled (by preventing their spread or removing them). Overall to facilitate ecosystem shift or evolution, management will reduce forest fragmentation, plant trees those are suited to climate change and ensure that restoration forest is of mixed species and uneven age structure.

### 8.1.5 Smart Patrolling (CPGs, FD)

Illegal removal of forest products within the NP will be checked through widespread joint patrolling (FD staff, CPG members and stakeholders) by applying SMART (Special Monitoring and Reporting Tool) method inside the forest.

With the technical support from CGEIS, BFD has developed in the the Sundarban Reserved Forest a GIS/ GPS based system for the systematic collection of patrolling data (Anon, 2003). The following process may be apply in smart patrolling for effective protection of the PA.


Community participation in patrols is essential to gain local support for protection and improve vigilance and intelligence sharingon locations of entry and extraction. To improve communication walkie talkies and mobile telephones will be provided/ subsidized. At least one motor cycle per beat will be provided for FD field staff. Upgraded fire protection and weeding equipment will be maintained in each beat office.

Incentives and equipment are needed. Efficient patrolling will be ensured through provision of clothese, shoes, torch and umbrella to the CPG members. CPG members will be preferred in allocation of lands under social forestry in the buffer zone (see later) and in livelihood development activities, and allowances for CPG members will be developed from resources mobilized by both CMC (e.g. entry fees) and FD (e.g. revenue). Rewards or prizes will be given to CPGs for good performance and persons whose information leads to the control of forest offences.

## 8.2 Management of PA (non-conservation priority areas)

### 8.2.1 Rules and norms

The management of areas within HNP where there is large scale encroachment and/or areas under litigation will be addressed separately as non-conservation priority areas. Such areas will be marked and delineated separately and intensive awareness program will be taken. Homestead planting around these paras and villages will be encouraged and effort made to encourage resettlement from core zone to buffer or impact zone.

Forest management in this zone (non-conservation priority areas) will focus on limiting the encroached areas and especially from this area into the conservation priority areas. This will be achieved by awareness building, and encouraging watershed management, stream side plantation, biomass production.

### 8.2.2 Limits on encroachment, settlement and land uses

Out of 1729 ha of HNP, the non-conservation priority area in this core zone is 795 ha (mostly encroached by homesteads and agriculture and with litigation). In the core zone there are some scattered settlements and encroachments which should be evicted and rehabilitated from the core zone to other areas. Provision of funds for the rehabilitation of settlers has been kept in the budget (Annex 9).

It is essential to have political commitment and administrative support from the law enforcing agencies to tackle the situation. Moreover, due to the shortage manpower and political interference FD is handicapped to face these issues. Co-operation of all agencies with FD through the CMC and co-management council is essential.

### 8.2.3 Restoration activities

Small stream based watersheds will be identified for improved management within the natural boundaries of a drainage area. An identified watershed will provide a context for a meaningful participation of local people. Appropriate land management practices in such watersheds will focus on in-situ moisture conservation to improve percolation of water under-ground based on natural vegetation and soil conservation. Low input land husbandry technologies (e.g. half moon trenches, contour furrows, staggered trenches, mulching, hedgerows, small check dams, impounding pits, small tanks, soil barriers and traps, diversion ditches, etc.), which can be implemented by local stakeholders by contributing their voluntary labor, will be implemented in the identified watersheds. Stream sides and slopes will be planted with favorable tree species for control of landslide and erosion and for perennial water-flow.

### 8.2.4 Participatory biomass production

One objective of managing this zone is to reduce pressures on the conservation priority areas of HNP. Encroachers will be encouraged to plant vacant lands with suitable fast growing indigenous tree specieswith technical support from FD.

### 8.2.5 Action to improve climate change resilience

In addition to watershed management (see section 8.2.3), measures will be taken to control and prosecute (working with DoE) developers engaged hill cutting which is a common cause of landslide and erosion. Planting deep-rooted trees and grasses in the bare hills may also be taken up.

### 8.2.6 Patrols (CPGs, FD)

CPGs will be strengthened and Groups of CPGs will be increased. Patrolling will be more or less similar pattern as mentioned (section 8.1.5).

## 8.3 Management of Buffer zone

### 8.3.1 Rules and Norms

Management of those parts of this area that have existing forest of biodivsrsity value will follow the same rules and practices as for the conservation value core area (9.1), in the expectation these areas will be incorpiorated in HNP.

Management of the rest of this area will focus on two targets: 1) restoring biodiverse forest and habitat of value to elephants along corridors and connecting areas used by elephants, and 2) intensive production of forest-based resources, particularly fuelwood, poles, timber, and NTFP through participation of local people. Social forestry using indigenous trees will be conditional on the participants in addition to protecting their trees, being active in biodiversity protection in HNP and its landscape (eg in CPGs). Existing plantations will not be clear felled but instead be managed under selective felling (mainly removal of exotic species) to encourage natural regeneration to a mixed forest. This will act as a buffer to protect the core zone and will supply NTFP and some firewood/timber to fulfill the demand of the local people Main management prescription of this zone will be:

- Social forestry involving co-management stakeholders. Tree species that are economically valuable and fast growing will be used.
- Fuel wood plantations with fast growing species like *Acacia auriculiformis, Albizia spp.* will be raised to fulfill the demand of the local people.
- NTFPs plantation is recommended and will be collected on sustainable way to serve the livelihood of the forest dependent people.
- Reintroduction of indigenous tree species in some forested areas and connecting lands is also neededso that these areas can be made continual with and brought into the NP in future. Such areas will be protected from human interference like grazing, fuel wood collection, fire *etc.* Protection of these areas will involve CPGs and ANR.
- In areas targeted for elephant habitat fruit bearing trees, bamboos and grasses preferred by elephants will be planted.

## 8.4 Management of impact zone/ Landscape zone

### 8.4.1 Rules and norms

The landscape zone is the area around the PA and other FD lands that impact on these forest lands – mostly by being the home of people who exploit and degrade the PA and forests. Most stakeholders involved in co-management live in this zone. As opportunities for receiving tangible benefits from the conservation-oriented management of core zone are limited, improving non-forest livelihood opportunities is a high priority. Subsistence

consumption needs of local people for fuelwood, NTFPs and timber will be met through co-management in the buffer zone and collective initiatives within the landscape zone.

### 8.4.2 Social forestry

Social Forestry will be encouraged to meet the forest product requirements of local people and reduce extraction from the PA and buffer zone. Slopes of roads and other public lands will be brought under social forestry involving local poor people. The plantations established will be harvested after 10 years and the sale proceeds distributed according to clause-20 of Social Forestry Rules 2004. Strip plantations are recommended on both sides of village roads involving local community.

### 8.4.3 Livelihood diversification and enhancement

To reduce ecological and climatic degradation proper soil and water conservation will be promoted, along with diversified profitable farming and other enterprises to reduce dependence on forest extraction.

The CMC will seek to partner with agencies (government, NGOs, private sector) that can provide training, services, micro-finance, and market development for these communities, particularly targeting households that extract forest resources and building in a conservation message to the programs of these agencies. The CMC will mobilize resources to provide enabling and community level resources such as road improvements to enable better market access. The benefits from eco-tourism may also be ploughed back for the development of local communities. These activities will be focussed mainly in the landscape zone but also in the core and buffer zone where there are existing settlements. The following livelihood development priorities have been identified based on field investigations done by NACOM.

#### 8.4.3.1 Integrated homestead farming

Homestead farming provides livelihood security of people and enhances incomes. Households will be encouraged to plant trees and grow higher value vegetables and other crops (betel leaf, betel nut, spices), or take up other enterprises such as bee keeping in homestead land.

#### 8.4.3.2 Cultivation of high value crops

High value crops to meet tourist demand in Cox's Bazar and demand in other cities will be promoted such as coconut, betel nut, black pepper, cinnamon, bay leaf, strawberry tomato, papaya, ginger, turmeric, yard long bean, leafy vegetables, chilly, guava, banana, jackfruit, pineapple. Mushroom culture may be tested at homestead level.

#### 8.4.3.3 Village tree nursery

Many private nurseries have grown up in the landscape of HNP to meet the demand for quality seedlings and seeds of vegetable and trees. Village nurseries are an enterprise that can be promoted with training, technical and logistic support. Growing indigenous and locally accepted species in the nursery is expected.

#### 8.4.3.4 Food Storage and Processing

Capacity building for local people in simple food processing and preservation techniques will add value locally and provide self-employment opportunities. For example, pickles of mango, lemon and jackfruit can be made locally for cash sale. Better post-harvest handling and packing of banana and pineapple and other fruits and food will improve returns.

### 8.4.3. 5 Livestock Rearing

Poultry rearing (broilers and layers) is potentially profitable. Cattle rearing will not be promoted except if these households undertake not to graze or collect fodder in the PA, and develop their own sources of fodder.

### 8.4.3.6 Fisheries

- Fish culture (in micro-ponds), Duck-cum-fish culture (in family ponds).
- hatchery establishment
- Community based fish culture
- fish marketing (Dry fish)

### 8.4.3.7 Ecotourism

Local people will be trained as eco-guides, and local entrepreneurs will be encouraged to establish eco-tourism enterprises in partnership with VCFs on the basis that they will not only employ local people but highlight local culture and enable local people to take a leading role in and they can be economically benefitted.

### 8.4.3.8 Cottage industries

Enterprises based on bamboo and cane products or handicrafts will be promoted provided they are based on sustainable sources of bamboo or cane grown in areas of the buffer zone in agreement with the FD and CMC. In all of these enterprises capacity bulding should focus on women.

### 8.4.3.9 Sewing activities

Involving village women local and national level garments and sewing activities.It may have significance to reduce dependency on forest and birh rate of HNP area.

### 8.4.4 Actions to reduce fuel wood collection/use

Fuel wood collection is the major problem of HNP. Most people living in and around HNP and Cox's Bazar depend on fuel wood for cooking. Poor women and young boys are engaged in collection of fuel wood from HNP. They cut seedlings, saplings and even bamboos for fuel wood. Preventing any natural regenerationof forest. To reduce fuelwood collection the following measures will be taken:

- Promote improved cooking stoves (ICS) including training about the benefits of ICS
- Promoteuse of kerosene stoves
- Promote use of biogas particularly in institutions and enterprises with higher and regular fuel demand.
- Promote manufacture and use of compressed rice husk (brickets)
- Establish fuel wood plantation and growing of quick biomassunder social for-estry (in buffer zone as well as landscape).
- Raising awareness on using ICS, kerosene stoves, biogas, rice husk and motibating to use.

### 8.4.5 Measures to improve community level resilience to hazards and climate change

HNP is vulnerable to a number of climatic hazards - drought, cyclone, storms, flood, landslide. Aadaptive measures prioritized by local communities include:

- Planting trees in degraded land, coastal embankment, homesteads
- Planting deep rooted trees and creepers to control landslide
- Promoting drought and saline tolerant rice varieties (e.g. BR 47, BR 43)
- New ponds may be excavated or existing ponds may be re excavated for the supply of pure natural drinking water
- Rainwater harvesting and conservation in community ponds, community reservoirs and household tanks and motki (earthen jar)
- Installation of deep tube wells
- Village based information networks to give warning about natural disasters
- Community based cyclone shelters for people and livestock
- Mass awareness, training and campaign about various natural calamities
- Planned construction of embankment with appropriate drainage system, height and width considering cyclone water level
- Improved programs to help people recover after disasters

## 8.5 Management Information System of PA

Management Information System (MIS) is envisaged as an integrated system which will be used to support the planning, implementation and monitoring of multi-objective activities under this plan and across the FD PA network. The MIS can be used for strategic, tactical and operational planning and implementation, and operational control in and across administrative units and levels. Besides supporting decision-making in FD and by the CMC, the MIS willtrack forest conditionand generate maps (e.g. land cover types, location of landscape villages, etc.). The MIS will be used to monitor:

- Progress against this ten year plan and the annual work plans of both FD and CMC;
- Perfomance of CMC, FD and other key stakeholders;
- Land cover classes and changes;
- Membership of various co-management institutions including CMC and CPGs,, and decisions;
- Details of eco-guides and local service providers.
- landscape villages with population statistics;
- Forest cover condition, management interventions and plantation history;
- Human resource records of FD personnel.
- Project based intervention records, e.g.list of projects with relevant project documents, lists of beneficiaries,
- Results of monitoring and studies whether carried out for PA management or done independently by academics or projects (e.g. habitat or wildlife surveys, socio-economic studies), Forest offence records including encroachments, illicit harvests/removal of resources, poaching, human-wildlife conflicts etc.

It is expected that FD will develop a suitable common MIS system for PAs in general to meet the needs above and orient the HNP team – FD and CMC in its use.

### 8.5.1 Archiving PA information

The FD HNP (range) office and CMC will both maintain archives of documents related to the PA and its landscape and management decisions and actions taken there. This is expected to include:

- This Protected Area Management Plan with associated data
- Hard copy maps of PA and its landscape with land cover, planned management interventions (such as forest restoration and plantations), zonation, forest administrative units, distribution of VCFs, and other line and point features;

- Digitial spatial data of the protected areas including GIS, GPS, remote sensing and Google Earth information
- Forest restoration (e.g. ANR), plantation and nursery records.
- CMC related information; profile, list of members in Council and Committee, list of VCFs, VCF member information, CPG information,
- Annual plans of CMC and FD.
- Details of project/schemes and their implementation by FD and CMC including list of projects and relevant information such as list of beneficiaries;
- Survey and monitoring data and results, such as forest inventory, resident forest bird surveys, household surveys, etc.
- Forest Offence Record

# 9 Ecotourism

An environmentally sound eco-tourism system that combines enjoyment of nature with education, interpretation and appreciation of the ecosystem and local communities, and generates a sustainable income for the local communities through the co-management organization will be established.

## 9.1 Appropriate visitors level and locations/zones

Tourists already visit HNP for its scenic beauty. Visits focus on: Himchari Picnic Spot, Darianagar sea view point, estuary of Reju khal, Majher chara, Tarabunia, and Chainda. Approximately 30000 people visited the main entry point of HNP in 2011. Visits other than to these sites are very few. An estimated 2 million people visited Cox's Bazar in 2011 during peak season (October to April) (UDD, 2011). With improved management visits to 2000 tourists per day and 200000 tourists per year is feasible in HNP.
There is scope to develop eco-tourism which can be advertised at these mass tourism spots. This would be based on a) nature/trekking trails including visits to selected villages interested to host visitors and set up simple enterprises such as camp sites, refreshments, tourist shops. As a separate activity the CMC could offer in association with an NGO to hold self-funding nature camps (of 1-2 days duration) at selected sites (e.g. Himchari and Chainda) within the NP for student/youth groups to provide a learning experience on biodiversity conservation issues. Such groups would be expected to bring their own tents and/or pay host VCFs for staying wiith them.

## 9.2 Entry fees

Among the identified sites entry fees are currently collected in Himchari picnic spot and Darianagar Sea View Park at the rate of Tk 25. With some improved facilities and a change to CMC management of the system the standard entry fees for other PAs could be charged (currently Tk 50 for Bangladeshi nationals, etc.).

## 9.3 Facilities and infrastructure development

Tourism facilities that are sustainable, durable, environment friendly, moderately priced, clean and self-sufficient need to be promoted in and around the NP. Ownership and responsibilities for facilities and their maintenance must be clearly defined before any investment. Some of the planned tourism facilities for HNP are as follows:

- Basic picnic facilities such as shelters and outdoor tables, simple toilets and litter disposal bins will be provided in the identified picnic spots of HNP.
- Nature trails (Borochara to Chinada, Himchri to Borochara) will be developed for visitors to walk and see key natural and cultural features of interest (e.g. patches of forests, caves, cliffs, natural streams/charas, and (if those communities agree) religious sites and villages). Trails of different length will be developed and waymarked, and have signposts with adequate information at each trail head. A list of do's and don'ts for visitors will also be prepared and displayed at all key visitor sites. Where appropriate simple toilets and litter bins will be provided at trail heads, and one or more shelters/benches along medium-longer trails.
- As the main tourist viewpoints for HNP are on hills there is no requirement for traditional watch towers in this NP, but shelters with interpretive displays are appropriate.

- With ample accommodation within Cox's Bazar, the focus will be on helping local entrepreneurs working with villagers/CMC to set up nature camps and cottages for tourists in the interface landscape zone.
- Instead of a new stand alone visitor center, existing buildings/structures and any new visitor shelters will be equipped with interpretive displays where landscape features of the NP are depicted visually including topography, biodiversity, history and culture.

## 9.4 Promoting visits

The publicity of HNP will be improved highlighting its waterfalls, green hills, views ofthe blue waves of the Bay of Bengal, and accessibility. HNP will be promoted in the electronic and print media (TV, radio newspaper, magazines) and through brochures and direct contact with the tourism industry in Cox's Bazar. Publicity and information materials on the NP will be provided to visitors by means of fixed signs at key locations, and by sale of brochures, leaflets, and printed guides. Mass Communication Officer of FD should provide support.

## 9.5 Ecotourism services (guides, training)

Unemployed youth members/naturalists from the villages represented in the CMC will be trained and registered as eco-guides. They will be trained in communication and interpretation skills (including on what to speak, how to speak, presentation skills, body language assessment, team building exercises, etc.). They will be trained on identification and information on local wildlife and plants on how to introduce local culture, and how they and visitors can walk and enjoy scenery without disturbing the nature.

## 9.6 Education and interpretation

Schools and colleges in the HNP landscape and Cox's Bazar town will be targeted for conservation education. The CMC will provide speakers, and encourage school visits to the NP and its facilities for learning experiences building on existing curricula as well as competitions and other activities. Sabuj Vahinis (Green Brigades) will be formed and oriented in nearby schools and madrsas. Nature interpretation as an educational activity will focus on revealing the meaning and relationships of complex ecosystems, landscapes and seascapes. This will make use of the interpretive displays developed in HNP. Appropriate audio-visuals and video films on wildlife and its habitat and local cultural aspects may be developed for use by schools and colleges (and may be used in the visitor facilities if those have electricity). A museum may be established based on NTFP to introduce local livelihood and culture.

# 10 Funding and resource mobilization

## 10.1 Budget requirements/ costs

Funding and resource mobilization is essential for implementing the management plan. To implement the management plan a ten year budget of about **Tk 794.800 million** is estimated (annex 9). These budget requirements cannot be fulfilled by the FD. The current revenue budget of FD is mainly confined for meeting the salary of FD staff. Multiple sources of funds and in kind support are needed including additional regular allocations by GOB, interventions based GOB allocations to FD in ADP, income from entry fees and tourism enterprises, contributions from the voluntary and private sectors, and support from other government programs in the landscape.

## 10.2 Resource mobilization

Internal financing within the PA, landscape, entry fees, GoB revenue allocations, donations, and contributions from local communities may all support the sustainable management of HNP. At present no such funds are being mobilized for the management and improvement of PAs. The current FD allocation towards the management of HNP is insufficient.. From GOB regular allocations are preferable rather than project based ones. It is expected that 50% of entry fees will be retained for ue by the CMC in support of conservation, maintaining visitor arrangements and community development. Similarly from social forestry and from concesions and CMC based enterprises (such as guest houses etc.) part of the income would be allocated through the CMC for these purposes.

## 10.3 External fund raising strategy

Externally derived funds are required to implement the management prescriptions of this plan. This may involve donor funded projects taken up by FD and/or CMC for the management of the PA and support to sustaining the landscape communities. Potential agencies include: GEF, carbon funds, World Bank, Asian Development Bank, European Commission, Japan International Co-operation Agency, and international NGOs. Smaller projects may be taken up with trust funds or foundations.Charitable donations including conservation and private sector may be for specific tasks or for general conservation of species.

## 10.4 Potential for ecosystem services payment (carbon payments)

HNP has some opportunity to generate its required funding through its ecosystem services especially through carbon trade. Although it has a limited carbon stock at present (52.8 Mg $CO_2$ $ha^{-1}$), through the effective implementation of this management it is expected that forest cover will be restored capturing more carbon making this attractive for some funding. Secondly slope stabilization, soil conservation and reforestation will reduce hazards to Cox's Bazar town, and a regular contribution from the municipal budget/taxes towards maintaining these services will be sought.

# 11 Monitoring, adjustment of plans and research

Monitoring and research are tools for assessing the performance of conserving HNP and natural resource management in its buffer and landscape zones, as well as improving understanding of the functions of HNP in order to sustainably manage constituent forests and biodiversity. An appropriate monitoring and research program will be developed with the following main objectives:

- To understand the trend of restoration or degradation of HNP ecosystem;
- To understand the biodiversity resources, ecosystem and landscape environment of HNP;
- To document flora and fauna, their current abundance, distribution, and functional relationship among biotic communities;
- To develop quantitative population estimates for selected key species, and develop detailed information on their current distribution and habitat use;
- To identify priority research and monitoring topics to help in the management program.

## 11.1 Monitoring forest protection

One of the main parameters of monitoring forest protection may be “Declining incidence of illegal cutting (Table 15). FD staff and CMC/CPGs will jointly monitor the numbers of trees, number of stumps and numbers of saplings in sample areas/transects.

**Table 15 Indication of forest monitoring with assessment parameters**

| Core indicators | Assessment parameters |
|---|---|
| Declining incidence of illegal cutting | Increased number of trees |
| | Increased canopy cover |
| | Increased natural regeneration |
| Frequent sighting of wild animals and birds | Sighting of wild elephants |
| | Phagents and horn bill sighting |

## 11.2 Monitoring changes in habitat/biodiversity/indicator species

A well-developed technique of monitoring in multi-species management scenario is to select one or more key species, and to ensure that habitat suitability for this species or a group of species is retained. The main species considered for purposes of macro-level habitat management while implementing this Management Plan is the Asian Elephant, requiring regenerating forest areas as well as grasses and bamboo for food and shelter, and water bodies for drinking and bathing. The long-term aim will be to maximize gains in quantity and quality of habitat, and quality of associated species. The following parameters may be used to monitor changes in habitat and biodiversity. To understand habitat improvement core indicator is given in table 16.

**Table 16 Indicators of habitat improvement**

| Core indicators | Assessment parameters |
|---|---|
| Improved elephant habitat | Use of elephant corridors |
| | Number of elephants |
| | Incidents of human-elephant conflict. |
| Increase in natural and assisted regeneration of tree species | Tree species composition |
| | Area with closed canopy coverage |
| Biodiversity and forest condition (Increased density of indicator bird species) | Density (number/sq.km) of indicator forest-dependent bird species through transect counts |
| Increasing carbon stock | % of basal area and density will be increased |

The activities set out in this plan and the plan itself will be reviewed and revised in the light of regular monitoring detailed above, as well as any new information from research.

## 11.3 Research

Prioritization of research topics will be decided by workshops involving FD, CMC, academics and potential sponsors of such research. The results of all such research must be shared in the CMC meetings and with the management agencies, and will be retained in the HNP repository (paper and computerized data base as appropriate).

### 11.3.1 Socio-economic research

Socio-economic research is an integral part of proper management of resources and may be taken up on priority basis based on management objectives. Possible topics of investigation may include

- the institutional development and economic sustainability of CMC and associated institutions,
- impacts and dependence of local people on the NP,
- impacts of human activities on natural habitats,
- forward and backward linkages of nature tourism,
- sustainable collection, harvesting, storage, processing and marketing of NTFPs

### 11.3.2. Ecological and biological research

Potential topics of ecological and biophysical research include evaluation of the contribution of the NP in water yield and conservation, impacts of forest grazing and forest fires on natural regeneration and wildlife, and impacts of habitat changes and eco-tourism on wildlife.

Some relevant topics of biological research may include species biology studies, surveys for little known faunal groups, wildlife-population viability analyses, population dynamics and feeding behavior, wildlife distribution patterns, wildlife seasonal variability and movements. The needs of species that are dependent on specific habitats (e.g. streamside areas) or specific components (e.g. standing and fallen dead trees) can also be studied for site-specific habitat management.

# 12 Gender, youth and ethnic community

There is a Rakhain village at Panerchara beat where 75 families of Marma ethnic group living within the HNP. These ethnic groups have their own culture and tradition. Representative from youth, women and ethnic community group is needed to be included in CMC for their empowerment. The following step may be taken for empowerment and lifestyle improvement of women, youth and ethnic community of Himchari National Park area

- Formal and informal education for youth, men, women and ethnic community
- Technical training for livelihood improvement
- Special donation
- Awareness building for biodiversity conservation.
- Training to Youth Tourism
- Handicrafts
- Tailoring
- Improved vegetable Cultivation
- Improved Cooking Stroves
- Technical Training
- Economic supports
- Job placement
- Fuel Wood plantation in Homesteads
- Substitutte of pole in betel leaf cultivation
- Nursery
- Mushroom
- Compost manure

Development of eco-tourism opportunities and enterprises, and capacity building for employment in tourism and d other enterprises in Cox's Bazar will target youth from households exploiting resources in HNP and its buffer forest lands.

# 13 Model structure for annual plans

**Table 17 Model structure for annual plans**

| Program | Activities | Timing | Main output | Responsibilities |
|---|---|---|---|---|
| **Coordination** | Meeting | Monthly | • Resolution forest land tenure problem<br>• Increased administrative support | DFO and Deputy commissioner, Cox's Bazar |
| | Meeting with law enforcing Agency | Quarterly | • Reduced forest offence and crime<br>• Increased security support<br>• Increased forest protection support | Police, BGB, Army with FD |
| | Co-management committee meeting (CMC) | Monthly | • preparation of monthly plan<br>• Improvement of forest protection | CMO and FD |
| | Co-management committee meeting (CMC) | Quarterly | • Quarterly progress assessment | CMO and FD |
| | council meeting (CMC) | Half-yearly | • Decision making and planning<br>• Strengthening CMO | CMO and FD |
| **Habitat protection program** | Mapping | First year, second year and third year | • Zoning map<br>• Boundary map | FD and CMO |
| | Boundary demarcation | First year, second year and third year | • Delineating boundaries | FD and CMO |
| | Control of illicit felling through patrolling | Full planning period | • Reduced biotic interference<br>• Increased vegetation cover<br>• Increased regeneration<br>• Increased biodiversity | FD/ Stakeholders/ CMC |
| | Control of forest grazing through patrolling | Full planning period | • Reduced biotic interference<br>• Increased vegetation cover<br>• Increased regeneration<br>• Increased | FD/CPG/ CMC |

| | | | | |
|---|---|---|---|---|
| | | | biodiversity | |
| | Control of encroachment through patrolling and motivation, law enforment | Full planning period | • Prevent encroach-ment<br>• Recovery of forest land | FD/CMC |
| | Resolving forest conflicts | Full planning period | • Increased forest protection | FD/ CMC |
| **Core zone management (conservation priority area)** | Enrichment plantation | Full planning period(yearly) | • Increased vegetation cover<br>• Increased biodiversity | FD |
| | Assisted natural regeneration | Full planning period(yearly) | • Increased Vegetation cover<br>• Increased natural regeneration<br>• Increased biodiversity | FD |
| | Biodiversity conservation through protection | Full planning period(yearly) | • Increased biodiversity | FD |
| **Core zone management (non-conservation priority area)** | Homestead plantation | Full planning period(yearly) | • Livelihood / habitat improvement | FD/CMC |
| | Agroforestry | Full planning period(yearly) | • Livelihood / habitat improvement | FD/ CMC |
| **Buffer zone management** | Enrichment plantation | Full planning period(yearly) | • Increased vegetation cover | FD/ CMC |
| | Participatory afforestation | Full planning period(yearly) | • Increased vegetation cover along with mitiga-tion of demand | FD/ CMC |
| | Elephant corridor management | Full planning period(yearly) | • Food and shelter movement ensured | FD/CMC |
| | NTFP regeneration | Full planning period(yearly) | • Supplement the demand of local people | FD/CMC |
| | Involving stakeholder in forest protection | Full planning period(yearly) | • Biodiversity conservation and resolved habitat | FD/CMC |
| **Landscape zone/ Impact zone** | Climate resilient activity described in annex 8 | Full planning period | • Adaption to climate change impact | CREL with close coordination of FD and CMC |
| | Homestead plantation | Full planning period(yearly) | • Livelihood improvement | CREL/FD/stakeholder |
| | Climate resilient cultivation | Full planning period(yearly) | • Increased food security | CMC/ CREL |
| | Community | Second year | • Increased safety of | CREL with close |

| | | | | |
|---|---|---|---|---|
| | based cylone shelter building | | life<br>• Increased social development | coordination of FD/CMC |
| | Elephant corridor involving stakeholders in forest protection | Full planning period(yearly) | • Providing food and shelter (improved habitat) | CREL/ CMC/FD |
| | Alternative Income Generating Activities (AIGA) | Full planning period(yearly) | • Improved livelihood<br>• Reduced dependency on forest resources | CREL/ CMC/ NGOs |
| **Infrastructure including visitor facilities** | Renovation and maintenance of Forest rest house | Full plan period (yearly) | • Improved visitor facilities | FD/CREL |
| | Renovation and maintenance of staff quarter | Full plan period (yearly) | • Improved staff facilities | FD/CREL |
| | Nature trail development (As specified in section 10.3 | First Year and second year | • Improved ecotourism | FD/CREL |
| | Nature interpretation center and museum | second year, third year and fourth year | • maximum enjoy minimum impact on the PA | FD/CREL |
| | Observation tower | second year and third year | • Improved tourism facilities | FD/CREL |
| | GolGhar (resting facilities) | Second year and third year | • Improved tourism facilities | FD/CREL |
| | Construction and mainte-nance picnic site | second year and third year | • Improved tourism facilities | FD/CREL |
| | Sign board | second year | • Improved ecotourism | FD/CREL |
| | Tube well | Full planning period | • Improved quality of ecotourism | FD/CREL |
| | Toilet | First year and second year | • Improved ecotourism | FD/CREL |
| | Park gate | First year and second year | • Improved management | FD/CREL |
| | Ticket counter | First year | • Improved tourism management | FD/CREL |
| | Waste bin | First year and fourth year | • Improve waste management<br>• Less pollution | FD/CREL |
| | Student dormitory | second year, third year and fourth year | • Increase learning | FD/CREL |
| **Visitor management** | Park gate | First year and second year | • Increase protection | CREL/FD/CMC |
| | Parking place | First year and second year | • Sustainable traffic management | CREL/FD/CMC |
| | Tourist shop | First year, | • Increase tourism | CREL/FD/CMC |

| | | | | |
|---|---|---|---|---|
| | and cafeteria | second year and third year | facilities<br>• Local Livlihood | |
| | Development code of conduct | First year and second year | • Increased ecotourism management | FD/CREL/CMC |
| | Monitoring and recoding visitors entry | Full planning period | • enhanced ecotourism management | FD/CREL/CMC |
| | Training eco-guides | Full planning period(yearly) | • Trained eco-guide for nature conservation | FD/CMC |
| | Publicity materials | Full planning period(yearly) | • Awareness about nature based tourism | FD/CMC |
| | Entry fee collection | Full planning period | • revenue earning | |
| **Capacity building and research** | PA archive development | Full Planning period | • Knowledge management<br>• help effective decision making | FD |
| | Training assessment for participatory PA management | Full Planning period | • Training identified | FD/CMC |
| | Training of staffs and stakeholders on conservation | Full planning period | • Trained personnel | FD/ NGOs/CMC |
| | Meeting and workshop | Full planning period | • Capacity building | FD/CMC |
| | Conservation research studies | Full planning period | • Develop Guidelines for conservation | FD/CMC |
| | Biological research | Full planning period | • Develop Guidelines | FD/CMC |
| | Research on utilization | Full planning period | • Develop Guidelines | FD/CMC |
| | Ecological research | Full planning period | • Develop Guidelines | FD/stakeholder |
| | Silvicultural research | Full planning period | • Develop Guidelines | FD/stakeholder |
| | Carbon inventory | Full planning period | • Capacity building | FD |
| | Human-elephant conflict management | Full Planning period | • Biodiversity conservation<br>• Reduce property damage | FD |
| **Capacity building for Livelihood program** | Selecting priority production technologies (reconnaissance surveys) | First year and second year | • Assessed Demand – supply | FD/stakeholder |
| | Identifying a list of feasible production Technologies | First year and second year | • Feasible production technologies identified | FD/stakeholder |

| | | | | |
|---|---|---|---|---|
| | Stakeholders' Consultations on the proposed production technologies | First year and second year | • Locally accepted Effective approach identified | FD/stakeholder |
| | Developing skills and loan for alternative income generation (poultry, fisheries, nursery, sewing etc.) | First year and second year | • Livelihood development | FD/stakeholder |
| **Staffing and resource need** | Staff recruitment and equipment as described in section 3.1 (table 11 & 12) | First year and second year | • effective management | FD |
| **Fund raising Plan** | Potential financial sources and As described in section 11; | Full planning period | • Financial efficiency | FD, CMO |

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# Annex

**Annex 1 Notification of HNP**

THE BANGLADESH GAZETTE, MARCH 6 1980

MINISTRY OF AGRICULTURE AND FOREST

Section XX

NOTIFICATION

Dacca, the 15th February 1980

No. XX/For-63/79/89. – In exercise of the power conferred by section 23 (2) of Bangladesh Wildlife (Preservation) Act, 1973, the Government of the People's Republic of Bangladesh, is pleased to declare the forest area measuring about 4,271.15 acres situated within the boundaries specified in the Schedule below at Cox's Bazar in the district of Chittagong to be a National Park with effect from the date of publication of this notification to increase the facilities of tourists and recreation in the area:

| Name of district | Name of subdivision | Name of Forests | Area in acres |
|---|---|---|---|
| Chittagong | Cox's Bazar | Bhangamura R.F. | 2155.00 |
| | | Part of Chainda R.F. | 150.00 |
| | | Part of Zhilonga P. F. | 1966.15 |
| | | Total | 4,271.15 |

**Description of boundaries**

**North**: Light house, Forest boundary of Jhilonja PF, Jhilonja BDR Camp, Forest boundary in the Southern side and Cox's Bazar, Ramu road, Cox's Bazar College, Link Road, Beat Office.

**South**: HimcharicharaKhuniapalongHimchari Road uptoBaniarchara

**East**: Baniarchara, Chaindachara, Jhilonja-ChaindaMouza boundary

**West**: Forest boundary of Jhilonjamouza; C&B office and Residential plots, Bhangamura R.F. boundary; all more or less parallel and facing the Cox's bazaar sea beach.

By order of the President
A.Z.M. OBAIDULLAH KHAN
Secretary

**Annex 2 Useful glossaries**

| | |
|---|---|
| **Biodiversity** | The variety of life and its processes including complexity of species, communities, gene pools and ecological functions . |
| **Buffer zone** | It is an area peripheral to a national park or equivalent reserve, where restrictions are placed upon resource use or special development measures are undertaken to enhance the conservation values of the area. This peripheral area can provide the local inhabitants with the privilege of regular consumption of forest products. |
| **Core zone** | These areas are securely protected sites for conserving biological diversity. The entire forest area that was declared as National Park in the official gazette is designated as core zone. |
| **Framework tree species** | **The framework species method involves planting mixtures of 20-30 indigenous forest tree species, which are typical of the target forest ecosystem. these species** i) are fast-growing with dense spreading crowns that rapidly shade out competing weeds and ii) are attractive to seed-dispersing wildlife, especially birds and bats. In addition, framework species must be easy to propagate in nurseries. High quality seedlings of 20-30 framework tree species, 5-60 cm tall (30 cm for the fastest growing species) are planted 1.6 – 1.8 m apart at the beginning of the rainy season. Weeds are vigorously controlled and fertilizer is sometimes added, but after 2-3 rainy seasons the canopy closes, the forest becomes self-sustaining and no further maintenance is required. Once the "framework" of a forest has been re-established, the other components of the ecosystem can return naturally. |
| **Impact zone** | The extent of area outside the legal boundaries over which local villagers have a traditional PA based forests based dependency and/or over which significant wildlife damage occurs. |
| **Landscape** | Landscape comprises the visible features of an area of land, including the physical elements of landforms such as mountains, hills, water bodies such as rivers, lakes, ponds and the sea, living elements of land cover including indigenous vegetation, human elements including different forms of land use, buildings and structures, and transitory elements such as lighting and weather conditions. Ecologically landscape consists of mosaic of natural communities – associations of plants and animals and their related processes and interactions. |
| **Keystone species** | Animals or plants which by virtue of their presence or absence alter the structure of a community. |
| **Succession stage:** | A stage or recognizable condition of a plant community which occurs during its development from bare ground to climax. |

**Annex 3 Plantation information of HNP (Source respective beat office)**

| Beat | Year | Planted Area (ha) | Type | Remarks |
|---|---|---|---|---|
| **Kolatoli** | 2011-2012 | 85 | SR | |
| | 2011-2012 | 60 | LR | |
| | 2012-2013 | 40 | SR | |
| | 2012-2013 | 20 | Fodder | |
| | 2013-2014 | 30 | Buffer | |
| **Link road** | 1993 | 10 | LR | |
| | 1993 | 16 | SR | |
| | 1994 | 14 | LR | |
| | 1994 | 10 | SR | |
| | 1995 | 50 | - | |
| | 2003-04 | 60 | SR | |
| | 2004-05 | 45 | LR | |
| | 2007-08 | 40 | LR | |
| | 2008-09 | 10 | SR | |
| | 2008-09 | 08 | LR | |
| | 2009-2010 | 17 | SR | |
| **Chainda** | 1999-00 | 30 | SR | |
| | 2000-01 | 50 | SR | |
| | 2002-03 | 30 | SR | |
| | 2003-04 | 60 | SR | |
| | 2004-05 | 30 | SR | |
| | 2005-06 | 60 | SR | |
| | 2006-07 | 32 | SR | |
| | 2007-08 | 20 | SR | |
| | 2010-2011 | 10 | | |
| | 2010-2011 | 15 | | |
| **Jhilonja** | 2011-2012 | 15 | SR | |
| | 2011-2012 | 15 | SR | |
| | 2012-2013 | 20 | SR | |
| **Himchari** | 2001-02 | 20 | Shelterbelt | |
| | 2002-03 | 40 | -do- | |
| | 2011-2012 | 7 km | ornamental | |
| | 2011-2012 | 65 | LR | |
| | 2011-2012 | 40 | SR | |
| | 2012-2013 | 40 | SR | |
| | 2012-2013 | 20 | SR | |
| | **Total** | **1127** | | |

**Annex 4 List of villages within HNP and its landscap**

| Sl. No | Village | Beat | Location |
|---|---|---|---|
| 1 | Himchari Para | Himchari | Inside |
| 2 | Korachipara | | Inside |
| 3 | North Monglapara | | Adjacent |
| 4 | Majerpara | | Adjacent |
| 5 | South Monglapara | | Adjacent |
| 6 | Mogpara | Chainda | Inside |
| 7 | Ghonapara | | Inside |
| 8 | Laharpara | | Inside |
| 9 | ChaindaMurarkaccha | | Inside |
| 10 | Khondokerpara | | Adjacent |
| 11 | Cchararkul | | Inside |
| 12 | Kaiummerghona | | Inside |
| 13 | Islamabad | | Inside |
| 14 | Charpara | | Adjacent |
| 15 | Momsururchar | | Adjacent |
| 16 | Sadhurpara | | Adjacent |
| 17 | Kalatolipara | Kolatali | Inside |
| 18 | Borochara | | Inside |
| 19 | Adorshogram | | Inside |
| 20 | Chaindrima | | Inside |
| 21 | Maittatoli Jail gate para | | Inside |
| 22 | Goiyamtoli | | Inside |
| 23 | Shuknachari | | Inside |
| 24 | Jharjharipara | | Inside |
| 25 | South Pahartoli (Moulovipara) | | Adjacent |
| 26 | Lighthousepara | | Adjacent |
| 27 | Abdullahpara | | Adjacent |
| 28 | Jhilongja | Jhilongja | Near to Adjacent |
| 29 | Janarghona | | Inside |
| 30 | Shahittikpalli | | Adjacent |
| 31 | Badsharghona | | Adjacent |
| 32 | Faterghona | | Adjacent |
| 33 | South Muhuripara | Link road | Adjacent |
| 34 | North Muhuripara | | Adjacent |
| 35 | Footkhali | | Inside |

**Annex 5 Floristic composition of HNP (Morshed and Alam, 2010)**

| Category | Local name | Botanical name | Family |
|---|---|---|---|
| Tree | Gamar | *Gmelina arborea* | Verbenaceae |
| | Segun | *Tectona grandis* | Verbenaceae |
| | Horina | *Vitex glabrata* | Verbenaceae |
| | Goda | *V. peduncularis* | Verbenaceae |
| | Bormala | *Callicarpa tomentoes* | Verbenaceae |
| | Batna | *Quercus spicata* | Fagaceae |
| | Utailla | *Meliosma simplicifolia* | Sabiaceae |
| | Hargoja | *Dillenia pentagyna* | Dill eniaceae |
| | Jam | *Syzygium spp* | Myrtaceae |
| | Garjan | *Dipterocarpus turbinatus* | Dipterocarpaceae |
| | Boilam | *Anisoptera scapula* | Dipterocarpaceae |
| | Bharta | *Diospyros stricta* | Ebenaceae |
| | Polash | *Buta monosperma* | Fabaceae |
| | Jhau | *Casuarinas equsetifolia* | Casuarinaceae |
| | Harjora | *Cissus quadrangularis* | Vitaceae |
| | Gilalota | *Entada phaseolodies* | Mimosaceae |
| | Rita | *Sapindus mukorossi* | Sapindaceae |
| | Horina gota | *Aphania danura* | Sapindaceae |
| | Dhup | *Canarium resiniferum* | Burseraceae |
| | Gutgutya | *Bursera serrate* | Burseraceae |
| | Haldu | *Adina cordifolia* | Rubiacea |
| | Dakrum | *Mitragyna parviflora* | Rubiacea |
| | Kodom | *Anthocephalus chinensis* | Rubiacea |
| | Asargula | *Grewia microcos* | Tiliaceae |
| | Jiribot | *Ficus spp* | Moraceae |
| | Jogya dumur | *Ficus racemosa* | Moraceae |
| | Bon boroi | *Zizyphus oenoplea* | Rhamnaceae |
| | Udal | *Sterculia villosa* | Sterculiaceae |
| | Mush | *Pterospermum acerifolium* | Sterculiaceae |
| | Mostali | *Sterculia guttata* | Sterculiaceae |
| | Dharmara | *Stereospermum personatum* | Bigoniaceae |
| | Boropata | *Haplophragma adenophyllum* | Bigoniaceae |
| | Kuruch | *Hollarhena antidysenterica* | Apocynaceae |
| | Kharulla | *Aporusa wallichi* | Euphorbiaceae |
| | Chitki | *Phyllanthus reticulatus* | Euphorbiaceae |
| | Maricha | *Suregada multiflora* | Euphorbiaceae |
| | Lalbura | *Macaranga dinticulata* | Euphorbiaceae |
| | Menda | *Litsea sebifera* | Lauraceae |
| | Kao | *Garcinia cowa* | Guttifrae |
| | Bukbela | | |
| | Amusha | | |

| | | | |
|---|---|---|---|
| | Barijeda | | |
| | Haddi | | |
| | | | |
| **Shrub** | | | |
| | Dadmari | *Cassia alata* | Caesalpiniaceae |
| | Naricha | *Corchorus capsularis* | Tiliaceae |
| | Tea indicator | *Melastoma malabathricum* | Melastomaceae |
| | Arhar | *Cajanus cajan* | Fabaceae |
| | Kukurmuta | *Celsia coromandelica* | Scropulariaceae |
| | Marishya | *Maesa ramentaceae* | Myrsenaceae |
| | Dolkolmi | *Ipomoea fistulata* | Convolvulanaceae |
| | Assamtree | *Eupatorium odoratum* | Compositeae |
| | Verenda | *Jatrpa curcas* | Euphorbiaceae |
| | Betbiun | | |
| | Jermeny | | |
| | Hubbici | | |
| | Ceggata | | |
| | Bol | | |
| **Climber** | Kalilata | *Derris trifoliate* | Leguminoseae |
| | Jhumkolota | *Passiflora foetida* | Passifloraceae |
| | Asamlota | *Mikania chordate* | Compositeae |
| | Banalu | *Dioscorea bulbifera* | Dioscoreaceae |
| | Chagalkuri | *Ipomoea pescaprae* | Convolvulanaceae |
| | Kumarilota | *Smilax macrophylla* | Liliaceae |
| | Painna lota | | |
| | Kasha lota | | |
| | Goisha lota | | |
| **Herb** | Khas | *Sacharum spontaneoum* | Gramineae |
| | Jharu | *Thrysanalaena maxima* | Gramineae |
| | Sungrass | *Imperata cylindrical* | Gramineae |
| | Nal | *Erienthes rivenae* | Gramineae |
| | Bidripata | *Curculigo recurvita* | Amarytadaceae |
| | Kaliser | *Derris trifoliate* | Leguminoseae |
| | Lajjabati | *Mimosa pudica* | Mimosaceae |
| | Rangkhela | *Musa spp* | Musaceae |
| | Banterapi | *Physalis minima* | Solanaceae |
| | Bakunjeabaj | *Polygonum barbatum* | Polygonaceae |
| | Phulga | *Curcuma zeoderica* | Zingiberaceae |
| | Borobet | *Calamus spp* | Arecaceae |

## Annex 6 Bird Species recorded within Himchari National Park

| English Name | *Genus* | *Species* | Th | St. | 1988 (Ap, S, O) | 2014 (J,J,A,S) | All |
|---|---|---|---|---|---|---|---|
| Lesser Whistling Duck | *Dendrocygna* | *javanica* | | W/r | | 1 | 1 |
| Western Spotted Dove | *Spilopelia* | *suratensis* | | R | c | c | c |
| Grey-capped Emerald Dove | *Chalcophaps* | *indica* | | R | uc | | uc |
| Barred Buttonquail | *Turnix* | *suscitator* | | r | | 1 | 1 |
| Eurasian Wryneck | *Jynx* | *torquilla* | | w | 3 | | 3 |
| Greater Yellownape | *Picus* | *flavinucha* | | R | | 1 | 1 |
| Grey-headed Woodpecker | *Picus* | *canus* | | R | r | | r |
| Black-rumped Flameback | *Dinopium* | *benghalense* | | R | | 1 | 1 |
| Greater Flameback | *Chrysocolaptes* | *lucidus* | | R | | 1 | 1 |
| Lineated Barbet | *Megalaima* | *lineata* | | R | 1 | | 1 |
| Blue-throated Barbet | *Megalaima* | *asiatica* | | R | uc | | uc |
| Coppersmith Barbet | *Megalaima* | *haemacephala* | | R | | 1 | 1 |
| Red-headed Trogon | *Harpactes* | *erythrocephalus* | | r | uc | | uc |
| Common Kingfisher | *Alcedo* | *atthis* | | R | uc | r | uc |
| Blue-eared Kingfisher | *Alcedo* | *meninting* | | r | uc | | uc |
| White-throated Kingfisher | *Halcyon* | *smyrnensis* | | R | uc | r | uc |
| Black-capped Kingfisher | *Halcyon* | *pileata* | | w | uc | | uc |
| Pied Kingfisher | *Ceryle* | *rudis* | | R | uc | uc | uc |
| Green Bee-eater | *Merops* | *orientalis* | | R | uc | | uc |
| Blue-tailed Bee-eater | *Merops* | *philippinus* | | r | uc | c | c |
| Chestnut-headed Bee-eater | *Merops* | *leschenaulti* | | r | uc | uc | uc |
| Green-billed Malkoha | *Phaenicophaeus* | *tristis* | | R | uc | c | c |
| Greater Coucal | *Centropus* | *sinensis* | | R | | c | c |
| Lesser Coucal | *Centropus* | *bengalensis* | | R | | c | c |
| Red-breasted Parakeet | *Psittacula* | *alexandri* | | R | uc | 1 | uc |
| Asian Palm-Swift | *Cypsiurus* | *balasiensis* | | R | r | | r |
| Fork-tailed Swift | *Apus* | *pacificus* | | pw | c | | c |
| House Swift | *Apus* | *affinis* | | R | r | | r |
| Spotted Owlet | *Athene* | *brama* | | R | 1 | | 1 |
| White-breasted Waterhen | *Amaurornis* | *phoenicurus* | | r | | 1 | 1 |
| Common Redshank | *Tringa* | *totanus* | | W | r | | r |
| Wood Sandpiper | *Tringa* | *glareola* | | W | uc | | uc |
| Common Sandpiper | *Actitis* | *hypoleucos* | | W | r | | r |
| Little Ringed Plover | *Charadrius* | *dubius* | | Wr | r | | r |
| Kentish Plover | *Charadrius* | *alexandrinus* | | Wr | r | | r |
| Lesser Sand Plover | *Charadrius* | *mongolus* | | W | r | | r |
| Greater Sand Plover | *Charadrius* | *leschenaultii* | | w | r | | r |
| Gull-billed Tern | *Gelochelidon* | *nilotica* | | W | uc | | uc |
| Common Tern | *Sterna* | *hirundo* | | w | uc | | uc |

| **English Name** | ***Genus*** | ***Species*** | **Th** | **St.** | **1988 (Ap, S, O)** | **2014 (J,J,A,S)** | **All** |
|---|---|---|---|---|---|---|---|
| White-bellied Sea Eagle | *Haliaeetus* | *leucogaster* | | r | 2 | | 2 |
| Short-toed Snake Eagle | *Circaetus* | *gallicus* | | v | 1 | | 1 |
| Crested Serpent Eagle | *Spilornis* | *cheela* | | R | r | 1 | r |
| Crested Goshawk | *Accipiter* | *trivirgatus* | | r | 1 | | 1 |
| Shikra | *Accipiter* | *badius* | | R | 1 | 1 | 2 |
| Little Egret | *Egretta* | *garzetta* | | R | 1 | | 1 |
| Goliath Heron | *Ardea* | *goliath* | | v | 1 | | 1 |
| Indian Pond Heron | *Ardeola* | *grayii* | | R | uc | uc | uc |
| Asian Fairy Bluebird | *Irena* | *puella* | | R | r | | r |
| Blue-winged Leafbird | *Chloropsis* | *cochinchinensis* | | r | uc | | uc |
| Golden-fronted Leafbird | *Chloropsis* | *aurifrons* | | R | r | uc | uc |
| Brown Shrike | *Lanius* | *cristatus* | | W | 1 | | 1 |
| Long-tailed Shrike | *Lanius* | *schach* | | R | uc | | uc |
| Common Green Magpie | *Cissa* | *chinensis* | | r | r | | r |
| Rufous Treepie | *Dendrocitta* | *vagabunda* | | R | r | c | c |
| House Crow | *Corvus* | *splendens* | | R | uc | | uc |
| Large-billed Crow | *Corvus* | *macrorhynchos* | | R | | c | c |
| Ashy Woodswallow | *Artamus* | *fuscus* | | R | | c | c |
| Black-hooded Oriole | *Oriolus* | *xanthornus* | | R | c | uc | c |
| Small Minivet | *Pericrocotus* | *cinnamomeus* | | r | | c | c |
| Black Drongo | *Dicrurus* | *macrocercus* | | R | c | c | c |
| Bronzed Drongo | *Dicrurus* | *aeneus* | | R | uc | r | uc |
| Lesser Racket-tailed Drongo | *Dicrurus* | *remifer* | | w | uc | | uc |
| Greater Racket-tailed Drongo | *Dicrurus* | *paradiseus* | | R | uc | | uc |
| Black-naped Monarch | *Hypothymis* | *azurea* | | R | c | uc | c |
| Asian Paradise-flycatcher | *Terpsiphone* | *paradisi* | | r | uc | | uc |
| Common Iora | *Aegithina* | *tiphia* | | R | uc | c | c |
| Blue Whistling Thrush | *Myophonus* | *caeruleus* | | w | 2 nesting | 1 | r |
| Taiga (Red-throated) Flycatcher | *Ficedula* | *albicilla* | | W | 1 | | 1 |
| Pale-chinned Blue Flycatcher | *Cyornis* | *poliogenys* | | r | uc | | uc |
| Tickell's Blue Flycatcher | *Cyornis* | *tickelliae* | | v | 1 | | 1 |
| Oriental Magpie-Robin | *Copsychus* | *saularis* | | R | r | c | c |
| White-rumped Shama | *Copsychus* | *malabaricus* | | R | uc | | uc |
| Black-backed Forktail | *Enicurus* | *immaculatus* | | r | uc | r | uc |
| Pied Bush Chat | *Saxicola* | *caprata* | | r | | uc | uc |
| Chestnut-tailed Starling | *Sturnus* | *malabaricus* | | R | uc | uc | uc |
| Pied (Myna) Starling | *Sturnus* | *contra* | | R | uc | c | c |
| Common Myna | *Acridotheres* | *tristis* | | R | uc | c | c |
| Jungle Myna | *Acridotheres* | *fuscus* | | R | uc | c | c |

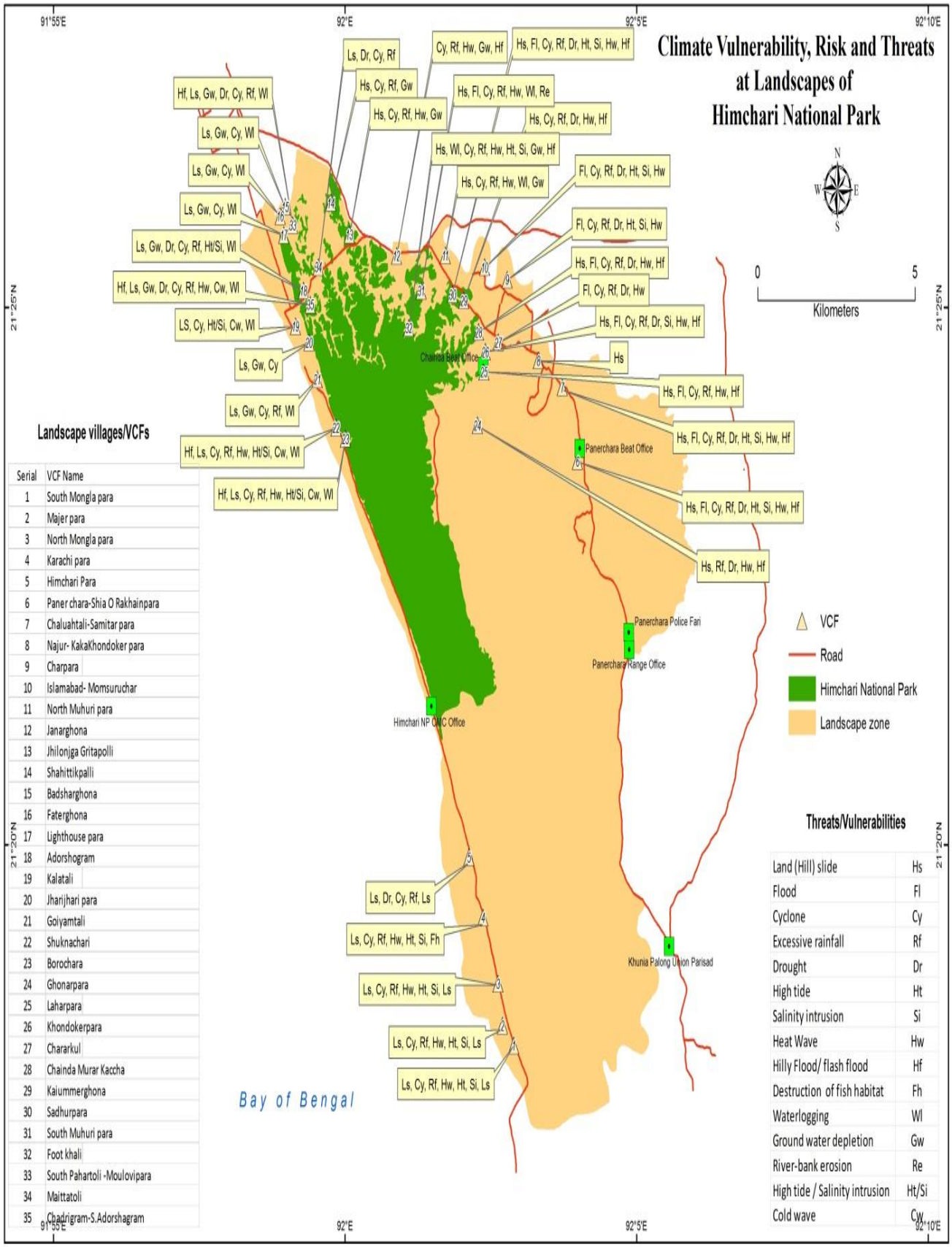
| **English Name** | ***Genus*** | ***Species*** | **Th** | **St.** | **1988 (Ap, S, O)** | **2014 (J,J,A,S)** | **All** |
|---|---|---|---|---|---|---|---|
| Common Hill Myna | *Gracula* | *religiosa* | | R | uc | r | uc |
| Brown-throated (Plain) Martin | *Riparia* | *paludicola* | | R | c | | c |
| Barn Swallow | *Hirundo* | *rustica* | | Wr | uc | | uc |
| Red-rumped Swallow | *Hirundo* | *daurica* | | w | uc | | uc |
| Black-headed Bulbul | *Pycnonotus* | *atriceps* | | R | c | | c |
| Black-crested Bulbul | *Pycnonotus* | *melanicterus* | | R | c | | c |
| Red-whiskered Bulbul | *Pycnonotus* | *jocosus* | | R | c | c | c |
| Red-vented Bulbul | *Pycnonotus* | *cafer* | | R | uc | c | c |
| White-throated Bulbul | *Alophoixus* | *flaveolus* | | R | c | | c |
| Olive Bulbul | *Iole* | *virescens* | | r | uc | | uc |
| Rufescent Prinia | *Prinia* | *rufescens* | | r | r | | r |
| Grey-breasted Prinia | *Prinia* | *hodgsonii* | | R | uc | uc | uc |
| Oriental White-eye | *Zosterops* | *palpebrosus* | | R | uc | uc | uc |
| Common Tailorbird | *Orthotomus* | *sutorius* | | R | uc | c | c |
| Dark-necked Tailorbird | *Orthotomus* | *atrogularis* | | R | | c | c |
| Greenish Warbler | *Phylloscopus* | *trochiloides* | | W | r | | r |
| Striated Grassbird | *Megalurus* | *palustris* | | R | | uc | uc |
| Lesser Necklaced Laugh-ingthrush | *Garrulax* | *monileger* | | r | uc | | uc |
| Greater Necklaced Laughingthrush | *Garrulax* | *pectoralis* | | R | | 1 | 1 |
| Rufous-necked Laugh-ingthrush | *Garrulax* | *ruficollis* | | R | | c | c |
| Abbott's Babbler | *Malacocincla* | *abbotti* | | R | uc | c | c |
| Puff-throated (Spotted) Babbler | *Pellorneum* | *ruficeps* | | R | uc | c | c |
| Large Scimitar Babbler | *Pomatorhinus* | *hypoleucos* | | r | 1 | | 1 |
| Spot-breasted Scimitar Babbler | *Pomatorhinus* | *erythrocnemis* | | r | 1 | | 1 |
| White-browed Scimitar Babbler | *Pomatorhinus* | *schisticeps* | | r | r | c | c |
| Grey-throated Babbler | *Stachyris* | *nigriceps* | | r | 2 | | 2 |
| Striped Tit Babbler | *Macronous* | *gularis* | | R | c | c | c |
| Chestnut-capped Babbler | *Timalia* | *pileata* | | r | | c | c |
| Striated Babbler | *Turdoides* | *earlei* | | R | | c | c |
| Brown-cheeked Fulvetta | *Alcippe* | *poioicephala* | | r | 1 | | 1 |
| White-bellied Yuhina | *Yuhina* | *zantholeuca* | | r | uc | | uc |
| Orange-bellied Flowerpecker | *Dicaeum* | *trigonostigma* | | r | 2 | | 2 |
| Pale-billed (Tickell's) Flowerpecker | *Dicaeum* | *erythrorynchos* | | R | | c | c |
| Scarlet-backed Flowerpecker | *Dicaeum* | *cruentatum* | | R | uc | c | c |

| **English Name** | ***Genus*** | ***Species*** | **Th** | **St.** | **1988 (Ap, S, O)** | **2014 (J,J,A,S)** | **All** |
|---|---|---|---|---|---|---|---|
| Ruby-cheeked Sunbird | *Anthreptes* | *singalensis* | | R | uc | | uc |
| Purple-throated Sunbird | *Nectarinia* | *sperata* | | R | uc | | uc |
| Purple Sunbird | *Nectarinia* | *asiatica* | | R | | c | c |
| Crimson Sunbird | *Aethopyga* | *siparaja* | | R | uc | | uc |
| Little Spiderhunter | *Arachnothera* | *longirostra* | | R | uc | uc | uc |
| House Sparrow | *Passer* | *domesticus* | | R | r | | r |
| Forest Wagtail | *Dendronanthus* | *indicus* | | p | 3 | | 3 |
| White Wagtail | *Motacilla* | *alba* | | W | uc | | uc |
| Yellow Wagtail | *Motacilla* | *flava* | | W | uc | | uc |
| Grey Wagtail | *Motacilla* | *cinerea* | | W | 2 | | 2 |
| Richard's Pipit | *Anthus* | *richardi* | | W | 1 | | 1 |
| Baya Weaver | *Ploceus* | *philippinus* | | R | uc | | uc |
| White-rumped Munia | *Lonchura* | *striata* | | r | uc | 1 | uc |
| | | | | | | | |
| **No of species recorded** | | | | | **104** | **59** | **125** |

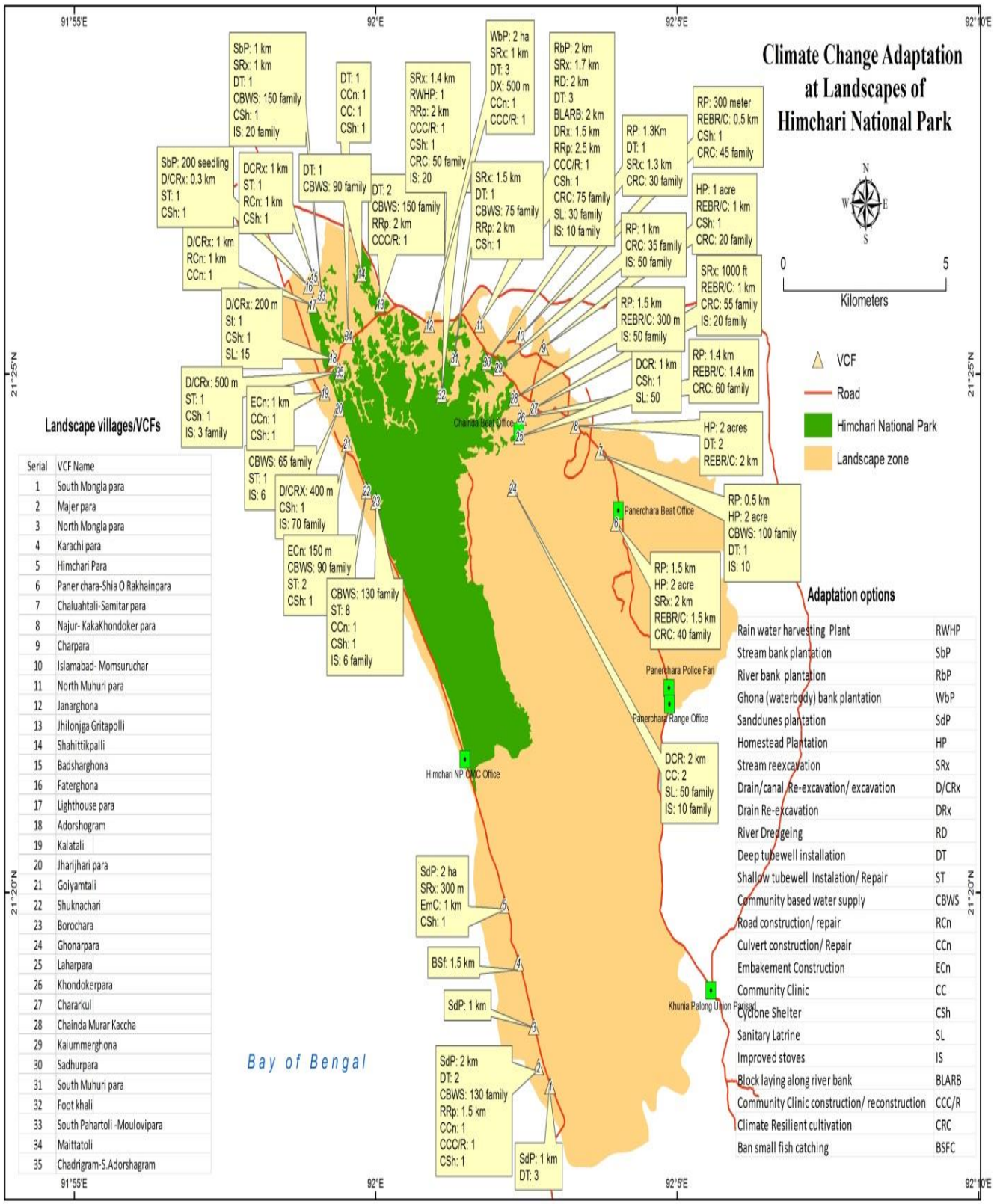
Notes: Th = global threat status (BirdLife International 2014), St = status (W=winter visitor, R=resident, p=passage migrant.
Numbers 1-5 indicate number of records of species, r=rare but more than 5 records, uc=uncommon, c=common. Note two national rarities recorded in 1980s – Spot-breasted Scimitar Babbler (only national record) and Short-toed Snake-Eagle (seen by Hans and Christina Lamosse in 1988)

Sources:
1988 - Paul Thompson personal observations, in litt. Includes beach adjacent to Himchari NP
2014 - CREL surveys (Bangladesh bird club, 2014)

**Annex 7 Climate Change Threat/challenges map at village landscape for HNP**



**Annex 8 Management intervention map to adapt climate change at HNP CMC**



**Annex 9 Input requirements and indicative costs estimates for 10 years (2015-2025) for HNP**

| Program | Activity | Unit | Quantity/year | | | | | | | Total cost (000 Tk) For 1st 5 Years | Y6-Y10 | | Cost for Y6-Y10 | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Qty Total | Unit cost (000 Tk) | | Qty Total | Unit cost (000 Tk) | | Qty for 10 years | Cost (000) Tk |
| **Habitat protection program** | Updating maps | LS | | | | | | | | 500 | LS | | 800 | LS | 1300 |
| | Boundary demarcation (Pillars) | km | 25 | 25 | 25 | 25 | 20 | 120 | 400 | 4800 | | LS | 2000 | | 6800 |
| | Control of illicit felling, grazing, encroachment | LS | | | | | | | | 1000 | | LS | 1500 | LS | 2500 |
| | CM council and CM committee meeting | LS | | | | | | | | 800 | | LS | 1200 | LS | 2000 |
| | PF, VCF, CPG meetings | LS | | | | | | | | 1150 | | | 1500 | | 2650 |
| | Patrolling equipment (CPG), CPG member ( 75) | No. | | | | | | | | 1875 | | | 2500 | | 4375 |
| | Remuneration of CPG | No. | | | | | | | | 1800 | | | 3000 | | 4800 |
| | Rewards for biodiversity protection efforts | Tk | | | | | | | | 1000 | | | 1500 | | 2500 |
| | Resolving forest conflicts | LS | | | | | | | | 2000 | | | 3000 | | 5000 |
| **Core zone management** | Enrichment planting | ha | 20 | 20 | 20 | 20 | 20 | 100 | 100 | 10000 | 100 | 150 | 15000 | 200 | 25000 |
| | ANR | ha | 20 | 20 | 20 | 20 | 20 | 100 | 150 | 15000 | 100 | 200 | 20000 | 200 | 35000 |
| | Habitat improvement works | ha | 35 | 35 | 35 | 35 | 35 | 175 | 100 | 17500 | 175 | 150 | 26250 | 350 | 43750 |
| | Habitat restoration works | ha | 10 | 10 | 5 | | | 25 | 100 | 2500 | 25 | 150 | 3750 | 50 | 6250 |
| | Establishement of orchid house | No. | | | | | | 1 | 5000 | 5000 | M | LS | 8000 | 1 | 13000 |
| | Establishment of arboretum | ha | | | | | | 10 | 100 | 5000 | M | LS | 8000 | 10 | 13000 |
| | Eviction/ Resettlement | Fami-ly (No.) | | | | | | 200 | 500 | 100000 | 200 | 500 | 100000 | 400 | 200000 |

| Program | Activity | Unit | Quantity/year | | | | | | | Total cost (000 Tk) For 1st 5 Years | Y6-Y10 | | Cost for Y6-Y10 | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Qty Total | Unit cost (000 Tk) | | Qty Total | Unit cost (000 Tk) | | Qty for 10 years | Cost (000) Tk |
| **Buffer zone management** | Participatory afforestation (seedlings) | No.(000) | 10 | 10 | 10 | 10 | 10 | 50 | .02 | 1000 | 50 | 0.03 | 1500 | 100 | 2500 |
| | Elephant habitat improvement (as in section 7.1.2) | ha | 10 | 10 | 10 | 10 | 10 | 50 | 100 | 5000 | | LS | 8000 | 50 | 13000 |
| | Forest restoration | ha | 5 | 5 | 5 | 5 | 5 | 25 | 100 | 2500 | 25 | 150 | 3750 | 50 | 6250 |
| | NTFP regeneration | LS | | | | | | | | 900 | | LS | 1500 | | 2400 |
| **Impact zone management** | Strip plantation | Km | 15 | 15 | 15 | 15 | 15 | 75 | 120 | 9000 | 75 | 180 | 13500 | 150 | 22500 |
| | Homestead plantation | LS | | | | | | 20 | 0.10 | 2000 | 20 | 0.15 | 3000 | 40 | 5000 |
| | Climate resilient cultivation | LS | | | | | | | | 1500 | | | 2500 | | 4000 |
| | Elephant corridor involving stakeholders in forest protection | LS | | | | | | | | 10000 | | | 15000 | | 25000 |
| | Installation of tube well | No. | | | | | | 20 | 100 | 2000 | 20 | 150 | 3000 | 40 | 5000 |
| | Stakeholders' Consultations on the proposed production technologies | LS | | | | | | | | 800 | | | 1200 | | 2000 |
| | Developing skills and loan for alternative income generation (poultry, fisheries, nursery, sewing) | LS | | | | | | | | 3000 | | | 4500 | | 7500 |
| | Development and maintenance of himchari chara and waterfall | LS | | | | | | 1 | 10000 | 10000 | | LS | 15000 | 1 | 25000 |
| | Watch Towers | No. | | | | | | 2 | 20000 | 40000 | M | LS | 10000 | 2 | 50000 |
| | Student Hut / Dormitory | No. | | | | | | 1 | 20000 | 20000 | M | LS | 10000 | 1 | 30000 |
| | Construction and | No. | | | | | | 5 | 100 | 500 | M | LS | 500 | 5 | 1000 |

| Program | Activity | Unit | Quantity/year | | | | | | | Total cost (000 Tk) For 1st 5 Years | Y6-Y10 | | Cost for Y6-Y10 | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Qty Total | Unit cost (000 Tk) | | Qty Total | Unit cost (000 Tk) | | Qty for 10 years | Cost (000) Tk |
| | maintenance of eco-tourism Area | | | | | | | | | | | | | | |
| | Nature trails construction and maintenance | No. | | | | | | 2 | 1000 | 2000 | M | LS | 1000 | 2 | 3000 |
| **Tourism and visitor manage-ment** | Identifying suitable sites for Nature Camps | No. | | | | | | 2 | | 100 | | LS | 100 | 2 | 200 |
| | Park gate | No. | | | | | | 2 | 20000 | 40000 | M | LS | 20000 | 2 | 60000 |
| | Nature interpretation centre/ NTFP museum establish-ment | LS | | | | | | 1 | 20000 | 20000 | M | LS | 1000 | LS | 21000 |
| | Sign arrow/ boards | No. | | | | | | 20 | 5 | 100 | M | LS | 150 | 20 | 250 |
| | Toilets construction and maintenance | No. | | | | | | 5 | 100 | 500 | M | LS | 500 | 5 | 1000 |
| | Resting Facility (golgarh) | No. | | | | | | 7 | 100 | 700 | M | LS | 1000 | 7 | 1700 |
| | Tube well for picnic spots and toilets | No. | | | | | | 5 | 100 | 500 | 5 | 150 | 750 | 10 | 1250 |
| | Trash cans | No. | | | | | | 25 | 3 | 75 | 25 | 4 | 100 | 25 | 175 |
| | Identifying & training eco-guides | LS | | | | | | | | 100 | | | 150 | | 250 |
| | Preparing publicity Materials | LS | | | | | | | | 2000 | | LS | 3000 | LS | 5000 |
| | Film making (audiovisuals) for NIC | No. | | | | | | 1 | 2000 | 2000 | | | 3000 | | 5000 |
| | Development and maintanence of Chara | LS | | | | | | | | 10000 | | LS | 15000 | LS | 25000 |
| **Training and research** | Training assessment for participatory PA manage- | LS | | | | | | | | 550 | | | 1000 | | 1550 |

| Program | Activity | Unit | Quantity/year | | | | | | | Total cost (000 Tk) For 1st 5 Years | Y6-Y10 | | Cost for Y6-Y10 | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Qty Total | Unit cost (000 Tk) | | Qty Total | Unit cost (000 Tk) | | Qty for 10 years | Cost (000) Tk |
| | ment | | | | | | | | | | | | | | |
| | Training of staffs and stakeholders on conserva-tion | LS | | | | | | | | 550 | | | 1000 | | 1550 |
| | Workshop | LS | | | | | | | | 950 | | LS | 1500 | LS | 2450 |
| | Floral and faunal Inventories | No. | | | | | | 3 | 2000 | 6000 | 3 | | 9000 | 6 | 15000 |
| | Conservation research studies | LS | | | | | | | | 2000 | | LS | 3000 | LS | 5000 |
| | Ecological research | LS | | | | | | | | 1500 | | | 2000 | | 3500 |
| | Silvicultural research | LS | | | | | | | | 2000 | | | 3000 | | 5000 |
| | Carbon inventory | LS | | | | | | | 2000 | 2000 | | | 4000 | | 6000 |
| **Administrative staff** | ACF (1) | m-m | | | | | | | | | | | | | As per national scale |
| | Office Assistant cum Computer Operator (1) | m-m | | | | | | | | | | | | | |
| | RO (1) | m-m | | | | | | | | | | | | | |
| | Foresters (4) | m-m | | | | | | | | | | | | | |
| | FG (12) | m-m | | | | | | | | | | | | | |
| | Plantation Mali (6) | m-m | | | | | | | | | | | | | |
| | Care taker (1) | | | | | | | | | | | | | | |

| Program | Activity | Unit | Quantity/year | | | | | | | Total cost (000 Tk) For 1st 5 Years | Y6-Y10 | | Cost for Y6-Y10 | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Qty Total | Unit cost (000 Tk) | | Qty Total | Unit cost (000 Tk) | | Qty for 10 years | Cost (000) Tk |
| **Facility Development Programs** | Renovation and Maintenance of FRH | No. | | | | | | 1 | 1300 | 1300 | M | LS | 2000 | 1 | 3300 |
| | Renovation and maintenance of Range officers quarters | No. | | | | | | 1 | 1100 | 1100 | M | LS | 1000 | 1 | 2100 |
| | Renovation and maintenance of Beat Officers' quarters | No. | | | | | | 5 | 900 | 4500 | M | LS | 3000 | 5 | 7500 |
| | Renovations and maintenance of FGs barrack | No. | | | | | | 5 | 1000 | 5000 | M | LS | 8000 | 5 | 13000 |
| | Construction and maintenance of ACF's Quarters | No. | | | | | | 1 | 10000 | 10000 | M | LS | 8000 | | 18000 |
| | Double-cab pickups | No. | | | | | | 1 | 2500 | 2500 | M | LS | 2000 | 1 | 4500 |
| | 100 cc motorcycles | No. | | | | | | 5 | 200 | 1000 | M | LS | 1000 | 5 | 2000 |
| | Computer | No. | | | | | | 7 | 60 | 420 | 7 | 90 | 630 | 14 | 1050 |
| | Field equipment (survey ins.+GPS+fire protection + raincoat ) | LS | | | | | | | | 1500 | | | 2500 | | 4000 |
| | Solar | LS | | | | | | 4 | 150 | 600 | | LS | 800 | 4 | 1400 |
| | PA archieve development | LS | | | | | | 1 | 2000 | 2000 | | | 3000 | | 5000 |
| **Total** | | | | | | | | | | **401670** | | | **393130** | | **794800** |

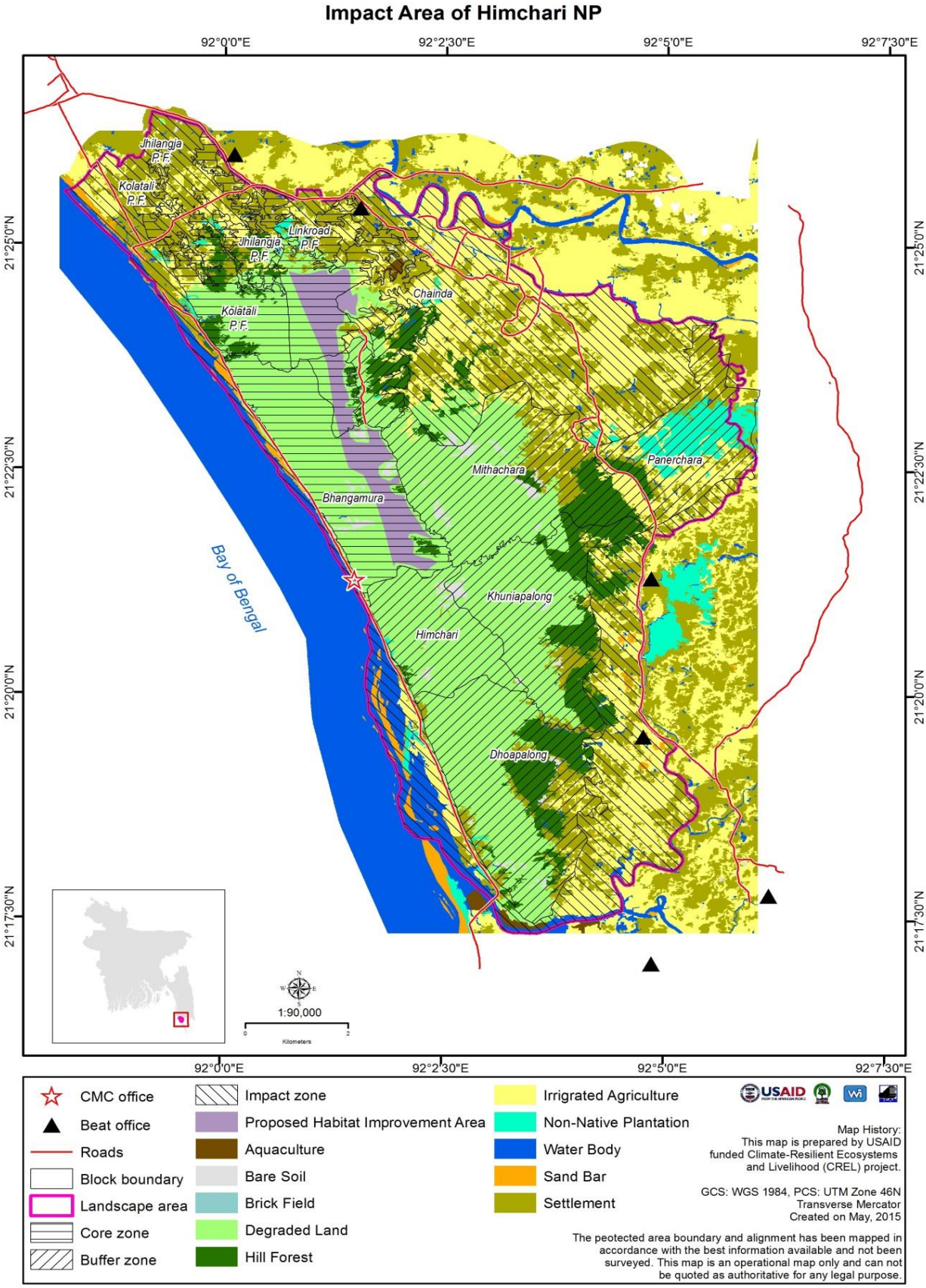
## Activities and Indicative Cost Estimate

The budget requirements for the implementation of the Management Plan for HNP are projected based on the information gathered from FD field offices and official documents. This proposed schedule of activities and costs is based on the major input requirements identified in the Management Plan. It is intended as both a summary of the major inputs required during the ten-year life of the Plan, and as a guide to further detailed costing by FD staff charged with its mplementation. Costs shown are subject to revision during the Plan implementation period.

**Annex 10 Number of access point in HNP**

| Issue | Paths for entering forest | No. of people enter | From Where |
|---|---|---|---|
| **Acces to forests (People)** | | | |
| **Kolatoli Beat** | Jholurghona Road(Jhorjhori para) | 50 | Pahartoli, Dokin, Jhorjhoripara |
| | Suknachari | 30 | Suknachari |
| | Borochara | 40 | Borochara |
| | Kanavanga | 100 | Samitipara, Ghonarpara, Padnarbeel, light house para |
| | Pulse School Chara | 40 | Lalpahar, Islamabad, Choudagram |
| | Notun Moshid Hargaja | 10 | |
| **Himchari Beat** | Majerchora Path | 50 | Samatipara, Kolatoli, Morichpara, Sonarpara |
| | Amtolichara | 30 | Samatipara, Kolatoli, Morichpara, Sonarpara |
| | Himchari Block (Salchar Side) | 20 | Dowapalong, Morichcca |
| | Himchari Chara Path | 20 | Mollapara, Himcharipara |
| | Rabetar Dhala | 30 | Moricha, Dowapalong, Gualiapalong |
| | Alam er Road | 20 | Himcharipara |
| | Moulabikata road | 35 | Hardarnashi |
| | Kochipara | 20 | |
| **Jhilonga Beat** | Foot Khali | 200 | Mohuripara, Chanderpara, Foot Khali, Ghalkuliarpara |
| | Medical college Road | 80 | Janarghona, Hazipara, Laharpara, Cholkhola, Kuruskkul |
| | Dokhin Hazi Para | 100 | Kurushkhul, Chankhola, SM para, Chowdhu-ripara, BDR camp para, BORUAPARA |
| | Dhokkhin Dick ful | 150 | Chonkhola, Kurusk, DIC, Laharpara |
| | Laharpara road (South) | 80 | Laharpara, Dick, Islamabad |
| **Link Road Beat** | BSCIC road | 70 | Konarpara, Mohuripara. Noyapara, Chaderpara |
| | Mohuripara | 80 | Mohuripara, Jholonga |
| | Govt. College Road | 80 | Ghatkuliarpara, Chaderpara, Chonkhola |
| **Chainda Beat** | Panchash Bagan | 100 | Gonarpara, Sanctuari, Lombaghuna, Napitpara, Purbachrarkul, Charpara, Phokipara, Sikdarpara, Moktarkul, Kurulia, Mithaichori, |
| | Samitighona Road | 150 | Chadarpara, Momorerchar, Kaimarghona, BSCHIS, Khulkhali, College gaite, Morrarkacha, Naharpara, Kondarpara, Paharoli, |
| **Total** | 24 | 1585 | |

**Annex 11 proposed areas for elephant habitat improvement work in core zone of HNP**



**Annex 12 List of major NTFP species in HNP**

| Sl No | Name | Scientific Name | Use |
|---|---|---|---|
| 01 | Borta | *Artocarpus lecucha* | Fruit |
| 02 | Shimul tula | *Bombax ceiba* | Cotton |
| 03 | Mitinga | *Bambusa tulda* | Bamboo |
| 04 | Baria | *Bambusa vulgaris* | Bamboo |
| 05 | Muli | *Melocana Beccifera* | Bamboo |
| 06 | Jali bet | *Calamus guruba* | Bet |
| 07 | Korak bet | *Calamus latifolius* | Bet |
| 08 | Murta | *Schumannianthus dichotomus* | Pati pata |
| 09 | Bohera | *Terminelia bellirica* | Medicine |
| 10 | Haritaki | *Terminelia cebula* | Medicine |
| 11 | Dumur | *Ficus hispida* | Food ,Medicine |
| 12 | Amloki | *Phyllanthus emlica* | Medicine |
| 13 | Agar | *Aquilaria agallocha* | Perfume, Medicine |
| 14 | Sungrass | *Saccharum spontanium* | Thatch material |
| 15 | Kalichari Bash | *Gigantachia andamanica* | Fencing bamboo |
| 16 | Dhekia | *Diplazium polypodioides* | Vegetable |
| 17 | Alulata | *Dioscirea pentaphylla* | Food, Medicine |
| 18 | Gilalata | *Entada rhedii* | Medicine |
| 19 | Kalilata | *Derris trifoliata* | Food, Rope |
| 20 | Bees | *Apis dorsata* | Honey, Wax |
| 21 | Ful jharu | *Thysanolaena maxima* | Broom |

**Annex 13: List elephant corridors of Bangladesh identified by IUCN**

| Sl. No. | Name of Corridors | Connectivity | Corridor Location | |
|---|---|---|---|---|
| | | | Forest Divi-sion/Range/ Beat | District/ Upzila/Union |
| 1 | Ukhia- Sowankhali | Nikhongchari-Kutupalong- Gundum-Tumru- Azuhaya to Madhuchara- Bot toligona- Balukhali-Palongkhali- Sowankhali | Cox'sbazar South FD/Ukhia Range/ Ukhia Beat Survey | Cox'sbazar/ Ukhia/ Rajapalong |
| 2 | Tulabagan-Panerchara | Razarkul- Tulabagan to Panerchara to Himchari | Cox'sbazar South FD/ Panerchara Range/ Panerchara Beat | Cox'sbazar/ Ramu/ Dokkhin Mithachari |
| 3 | Nikhongchari-Tulabagan | Nikhongchari-Sonaichari- Razarkul to Tulabagan- Panerchara-Himchari | Cox'sbazar South FD/ Razarkul Range/ Razarkul Beat | Cox'sbazar/ Ramu/ Razarkul |
| 4 | Vomoriagona-Rajghat | Tulatoli- Panerchara-Vomoriagona to Rajghat- Khuntakhali | Cox'sbazar North FD/ Idgaon Range/ Vomoriagona Beat | Cox'sbazar/ Ramu/ Razarkul |
| 5 | Tulatoli- Idgar | Idgar- Lama to Tolatoli-Machuakhali- Kalirchara | Cox'sbazar North FD/ Idgaon Range/ Tulatoli Beat | Cox'sbazar/ Ramu/ Idgar |

| | | | | |
|---|---|---|---|---|
| 6 | Khuntakhali-Medhakacchapia | Lama- Dulahazara-Bogachari- Khuntakhali-Medhakacchapia to Bahaltoli | Cox'sbazar North FD/ Fulchari Range/ Medhakacchapia Beat | Cox'sbazar/ Chakaria/ Khuntakhali |
| 7 | Fasiakhali-Chairakhali | Fasiakhali and Dulahazara to Chairakhali, Ringvong, Sagirsaha Kata | Cox'sbazar North FD/ Fasiakhali Range/ Fasiakhali Beat | Cox'sbazar/ Chakaria/ Fasiakhali |
| 8 | Fasiakhali- Manikpur | Fasiakhali- Dulahazara in South, Kumari- Lama in East and Manikpur-Kakara- Nolbila in North | Cox'sbazar/ Chakaria/ Fasiakhali | Cox'sbazar/ Chakaria/ Fasiakhali |
| **9** | Chunati- satgar | Satgar, Harbang, Baroitali, Daluchari, Dalu, Sarai, Tongkawati, Faitong to Chunati Wildlife Sanctuary (Chunati, Aziznagar, Harbang, Napura, Poichari, Chambal, Jaldi) Banshkhali Eco Park, Madarsha and Kalipur Range | Chittagong Wildlife and Nature Conservation Division/ Chunati Range/ Chunati Beat | Cox'sbazar/ Chakaria/ Chittagong, Lohagara |
| 10 | Lalutia- Barduara | Lalutia- Dohazari-Dudpukuria- Dhopachari WS- Potiya to Barduara-Hangur- Tongkawaty-Dalu | Chittagong South FD/ Podua Range/ barduara Beat | Chittagong, satkania, Bajalia |
| 11 | Sukhbilash- Kodala | Srimai- Komolchari-Kurusia- Sukhbilas to Shilok, Kodala- Kaptai | Chittagong South Forest Division/ Khurusia Range/Sukhbilash Beat | Chittagong, Rangunia, Podua |
| 12 | Narischa- Kodala | | Chittagong South Forest Division/ Rangunia Range/Narischa Beat | Chittagong, Rangunia, Podua |