

Management Effectiveness Assessment of Protected Areas of Bangladesh



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TA FOR TRAINING ON USING **MANAGEMENT EFFECTIVENESS TRACKING TOOL**

A Sub-project under Strengthening Regional Cooperation for Wildlife Protection Project
Funded by the World Bank

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**Lesser
Adjutant**

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FOREWORDS

Bangladesh is bestowed with rich biodiversity . For conservation of the same, Protected Areas have been established through Bangladesh since 1973. Currently there are 38 (thirty eight) Protected Areas in the country and these protected areas are located in different ecosystems of the country. Himchari National Park was of its kind in the country declared under Wildlife (Preservation) (Amendment) Act, 1973. Though many PAs were declared in different times yet there was no systematic system of assessing management effectiveness of the PAs. However, under the Strengthening Regional Cooperation for Wildlife Protection (SRCWP) Project, a sub-project titled, TA for Training on Using the Management Effectiveness Tracking Tool (METT) was undertaken to assess the management effectiveness of the protected areas of Bangladesh. This sub-project covered 37 protected areas of the country. This tool is widely used by many countries of the world. The result pointed the laps and gaps in the effectiveness in our PA management on the basis of which the authority can intervene for the development of the PA management.

The Forest Department can now go for providing inputs properly and timely to increase the effectiveness of the management of our Protected Areas and then the objectives of PA declaration will be fulfilled.

Abdul Mabud

Deputy Chief Conservator of Forests

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Project Director

Strengthening Regional Cooperation

for Wildlife Protection (SRCWP) Project

Bangladesh Forest Department

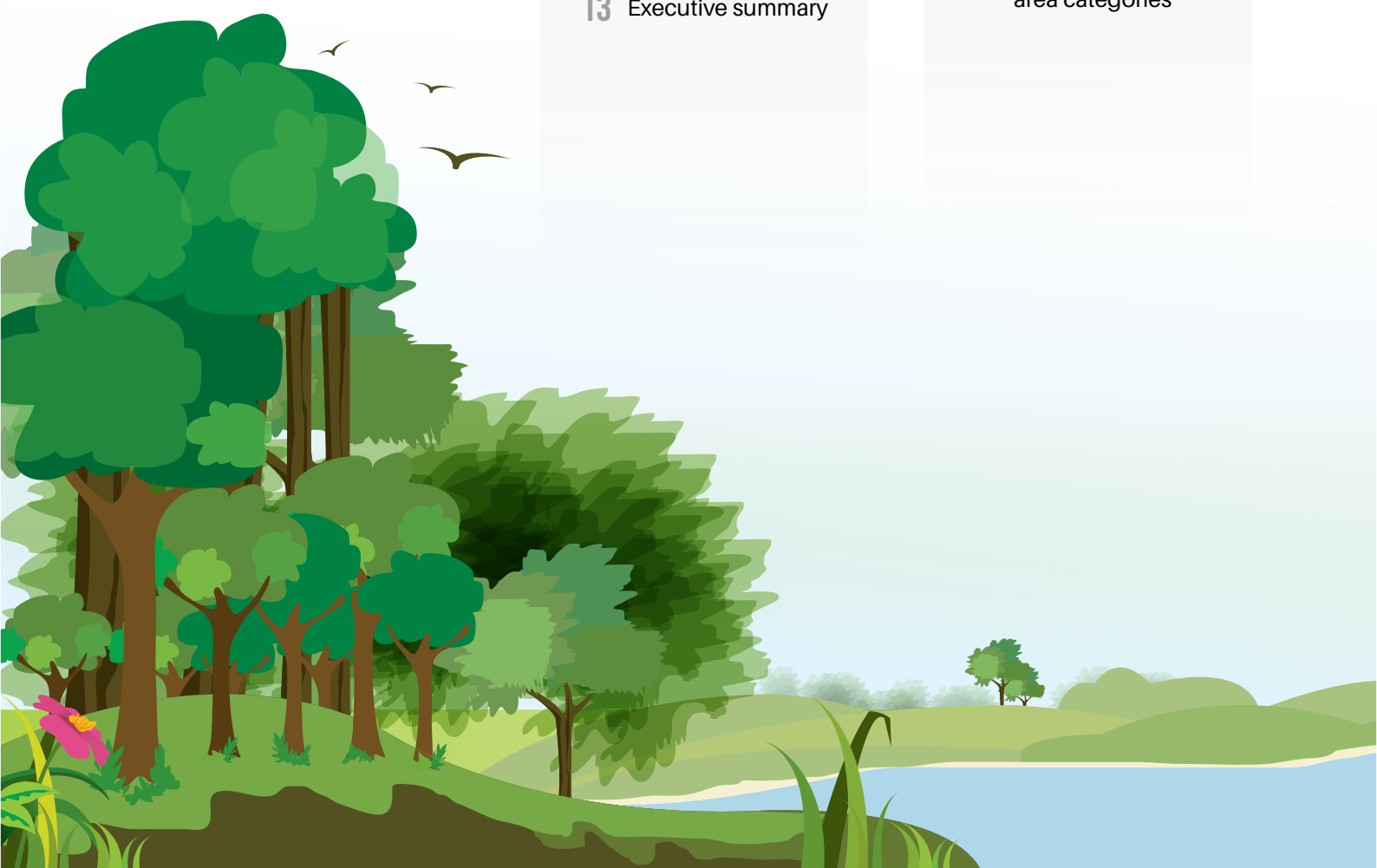
Dhaka, Bangladesh

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ACRONYMS

ACF	Assistant Conservator of Forests
BO	Beat Officer
CF	Conservator of Forests
CCF	Chief Conservator of Forests
DFO	Divisional Forest Officer
FD	Forest Department
IUCN	International Union for Conservation of Nature & Natural Resources
KNP	Kaptai National Park
LNP	Lawachara National Park
METT	Management Effectiveness Tracking Tool
MNP	Madhupur National Park
NDNP	Nijhum Dwip National Park
NP	National Park
PAs	protected areas
RO	Range Officer
SRCWP	Strengthening Regional Cooperation for Wildlife Protection
SSWS	Sundarban South Wildlife Sanctuary
TWS	Teknaf Wildlife Sanctuary
WB	World Bank
WCPA	World Congress of Protected Area
WNCC	Wildlife and Nature Conservation Circle
WS	Wildlife Sanctuary
WWF	World Wildlife Fund

PROTECTED AREAS

ANP	Altadighi National Park	NDNP	Nijhum Dweep National Park
BdNP	Baroiyadhala National Park	NMDS	Nagarbari-Mohongonj (Dolphin) Wildlife Sanctuary
BgNP	Birgonj National Park	NWS	Nazirgonj (Dolphin) Wildlife Sanctuary
BNP	Bhawal National Park	PWS	Pablakhali Wildlife Sanctuary
CKMWS	Char Kukri Mukri Wildlife Sanctuary	RKWS	Rema Kalenga Wildlife Sanctuary
CpWS	Chandpai Wildlife Sanctuary	RSNP	Ramsagar National Park
CWS	Chunati Wildlife Sanctuary	SaWS	Sangu Wildlife Sanctuary
DDWS	Dudhpukuria Dophachari Wildlife Sanctuary	SEWS	Sundarban East Wildlife Sanctuary
DmWS	Dhaingmari Wildlife Sanctuary	SNP	Satchari National Park
DWS	Dudmukhi Wildlife Sanctuary	SNWS	Shilonda-Nagdemra (Dolphin) Wildlife Sanctuary
FWS	Fasiakhali Wildlife Sanctuary	SoWS	Sonachar Wildlife Sanctuary
HNP	Himchari National Park	SrNP	Shingra National Park
HWS	Hazarikhil Wildlife Sanctuary	SSWS	Sundarban South Wildlife Sanctuary
KgNP	Kadigarh National Park	SWWS	Sundarban West Wildlife Sanctuary
KkNP	Kuakata National Park	TkWS	Teknaf Wildlife Sanctuary
KNNP	Khadim Nagar National Park	TgWS	Tengragiri Wildlife Sanctuary
KNP	Kaptai National Park		
LNP	Lawachara National Park		
MKNP	Medha Kachchhapia National Park		
MNP	Madhupur National Park		
NbNP	Nababgonj National Park		

Photo credit: Md. Modinul Ahsan







EXECUTIVE SUMMARY

BACKGROUND

The Wildlife and Nature Conservation Circle (WNCC) with funding from Strengthening Regional Cooperation for Wildlife Protection (SRCWP) Project carried out Management Effectiveness Tracking Tool (METT) assessment for 37 (thirty seven) forest protected areas of the country. The assessment is the outcome of effort of the participants of the forest department employees and representatives of NGOs, Co-management Committee members, local peoples who attended during workshops conducted at the division and field level offices.

METHODOLOGY & APPROACH

The approach is based on the WWF / World Bank - Management Effectiveness Tracking Tool (METT). The Tracking Tool has two main sections: (1) datasheets (general and threat) and (2) assessment form (questionnaire). General Datasheet records basic information on the site, e.g., name, size, location, local & IUCN designation, ownership, staff numbers, and date of national or international designation. Threat data sheet provides a generic list of (12 nos) threats which protected area managers rank - high, medium, low categories based on situation.

The assessment form contains 30 questionnaires covering all elements of the WCPA Framework – contextual, planning, inputs, process, outputs and outcome

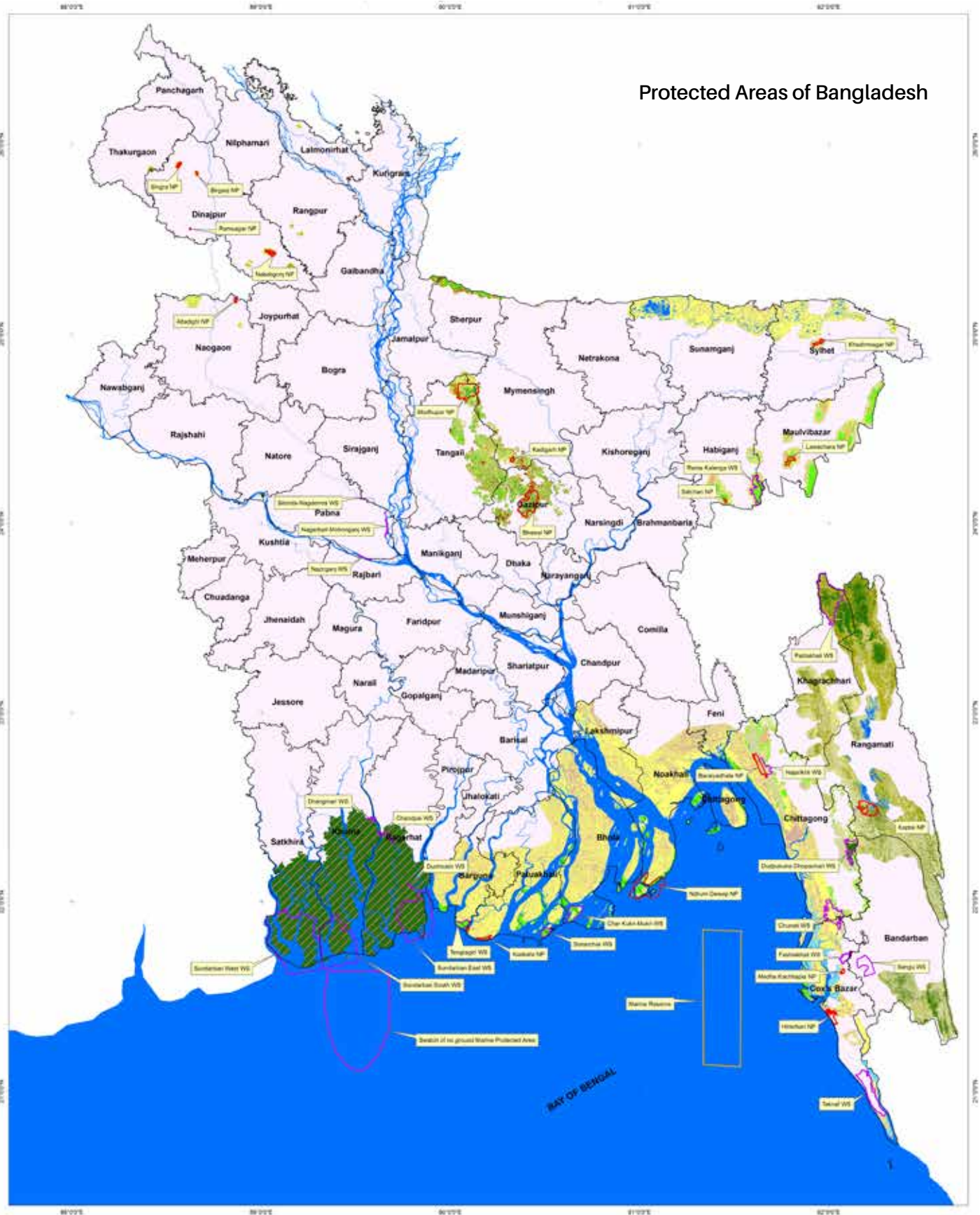
related issues. The assessment involves selection of one among four (4) alternative text answers (ideal to worst) that best represent a particular issue for the PA, with a corresponding score from 3, 2, 1 and 0. Maximum score of the 30 questions and supplementary questions is 102. Final score is calculated as percentage of 102 or % of total score from relevant questions.

A pre-training workshop was arranged where some country specific additions were incorporated in the Data Sheet and Questionnaire, based on inputs from Forest Department Officials. Subsequently a two-day Training of Trainers (TOT) training event was conducted for a total of twenty Forest Department Officials involving theory and practical field session. Subsequently a piloting was carried out in 6 (six) PAs involving officials obtained TOT training. After piloting, the METT assessment was rolled out remaining 31 Protected Areas. The state of forest protected area management is based on assessment on 37 PAs is given below.

RESULTS

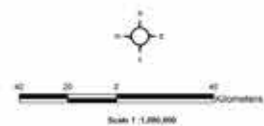
Threats to Protected Areas: Among the 37 PAs, Bhawal NP is enduring the highest threats (36%), followed by Himchari NP (32%), Medha-Kachchhapia (30%), Fasiakhali WS (28%) and Chunati WS (28%). Threat score for rest of the PAs falls below 20%. Char Kukri-Mukri WS obtained the least score of only 2%. Among 12 threats categories, - human intrusion and

Protected Areas of Bangladesh



Legend

- | | | | |
|---|------------------|--------------------------------------|----------------------------|
| Natural Forest (Hill) | Bamboo | Agriculture Land | National Park |
| Natural Forest (Sai) | Other Vegetation | Settlement with Homestead Vegetation | Wildlife Sanctuary |
| Natural Forest (Swamp) | Reed Land | Brick Field | Marine Park |
| Natural Forest (Mangrove) | Shrub and Grass | Saltpan and Fish Farm | Marine Reserve |
| Scattered Forest (Natural and Plantation) | Rubber | Mudflat and Moist Land | District Boundary and Name |
| Plantation | Tea Garden | River and Canal Waterbody | |
| Plantation (Mangrove) | Bariland | | |



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 February, 2017.

disturbance (24%) is the main concern to PA managers, followed by biological resource use (22%), agriculture and aquaculture (17%), and residential and commercial development (17%) within a PA.

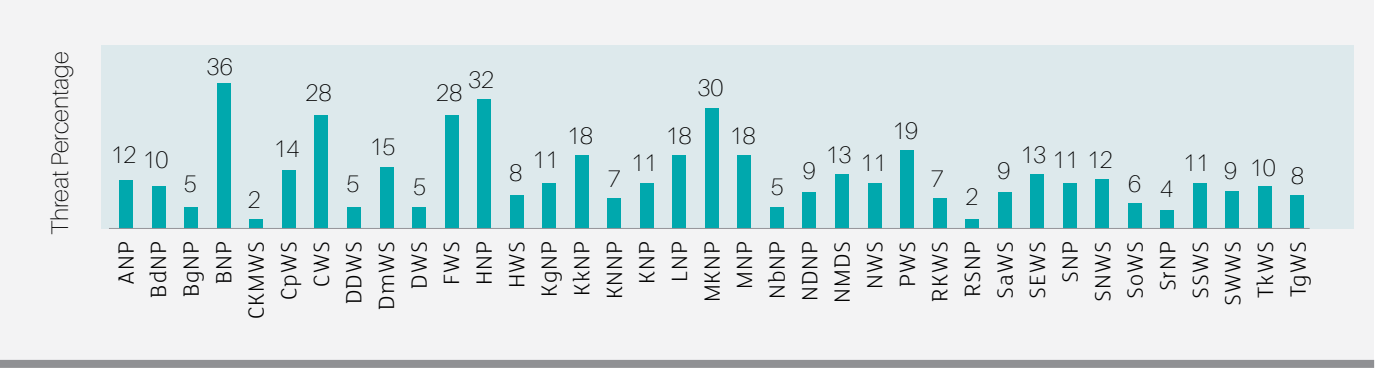
Management Effectiveness

Score: Management effectiveness

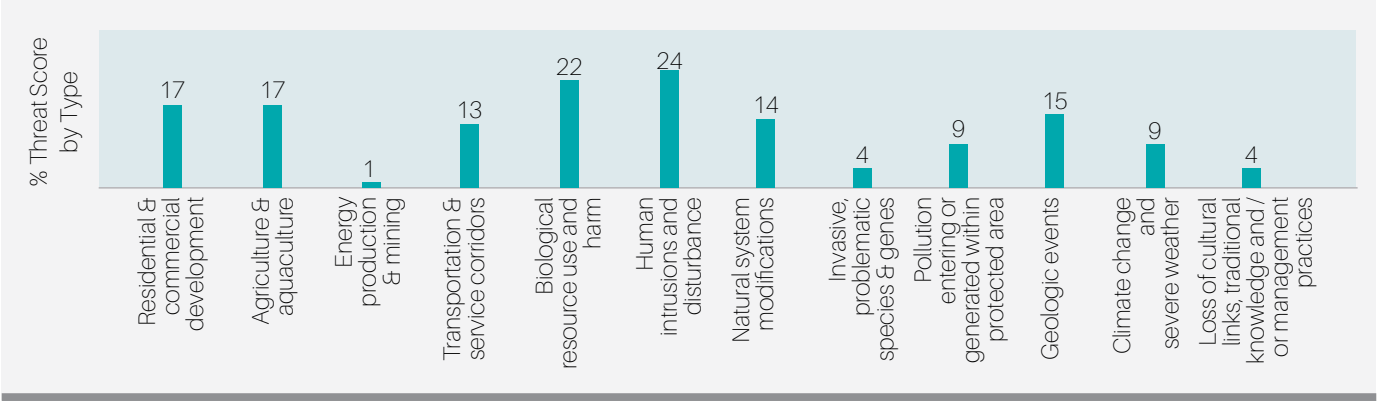
score was found to be highest for Lawachara NP (58%), followed by Kaptai NP (54%), Rema-Kalenga WS (52%) and Satchari NP (49%). Results show that the PAs have strong legal footing, and this is the only element to have full score across all PAs. The PA rules also provide good legal footing with

some loopholes; however, law enforcement is very weak. The design of PAs are mostly supportive of achieving objective, however, across PAs, issues like management planning, work plan, budget and budget security, staff number and skills, equipment is lacking. These have impact on processes i.e.,

Comparative Threats of Protected Areas



Category of Threats on Protected Areas



Management Effectiveness Score of Protected Areas

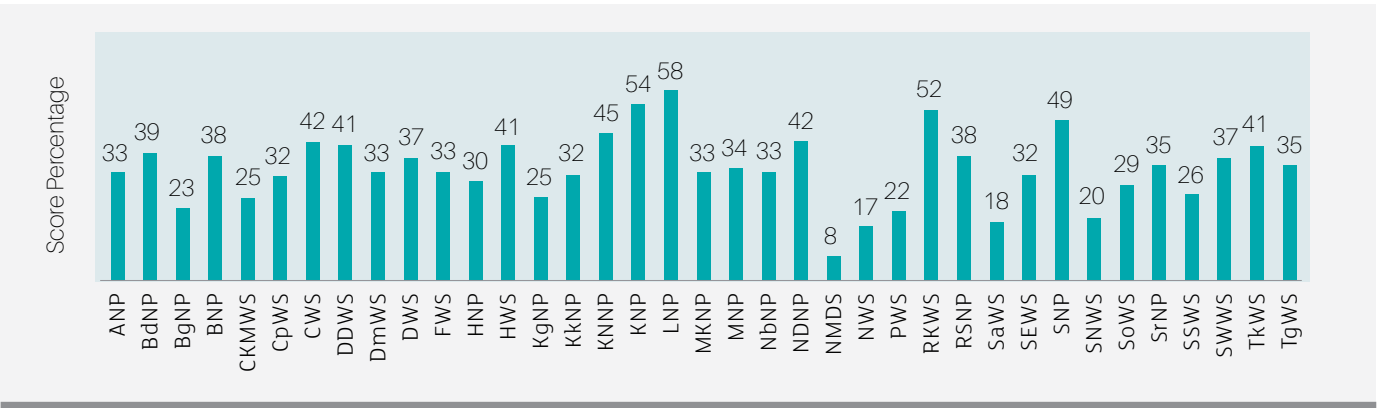
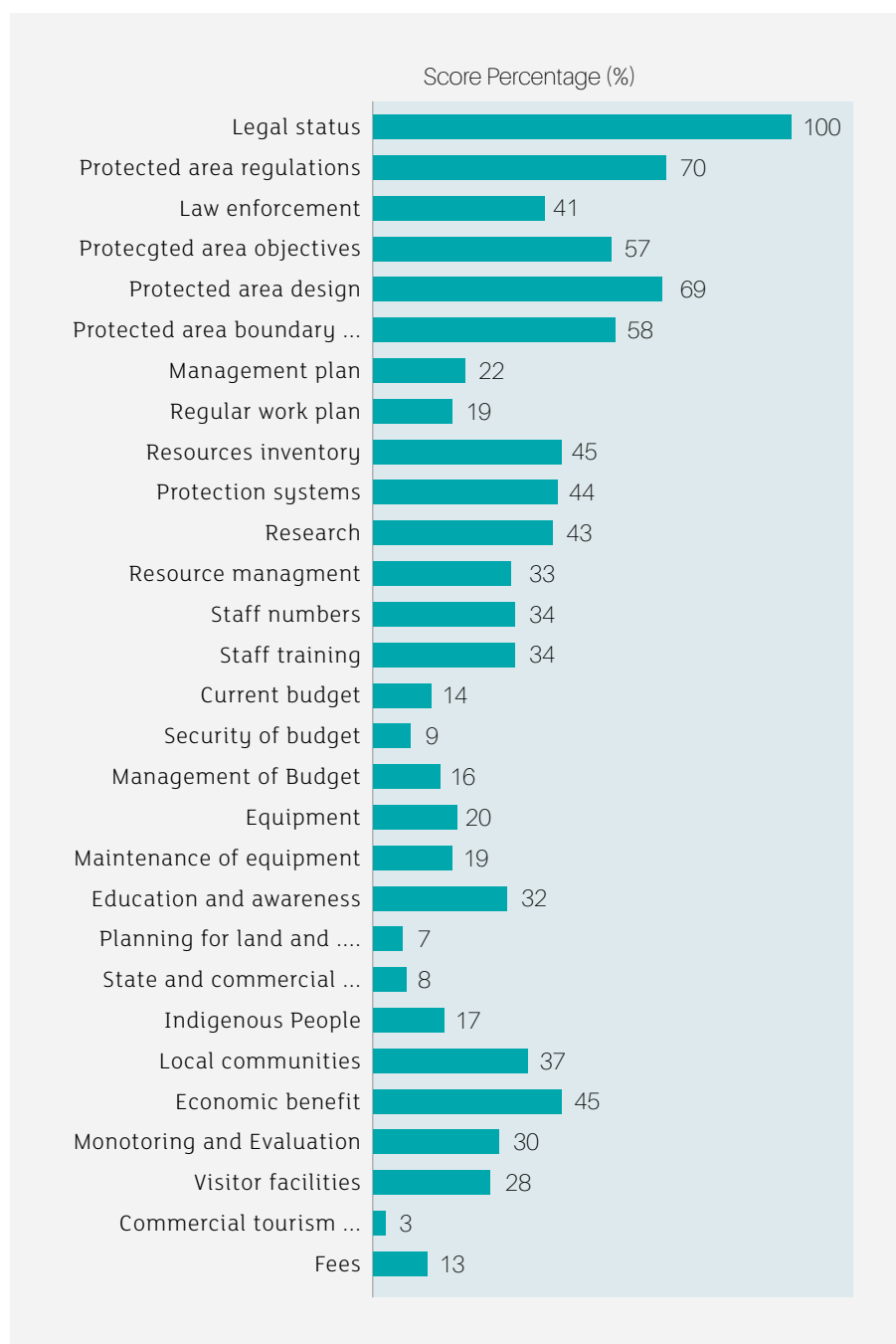


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Yellow-wattled Lapwing

Management Effectiveness Scores by Assessment Issues of Protected Areas



especially protection and resource management. Relations with state & corporate neighbors, tour operators is generally poor. All of these have contributed to degraded condition of values for which PAs are established.

IMPLICATIONS FOR MANAGEMENT

In general, if better planning, continued inputs, strong process exist, then better output and outcome can be expected. Critical issues amongst all are the

budgetary allocation to PAs and its security. This is a common problem mentioned by the PA managers. Not all issues under an element, i.e., planning can be addressed immediately, but the key issues that can have a great impact on improve management are highlighted below:

• **Minimizing Threats facing**

PAs: Given that threats against Bhawal NP, Himchari NP, Medha Kachchhapia NP, Fasiakhali WS and Chunati WS is more than their capacity to handle. The management must investigate further to design and take proper action to minimize threats. Highest threat against PAs with least management capacity makes these PAs vulnerable and therefore requires immediate attention. Reducing threats against PAs generally paves way for better condition of value for which they are established.

• **Management Planning:** At present, for most of the PAs, there is no management plan. However, good news is, projects like SRCWP, CREL etc. developed some management plans of some selected PAs (with a focus on wildlife management). However, there is a need to pay attention to financial resources required to implement those plans. Government can seek budget from its own resources (revenue budget) and / or seek some funds from development partners as well.

• **Staff Number:** All PAs are in very acute shortage of manpower against its approved organogram. The shortage of staff resulting in deficiencies in protection. It is to be noted that in the absence of resource management,

protection is the only activity or management objective. And when this activity is hampered, it becomes difficult to protect biodiversity. While community petrol groups (CPGs) are helping Forest Department to some extent, even then, the CPG members cannot provide twenty four hour protection without forgoing their earnings. Another issue rose during the assessment that the average age of the field level staff (i.e., forest guards) is around 58+ years. This is one of the major factors behind irregular partol. New recruitment is very important for the proper management of the PAs to achieve objective.

- **Staff training:** In addition to recruitment, staff training especially in areas of protected area management, wildlife management, inventory, wildlife crime control, prosecution, tourism etc. need to be carried out in order for them to contribute to PA management.
- **Equipment:** All of the PAs are in shortage of equipment like arms and ammunicions, vehicles, fuel. These are the critical equipment support needed for the purpose of protection. At present, without these supports, protection is being hampered.
- **Increase budgetary allocation:** At present, the PAs are either being supported from project

budget or without any financial support apart from staff salary. For this reason the PA staff cannot perform their duties regularly which ultimately impact the ability for performing the resource management activities.

- **Entrée Fee:** At present, not all PAs charges entrée fee and not all entry fees returns to PA for (i.e. Sundarban) protected area management. Currently only 5 (five) PAs get 50% share of revenue from entrée fee but most of the PAs do not. Under the current system only the PAs get 50% revenue from the PA. All of the PAs should start entrée fee system and 50% revenue can be shared for the management of the PAs
- **Maintain liaisons with Commercial Tourism Operators:** Commercial tour operators have high potentials to generate revenue for protected areas as well as promote conservation awareness education. There is an increasing trend in tourism in protected areas of the country. Protected Areas harbors rich biodiversity which are source of attraction. Some of these PAs are also equipped with infrastructures (i.e., rest house) in degraded condition due to lack of maintenance budget. These facilities can be leased out to commercial operators for sustainable tourism and management of infrastructure.

- **Rules, regulations and Law enforcement:** There are couples of critical issues raised by the PA staff with respect to law and regulation. The Wildlife Act, 2012 does not take into account or recognize the inherent difficulty in proving an offence case and makes FD Officials liable for the failure. As a result, the officials are not interested to register cases under Wildlife Act Officials also pointed out that program that is not consistent with PA management objective is applied in PA management i.e., establishment of social forestry plantations in PAs. Another important aspect pointed out that Territorial Division currently provides no support to protect wildlife just because they have not been given mandate. Empowering DFOs of Territorial Divisions adjacent to PA by the Chief Wildlife Warden to execute the Wildlife Act in his/her jurisdiction will have a positive impact on protected area and biodiversity conservation.

It is to be noted that METT is a quick assessment tool, with the purpose of providing a general indication of problems facing the protected areas and strategies that can be taken to improve the management. Such assessment should follow up with details assessment to allow for development of specific measures and resource allocation for individual PAs.

Coppersmith Barbet



Photo credit: Samiul Mohsanin



CHAPTER 1

OVERVIEW OF PROTECTED AREAS

CHAPTER 1

OVERVIEW OF PROTECTED AREA

1.0 INTRODUCTION

1.1 PROTECTED AREAS & BIODIVERSITY CONSERVATION

There are many definitions of protected area but in a very easy way the protected area can be defined as: “A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008). The Forest protected areas supports conserve ecosystems that offers habitat, shelter, food, raw materials, genetic materials, a barrier against disasters, a stable source of natural resources, cultural resources and many other ecosystem goods and services – and thus can have an significant role in aiding species, people and countries adapt to climate change. By virtue of their protective status, these forests should be kept free from any destructive human intervention. They can thus continue to serve as a natural storehouse of goods and services into the future. However, the Protected Area has three major roles to serve namely- ecological, social and economic.

1.1.1 Ecological role

There are numbers of protected areas in the world and now the world now has more than 100,000 protected areas, of which the terrestrial ones cover 12.2 percent of the earth's surface (UNEP-WCMC, 2008). Protected areas can play a strong role in

protecting species from extinction and from the impact of human-induced threats if well planned and managed. They can also contribute to biodiversity conservation by:

- representing distinct natural communities within conservation landscapes and protected areas networks;
- maintaining ecological and evolutionary processes that create and sustain biodiversity;
- maintaining viable populations of species;
- conserving blocks of natural habitat large enough to be resilient to large-scale disturbances and long-term changes (Noss, 1992).

In a world of changing climate, protected areas take on added importance as protected havens for biodiversity by offering good-quality habitats less vulnerable to climate extremes, by providing refuges for threatened species and by conserving important gene pools. This would also become more important to protect reference landscapes ecosystems on which restoration planning is based, and which provide a basis for evaluating the success of restoration (Sayer, 2005).

1.1.2 Social role

Protected areas of the world also provide many ecosystem services including drinking water, carbon storage and soil stabilization; harbor sacred sites for different faith groups; and hold important gene reservoirs of value in medicine, agriculture and forestry (Simms, 2006).

By maintaining natural ecosystems the protected areas can contribute to physical protection against major disasters, which are predicted to be on the rise with climate change (Scheuren et al., 2007). Although the scale of disasters generally depends on an aggregation of factors (e.g. building regulations, land use), in many cases ecosystem maintenance and forest protection can greatly reduce their impacts. Coastal mangroves, coral reefs, floodplains and forests may buffer land, communities and infrastructure against natural hazards. For example, during Aila in 2009 the Sundarbans protected life and wealth of the coastal areas of the Southern region of Bangladesh.

In some areas of the world the protected areas provide an opportunity for active or passive restoration of traditional land use practices such as agroforestry and crop terracing, which may help mitigate the impacts of extreme weather events in arid lands, for example by reducing the risk of erosion and by maintaining soil structure (Stolton, Dudley and Randall, 2008).

In addition, protected area management can help empower marginalized human populations or ethnic community groups. Alternative forms of protected area governance such as collaborative management, community conservation or joint management, for example, are being implemented to reduce conflicts over land and to promote long-term maintenance of protected

areas for provision of benefits to stakeholders (Peredo-Videa, 2008).

1.1.3 Economic role

It has been found that the gross domestic product (GDP) of a number of countries, led by Viet Nam, could be negatively affected by sea level rise, saltwater intrusion and natural disasters attributed to climate change. In helping to protect natural habitat, protected areas indirectly help to protect the national economy (Dasgupta et al., 2007). Tourism is one of the finest sources of earning money for the local community and the country as well. For example, Guatemala's Mayan Biosphere Reserve provides employment for over 7 000 people and generates an annual income of approximately US\$47 million (PCLG, 2002).

In Madagascar, a study of 41 reserves found that the economic rate of return of the protected area system was 54 percent, essentially from watershed protection and to a lesser extent from ecotourism (Naughton-Treves, Buck Holland and Brandon, 2005). Thus, protected areas provide a safety net which can be valuable in times of stress, such as extreme climate events.

1.2 PROTECTED AREA CATEGORIES

A protected area is a geographically defined area managed through legal or other effective means to protect and maintain biological diversity and natural and associated cultural resources (IUCN 1994). Some protected areas have been

designed to exclude people; the IUCN definition of 'national park' (Category II) calls for ecosystems "not materially altered by human exploitation and occupation" and expects governments "to prevent or eliminate as soon as possible exploitation or occupation in the whole area" (IUCN 1990). The virtual extinction of the Ik people who were dispossessed with the establishment of Kidepo National Park in Uganda is only the most extreme illustration of a problem that has been repeated throughout the world (Machlis and Tichnell 1985; West and Brechin 1991). On the other hand, the number of people displaced through the creation of protected areas is relatively limited, and in any case is likely to be tiny in comparison with the many millions who have lost their livelihood because of land degradation, deforestation, dam construction or inappropriate development.

Further, the ideal of the pristine national park is seldom attained, even in fairly wealthy countries. For example, it has been found that 86% of South American IUCN Category II National Parks have permanent human occupation, many of whom practise agriculture (Amend and Amend 1992). In India, rights of grazing, agriculture and collection of forest products, such as fodder and firewood, are provided to local people in nearly half of the 52 national parks and in over two-thirds of the 209 sanctuaries (IIPA 1989), a compromise which appears necessary to enable protected areas to make their larger

contributions to society. It is apparent that governments are adapting IUCN's ideal to the reality of local conditions.

As a means of promoting a more positive relationship between people and protected areas, IUCN's new system of categories of protected areas (IUCN 1994) recognizes that humans and protected areas can co-exist productively under some management regimes. For example, Category V, Protected Landscape/Seascape, includes areas of land, with coast and sea as appropriate, "where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area." And Category VI, Managed Resource Protected Areas, is defined as an "area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs." Box 1 provides more details of the IUCN categories system.

BOX I

The 1994 IUCN system of protected areas categories

I. Strict Nature Reserve/Wilderness Area: Areas of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring; or large areas of unmodified or slightly modified land, and/or sea, retaining their natural character and influence, without permanent or significant habitation, which are protected and managed so as to preserve their natural condition.

II. National Park: Protected Areas Managed Mainly for Ecosystem Conservation and Recreation. Natural areas of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for this and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

III. Natural Monument: Protected Areas Managed Mainly for Conservation of Specific Features. Areas containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.

IV. Habitat/Species Management Area: Protected Areas Managed Mainly for Conservation Through Management Intervention. Areas of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

V. Protected Landscape/Seascape: Protected Areas Managed Mainly for Landscape/Seascape Conservation and Recreation. Areas of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, cultural and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

VI. Managed Resource Protected Area: Protected Areas Managed Mainly for the Sustainable Use of Natural Ecosystems. Areas containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Greater False Vampire



Photo credit: Samiul Mohsanin



Photo credit: Md. Modinul Ahsan



1.3 PROTECTED AREA IN SOUTH ASIA

One of the areas at the bleeding edge of worldwide populace and financial development is South Asia. Containing the nations of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, South Asia's human populace dramatically multiplied in the vicinity of 1950 and 2009, from 473 million to 1.6 billion, and is anticipated to grow a further 41% by 2050). South Asian economies are for the most part in view of horticulture (for instance, in Nepal more than 90% of the populace is included in farming), which means a great part of the locale is currently commanded by anthropogenic biomes (Ellis and Ramankutty, 2008). Natural surroundings debasement is happening in all South Asian nations, generally brought on by serious agrarian plans, with much beforehand neglected land now being utilized for cultivating (UNEP, 2009). Subsequently, zones of characteristic territory and their related biodiversity may have turned out to be progressively limited to ensured ranges.

The significance of secured regions in protecting biodiversity is presently revered in Aichi Target 11 that structures part of the Strategic Plan for Biodiversity 2011–2020 of the Convention on Biological Diversity (CBD 2010). This Convention hosts been marked by 193 Gatherings, including every one of the seven South Asian nations. Target 11 expresses that, by 2020, no less than 17% of earthly and inland water living space ought to be saved viably by ensured ranges or

other comparative region based preservation measures. This is an exceptionally aggressive target and gaining critical ground towards it will require a nearby arrangement of science, administration and strategy, and a sound comprehension of the biological honesty of set up secured territories. Science has effectively shown the commitment of ensured territories to species scope [Rodrigues et. Al. 2004] and has created strategies for assessing administration and intercessions. In any case, focused on examinations of the degree to which specific secured zone systems are meeting their biodiversity preservation destinations are hard to find given the quantity of ensured territories in presence, however a few reviews are presently developing (Leverington et. Al. 2010). Shockingly, given both the noteworthy number of ensured zones in the locale (mirroring its worldwide biodiversity significance) and its quickly developing human populace and financial influence, evaluations of the viability of secured territories in South Asia are recognizably truant, especially in examination with the relative abundance of studies surveying secured zones in close-by Southeast Asia (Curan et.al., 2004) Within South Asia, some particular reviews exist, for example, those recording lower rates of land cover change inside the Royal Chitwan National Park, Nepal (Nagendra et. Al. 2004] and the Tadoba Andhari Tiger Reserve, India [Nagendra et.al. 2006) than outside these ensured territories. There have been dire calls for

more reviews in the South Asia district (Sagar and Singh 2004) especially as the range has been distinguished a high need for the expansion of new secured regions (Mondal and Nagendra 2011). Such appraisals are likewise called for by the South Asia Environment Outlook, a consultative procedure with governments and different accomplices from South Asia, sub-territorial intergovernmental organizations and specialists (UNEP 2009).

This has been watched that natural surroundings inside South Asia's secured zone framework have been significantly changed and that this circumstance has been unfurling since a hefty portion of the ensured regions were initially gazetted. It is currently at a phase where it merits earnest consideration. Our most imperative outcomes are that rates of leeway inside the secured region home are not factually recognizable from those outside, and that rates of

freedom inside ensured regions don't essentially diminish after gazettelement. This unmistakably raises questions about South Asia's capacity to add to the Convention on Biological Diversity's Aichi Target 11, which sets out both quantitative (17% of earthly and inland water natural surroundings) and subjective (adequately oversaw) criteria (CBD 2010).

Around a fourth of the aggregate land surface inside South Asia's

Photo credit: Emdadul Islam Bitu



secured zone bequest has been changed by anthropogenic uses, and subsequently, ensured territories won't not preserve biodiversity to the level that their degree may recommend. Each ensured range has had, by and large, more than 33% of its territory cleared for human utilize. While arrive outside ensured ranges has been adjusted to a much more noteworthy degree, with the greater part of the environment being changed for human utilize, the size of transformation inside secured zones is plainly a noteworthy concern. This is particularly so if some ensured zones have been sited in areas where arrive utilize change weight is moderately low (Joppa and Pfaff, 2011). This recommends two things. Firstly, that the change of living space in right now open zones that can be effectively adjusted is higher, perhaps generously so given the nearness of critical rocky and parched biological communities in the area. Furthermore, with expanding weight from both an expanded populace and a requirement for new land, these as of now ugly regions will likewise be changed over from normal to altered living spaces unless they are managed compelling security and administration.

Tantamount outcomes have been depicted from different parts of the world. Rayn and Sutherland discovered comparable rates of timberland deforestation between land inside and outside secured zones in Mexico, and no distinction in woodland misfortune in ensured arrive previously, then after the fact gazettelement. Also, Curran et.

al. report that over 56% of secured swamp woods were debased in the vicinity of 1985 and 2001 in Kalimantan (Indonesian Borneo). A current review by Mora and Sale proposes that the adequacy of existing secured regions and the rate at which new ensured zones are being built up won't be adequate to battle current biodiversity misfortunes. The greater part of this proposes it is basic that we change our state of mind.

1.4 PROTECTED AREAS IN BANGLADESH

The People's Republic of Bangladesh is situated in the northeastern part of the South Asian subcontinent, lying between 200°25' and 260°38' north latitude and 880°01' and 920°40' east longitude. Total area is about 14.4 million hectares with three broad physiographic regions viz flood plain, terraces and hills occupying about 80%, 8% and about 12% of the land area respectively. Most parts of Bangladesh are less than 12 meters (39 ft) above the sea level, hilly regions on the northeast and southeast with an average elevation of 244m and 610m respectively. The highest point (1230m) is located at the southeastern extremity of the erstwhile district of Chittagong Hill Tracts. The country is bordered by India to the north-east and west, Myanmar to the south-east, and the Bay of Bengal to the south with a coastline of more than 580 km. The climate in Bangladesh is sub-tropical, maximum summer temperatures range between 32°C and 38°C and in January, the coldest month, the average temperature for most of the

country is 10°C. Annual rainfall ranges from 200 to 400 cm. The country has four main seasons, Winter (Dec-Feb), Summer (Mar-May), Monsoon (Jun-Sep) and Autumn (Oct-Nov).

Bio-geographically, Bangladesh lies at the junction of the Indian and Malayan sub-regions of the Indo-Malayan Realm and is located very near to the western side of Sino-Japanese region. The country's biodiversity reflects this admixture. Bangladesh has now a total of 1,619 animal species belonging to seven groups – mammals (138), birds (566), reptiles (167), amphibians (49), freshwater fish (253), crustaceans (141), and butterflies (305) (<https://www.iucn.org/news/bangladesh-red-list-reports-31-regionally-extinct-and-390-threatened-animal-species>)

The rich biodiversity is significant in the local context as well as international context. Two RAMSAR sites (Tanguar Haor and three Wildlife Sanctuaries of Sundarbans, 1992) have been declared in country and the entire Sundarbans (largest mangrove tract) is designated as World Heritage Site (1997). The Country soon after its independence promulgated the Bangladesh Wildlife (Preservations) Order, 1973 as Presidential Order No.23 of 1973, which was enacted as Bangladesh Wildlife (Preservation) Act, 1973. The 1973 Act was amended, elaborated and reenacted as Bangladesh Wildlife (Preservation) (Amendment) Act, 1974. It provided the constitution of Bangladesh Wildlife Advisory Board, provision for Sanctuaries, National Parks, and Game Reserves (See box below).

BOX II

“Protected area” means all sanctuaries, national parks, community conservation areas, safari parks, eco-parks, botanical gardens notified under the provisions of sections 13, 17, 18 and 19 under Chapter IV and special biodiversity conservation area established under the provisions of section 22 under Chapter V and traditional heritage and kunjaban declared under section 23

Later in July of 2012, a revamped Wildlife (Conservation and Security) Act of 2012 was approved in the parliament. The Act 2012 includes several definitions like core zone, buffer zone, landscape zone, corridor, to aid management, revised list of protected species

and made provision for crime against wildlife. For example, 12 years of imprisonment for killing a tiger or an elephant. Under the act, any state-owned forest land, land or water-body can be turned into an eco-park, safari park, botanical garden or breeding

grounds. Such land can also be declared reserve land by gazettes. Farming, woodcutting, burning and construction will be prohibited on forest reserves and violators can be jailed for up to two years.

BOX III**Ex-situ Conservation Areas of Bangladesh**

Sl	Protected Areas	Ecosystem	Location	Area (ha.)	Date
1.	Baldha Garden	Man made	Dhaka	1.37	1909
2.	National Botanical Garden	Man made	Dhaka	84.21	1961
3.	Dulahazara Safari Parks	Mixed Evergreen	Cox's Bazaar	600.00	1999
4.	Sitakunda Botanical Garden & Eco Park	Mixed Evergreen	Chittagong	808.00	2000
5.	Madhabkunda Eco Park	Mixed Evergreen	Moulvibazaar	265.68	2001
6.	Madhutila Eco Park	Deciduous Forest	Sherpur	100.00	2001
7.	Banshkhali Eco-Park	Mixed Evergreen	Chittagong	1,200.00	2003
8.	Kuakata Eco-Park		Patuakhali	5,661.00	2005
9.	Tilagar Eco-Park	Mixed Evergreen	Sylhet	45.34	2006
10.	Borshijora Eco-Park	Mixed Evergreen	Moulavibazar	326.07	2006
11.	Bangabandhu Sheikh Mujib Safari Park	Deciduous Forest	Gazipur	1,542.51	2014
				9,434.18	

BOX IV

Types of PA [According to Wildlife (Preservation) (Amendment) Act, 1974]

National Park: a comparatively large area of natural beauty to which the members of the public have access for recreation, education and research, and in which the wildlife is protected.

Wildlife Sanctuary: an area maintained as an undisturbed breeding ground for wild fauna and where the habitat is protected for the continued well-being of the resident or migratory fauna.

Game Reserve: normally comprises a relatively isolated area meant for protection of wildlife in general and to increase the population of specified species.

Types of PA [according to Wildlife (Conservation and Security) Act, 2012]

A. National Park means comparatively large area of outstanding scenic and natural beauty with the primary object of providing public education, research and recreation and managed for preservation of natural state of flora and fauna and outstanding charming scenery, and which is an area declared as such through official gazette notification under section 17 of this Act;

B. Sanctuary means an area where hunting, killing, shooting or trapping of wild animal is prohibited and managed for the protection of all natural resources such as vegetation, soil and water primarily for undisturbed breeding of wildlife and declared as such by the Government by official gazette under section 13 of this Act

C. Ecopark means an area of natural ecological habitat of flora and fauna with outstanding scenic beauties which is managed for providing recreational facilities for visitors and which is declared as such through official gazette notification under section 19 of this Act;

D. Botanical garden means an area where different native and exotic plant species are conserved or managed for education, research and conservation and improvement of source of genepool introducing from another habitat and which is declared as such through official gazette notification under section 19 of this Act;

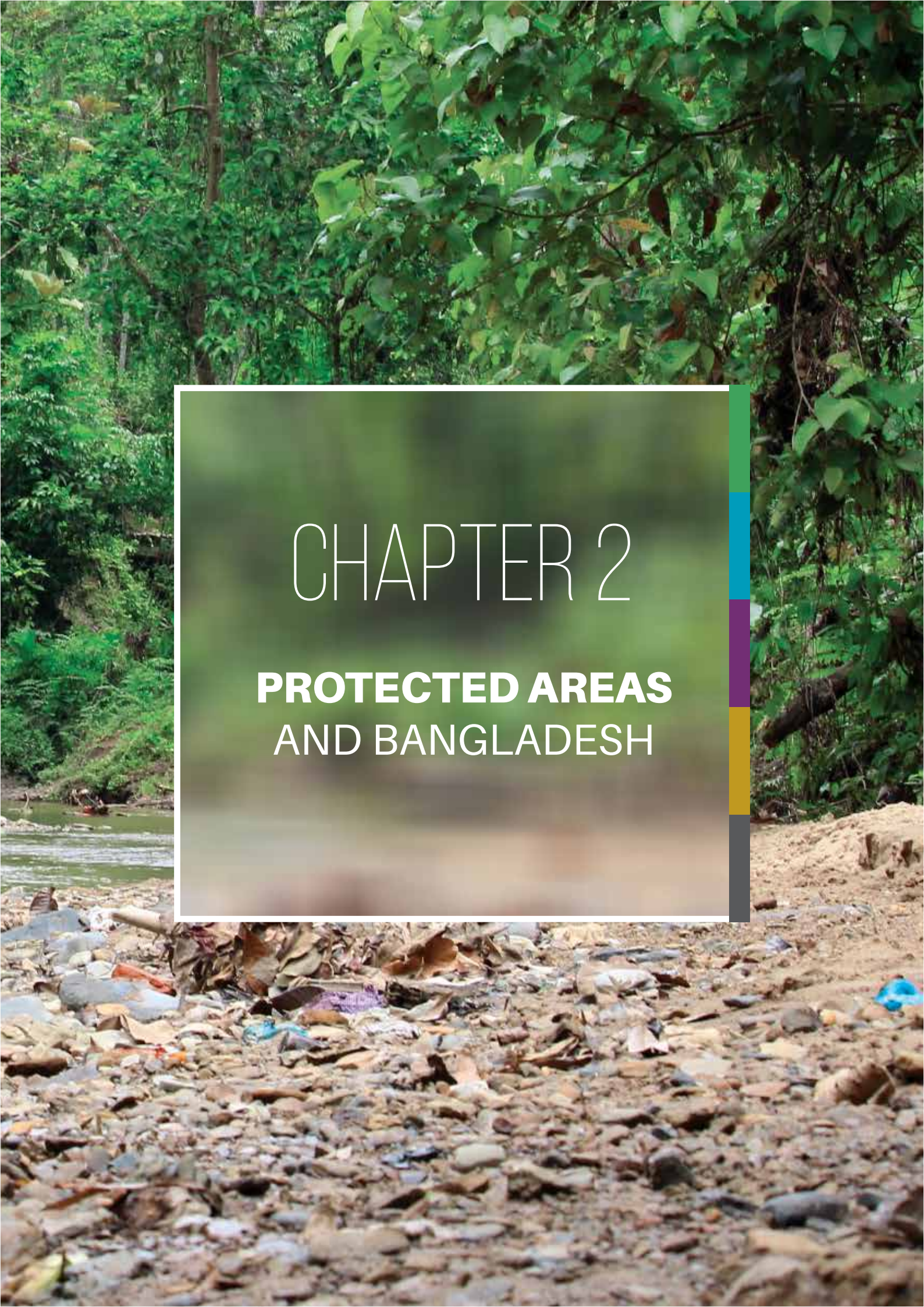
E. Community conservation area means any area which is a private or community or government khas land under management for the protection of flora and fauna and as a conservation site of traditional or cultural heritage and declared as such through official gazette notification under section 18 of this Act;

F. Safari Park means an area where indigenous and exotic wild animal species are protected in an approximation of a natural environment for increasing the population and grazing openly and which is declared as such through official gazette notification under section 19 ;

G. Kunjaban means an specified area enriched with different species of trees, herbs and shrubs, which is rich in biodiversity and bear cultural, social and traditional values to local community and which is declared as kunjaban through official gazette notification under section 23 of this Act;

Photo credit: Quamruzzaman Babu and Avijit





CHAPTER 2

PROTECTED AREAS AND BANGLADESH

PROTECTED AREAS AND BANGLADESH

2.1 PROTECTED AREA MANAGEMENT IN BANGLADESH

Despite having specific acts and rules to protect such areas and apparatus to execute policies, the PAs are themselves threatened or in critically endangered state due to lack of continued institutional and political support as well as increasing socio-economic pressures. The legislation for conservation of wildlife was created in 1973 and the power was vested with the Forest Department and new Wildlife Circle was created in 1976, which however, was abolished in 1983 due to shortage of fund. After that Again Wildlife Circle was created in 1994 under a development project, which was continued up to project period i.e., 1997. In 2002, the Circle was revamped and named as “Wildlife and Nature Conservation Circle (WNCC)” under revenue budget of the Forest Department.

The Forest Department has taken repeated attempts to develop scientifically based management plans for the PAs. Some milestones are:

- Defining the PAs as ‘Preservation Working Circles’ from ‘Production Working Circles’ in the management plans of Sylhet, Chittagong and Cox’s Bazar Forest Divisions during 90’s
- Conservation management plans for 3 Wildlife Sanctuaries in the Sundarbans, Bhawal NP, Rema-Kalenga WS and Teknaf GR under Forest Resource Management Project (FRMP, Year 1993-2000)

- Guidelines for preparation of Conservation Management Plans under FRMP
- Participatory Conservation Management Plans for Modhupur NP, Chunati WS, Himchari NP and Rema-Kalenga WS under Forestry Sector Project (1997 - 2006).
- Collaborative management in five protected areas namely – Lawachara National Park, Satchari National Park, Rema-Kalenga Wildlife Sanctuary, Chunati Wildlife Sanctuary and Teknaf Game Reserve under Nishorgo Support Project (2006).
- Approval of management plans for the above mentioned five sites under Nishorgo Support Project (Year 2006).
- Tiger Action Plan for Sundarbans is being jointly prepared by Forest Department and Wildlife Trust of Bangladesh.
- Tiger Estimation was done in the year 2013-2014.
- Elephant population survey was done in 2016 and an action plan was developed

In order to have a better legal framework for PA management, Forest Department has recently with help from Nishorgo Support Project, proposed amendment to update the Wildlife Act of 1974, taking account of important modifications and improvements cover such issues as updated CITES species lists, clarification of authorities for seizing wildlife, particularly during transport, inclusion of formal collaborative management approaches, and inclusion of community conserved areas. The Act amendment also clarifies more than 55 definitions that were not previously included.

2.2 CONTEXT OF ASSESSING MANAGEMENT EFFECTIVENESS OF THE PROTECTED AREA

Many protected areas (PA) in the world are not achieving the objectives for which those were established. This is a great concern among the conservationists. For tracking and increasing the effectiveness of the protected area management a number of tools have been developed so far to assess the management practices. It is clear that the existence of a wide range of situations and needs require different methods of assessment. The World Commission on Protected Areas (WCPA) has therefore developed a 'framework' for assessment (www.biodiv.org/decisions). The WCPA Framework aims to provide overall guidance in the development of assessment systems and to encourage standards for assessment and reporting (WWF 2007).

According to the WCPA Framework, good protected area management follows a process that has six distinct stages, or elements: it starts with the understanding of the context of existing values and threats, progresses through planning, and allocation of resources (inputs), and as a consequence of management actions (processes), eventually produces products and services (outputs), that result in impacts or outcomes (WWF 2007).

The Management Effectiveness Tracking Tool is one of a series of management effectiveness assessment tools built around the WCPA Framework, which range

from the WWF Rapid Assessment and Prioritization Methodology used to identify key protected areas at threat within a protected area system to detailed monitoring systems such as that developed by the Enhancing our Heritage project for UNESCO natural World Heritage sites. Having this range of tools in place will aid the many countries who are signatories to the Convention on Biological Diversity (CBD) in fulfilling their commitments. In particular at the 7th CBD Conference of the Parties in 2004, 188 member countries agreed a Programme of Work on Protected Areas (www.biodiv.org/decisions), one of the most ambitious environmental strategies in history. As part of the Programme Nations have committed to develop assessment systems and report on the effectiveness of 30 per cent of their protected areas by 2010 (Dudley et. al. 2005).

2.3 THE WCPA FRAMEWORK

To improve management processes and to increase the potential of protected areas there is a need to understand the strengths and weaknesses of their management and the threats that they face. The World Commission on Protected Areas provides an overarching framework for assessing management effectiveness of both protected areas and protected area systems, to give guidance to managers and others and to help harmonise assessment around the world (WWF 2007). Table 1 as mentioned in the Annex I explains briefly about the summary of the elements of the WCPA Framework and the criteria that

can be assessed (www.biodiv.org/decisions). The World Bank/WWF Management Effectiveness Tracking Tool has been designed to fulfill the elements of evaluation included in the Framework. However the main purposes of the Tracking Tool were that it needed to be:

- Capable of providing a harmonised reporting system for forest protected area assessment within both the World Bank and WWF
- Suitable for replication
- Able to supply consistent data to allow tracking of progress over time
- Relatively quick and easy to complete by protected area staff, so as not to be reliant on high levels of funding or other resources
- Capable of providing a "score" if required
- Based around a system that provides four alternative text answers to each question, strengthening the scoring system
- Easily understood by non-specialists
- Nested within existing reporting systems to avoid duplication of effort

2.4 AIMS OF THE MANAGEMENT EFFECTIVENESS TRACKING TOOL (METT)

The Tracking Tool aims to report progress on management effectiveness and should not replace more thorough methods of assessment for the purposes of adaptive management. The Tracking Tool has been developed to provide a quick overview

Photo credit: Md. Modinul Ahsan





BOX IV

GENESIS OF METT

IUCN WCPA: The METT was originally developed from work carried out by the IUCN WCPA task force on management effectiveness (see section 7.1). The task force went on to help develop and promote widely PAME assessments in general and the METT in particular during the early years of its development. Those involved have continued to implement the METT across the globe.

CBD: The Programme of Work on Protected Areas (PoWPA) asked Parties to . . . “expand and institutionalize management effectiveness assessments to work towards assessing 60 per cent of the total area of protected areas by 2015 using various national and regional tools, and report the results into the global database on management effectiveness. . .” (CBD, 2004; also see Hockings et al., 2015 for an overview of PoWPA targets). By 2014, Coad et al. found over 17 per cent of countries had already met this target. The METT was one of the most used tools and the frequency of PAME assessment was highest in the tropical forests, where 45 per cent of protected areas have been assessed, which possibly reflects wide use of the METT in these areas due to its initial purpose and targets to assess PAME in forested protected areas.

GEF: The METT is the first area-based tracking tool to become a requirement for GEF-financed operations. METTs for all protected areas supported by a project are submitted at three stages (i.e. three times) of implementation: (i) at CEO Endorsement for full-sized (FSP), or CEO approval for medium-sized projects (MSP), (ii) at project midterm and (iii) at project completion (Swartzendruber, 2013). At both the project and portfolio level, the GEF is using the METT as a proxy for biodiversity status and condition and as a measure of one key contributing factor towards ensuring the sustainability of a protected area system, i.e., effectively managed individual protected areas must be considered a cornerstone of a sustainable system, notwithstanding key aspects of sustainability such as financing, institutional sustainability and capacity, and ecosystem and species representation that may not be directly assessed at the system level (Zimsky et al., 2010). The GEF thus makes the assumption that project interventions leading to improvements in protected area management will have a positive impact on biodiversity (Coad et al, 2014). The GEF supports this assumption with evidence from studies, such as one carried out in Zambia, which used the adapted METTPA Z, which found that increases in METT scores were correlated with improvements in biodiversity outcomes (Zimsky et al., 2010). The GEF has data from some 2,440 METTs from 1,924 PAs in 104 countries (GEF, 2015). The main adaptations of the latest version (Tracking Tool for GEF-6 Biodiversity Projects¹⁰) include changes to the datasheets in relation to biodiversity objectives and the threat assessment; and question 30 has been adapted specifically to assess the status of the biodiversity outcomes stated in the tools datasheets. Of note is that the tool only includes comments and next steps narrative fields and does not ask for justification of the assessment response.

World Bank: The Bank used the METT for reporting on all its protected area projects and was a major mover in the wider uptake of protected area assessment by the GEF and CBD.

WWF: WWF used the METT in over 200 forest protected areas in 37 countries during 2003-4 (Dudley et al., 2004), and again in over 100 protected areas in 2005-6 (Dudley et al., 2007). The results of the METT helped WWF to identify minimum management standards for application in its protected area projects and also helped to shape the work programme and targets for WWF’s global programme (Dudley et al., 2007). More recently, the METT has been used extensively by WWF and partners as the first stage in the Conservation Assured | Tiger Standards (CA|TS) development.

of progress in improving the effectiveness of management in individual protected areas, to be filled in by the protected area manager or other relevant site staff. As such it is clear that there are limitations on what it can achieve: it should not for example be regarded as an independent assessment, or as the sole basis for adaptive management.

Because of the great differences between expectations, resources and needs around the world, the Tracking Tool also has strict limitations in terms of allowing comparison between sites: the scoring system, if applied at all, will be most useful for tracking progress over time in one site or a

closely related group of sites. The Tracking Tool has however been used to identify trends and patterns in management of protected areas across a number of sites.

Lastly, the Tracking Tool is too limited to allow a detailed evaluation of outcomes and is really aimed at providing a quick overview of the management steps identified in the WCPA Framework up to and including outputs. Clearly, however good management is, if biodiversity continues to decline, the protected area objectives are not being met. Therefore the questions on condition assessment have disproportionate importance in the overall Tracking Tool.

2.5 METT TO UNDERSTAND MANAGEMENT EFFECTIVENESS

The METT is designed primarily to track progress in PAME over time and to identify actions to rectify any weaknesses in management; it was not designed as a way of comparing management between different sites. Nonetheless, the existence of a growing database of METT results has encouraged researchers to use the METT as a way of identifying more general information on protected area strengths, weaknesses, regional variations and progress over time. Whilst noting the limitations of



Photo credit: Samiul Mohsanin

using METT data in this way these studies nonetheless provide some useful pointers for management and show an additional use of the METT.

Soon after the METT was first developed, during 2003-2004, WWF carried out two analyses of METT data, drawing on successive applications in forest protected areas (Dudley et al, 2004; Dudley et al, 2004a). Analysis of around 200 forest protected areas suggested that management effectiveness tended to increase with length of establishment and pinpointed important regional differences, with management at that stage being particularly weak in Latin America. Key threats were from poaching and illegal timber extraction, encroachment and over-collection of non-timber forest products. Strengths and weaknesses of management were highlighted, along with those aspects of management which correlated with success.

Bangladesh though having 39 PAs in total but still the management of those PAs does not have any structured effectiveness measurement tool by which the impact of management actions can be evaluated. This exercise is an initiative to start a formal measurement tool to assess the effectiveness of management efficiency of the PAs of Bangladesh which will ultimately help in wildlife conservation.

2.6 GUIDANCE NOTES FOR USING THE TRACKING TOOL

The METT has been designed to be a simple and rapid site assessment system. We recognize that there

will be some variation in the way that it is completed depending on the circumstances and time available for any particular assessment; however the tool is beginning to provide a useful dataset on protected areas globally and thus we would encourage people to add additional questions to suit local circumstances rather than modify the Tracking Tool. The following guidance on process should assist in making an assessment of Management Effectiveness as rigorous, reliable and useful as possible. National or regionally specific guidance can be prepared to provide more contexts for the completion of the Tracking Tool across a protected network or system. More general guidance on undertaking management effectiveness assessments can be found in the WCPA Framework (Hockins et. al 2006).

2.7 PROCESS FOR COMPLETING THE TRACKING TOOL

The Tracking Tool contains a set of questions that have been designed to be easily answered by those managing the protected area without any additional research. However, it is useful to review the results of existing monitoring and to spend sufficient time discussing each aspect of management being assessed to arrive at a considered judgment. In most cases, a group of protected area staff from the reserve, project staff or other agency staff should be involved in answering the questions in the Tracking Tool; where possible additional external experts, local community leaders or others with knowledge and interest in the area

and its management should also be involved (Hockins et. al 2006).

When repeat assessments are undertaken it is advisable to use at least some of the same team members who undertook previous assessments. Where this is not possible the information provided by previous assessors in the text fields of the Tracking Tool will be particularly valuable in guiding the assessment and ensuring consistency in the evaluation being made (Hockins et. al 2006).

2.8 USING THE METT TO INCREASE EFFECTIVE MANAGEMENT

In addition to reviews of the results of the METT the two most fundamental questions related to 15 years use of the tool are:

- Does using the METT help increase the management effectiveness of protected areas?
- Do the METT results correlate with other indicators of protected area effectiveness in terms of outcomes?

In relation to the first question, a clear strength of the METT is that it allows for progress to be measured over time in relation to specific management issues (Higgins-Zogib and MacKinnon, 2006). If the METT is to have a role in increasing PAME and helping countries reach the Aichi Biodiversity Targets (see Stephenson et al., 2015), specifically target 11 which call for “through effectively and equitably managed, ecologically representative and well-connected systems of protected areas” (CBD, 2010), this implies that

the METT findings are reflected in subsequent management decisions (e.g. through adaptation, funding or action plans). This positive relationship is most evident in regional/jurisdictional use of the METT, with examples provided in a range of reports.

The second question relates to the validity of the METT results and the relationship of those results to conservation actions. As noted, the METT does not focus on outcome assessments but rather whether the core components of effective management are in place to achieve conservation. As Coad et al. (2015) note: “It is important to understand the causes of success or failure of management: without such an analysis, attempts to improve performance may be ineffective. The rationale for PAME, while focused on facilitating effective management rather than building a scientific evidence base, is therefore, in part, to understand the impacts of protected area management”. The METT can thus be a useful contributor to a range of datasets, rather than providing the sole dataset, to help practitioners assess conservation outcomes (see for example Forrest et al., 2011 and Henschel et al., 2014).

The most detailed paper on impact evaluation in protected areas was published by Coad et al. in 2015. This looked at the impact of protected area management on biodiversity outcomes. It used the whole dataset of PAME results held in the Global Database for Protected

Area Management Effectiveness, which at the time held almost 18,000 PAME assessments and in addition assessed the peer-reviewed literature on how PAME data had been used in impact evaluation. The authors found that the paucity of data from appropriate counterfactuals (i.e. a “counter-to-fact conditional” such as the status of an area if had not been declared a protected area, or certain management activities had not happened) means that the PAME data are not ideally suited to the needs of scientific impact assessment. However they concluded that: “When suitably combined with independent measures of PA impact that have employed appropriate counterfactual methodologies, PAME data can help increase our understanding of the impact of aspects of PA management on conservation outcomes” (Coad et al., 2015).

Overriding both the above questions is the need to be confident that the METT score does indeed provide a useful reflection of management realities. In the research carried out by Geldmann et al (2015), which focused on 722 sites that had completed at least two METT assessments, the authors specifically addressed the criticism that METT scores are not an accurate reflection of reality on the ground. They note that in general most repeated METT assessments produce scores that suggest improvement in management over time, as would be expected

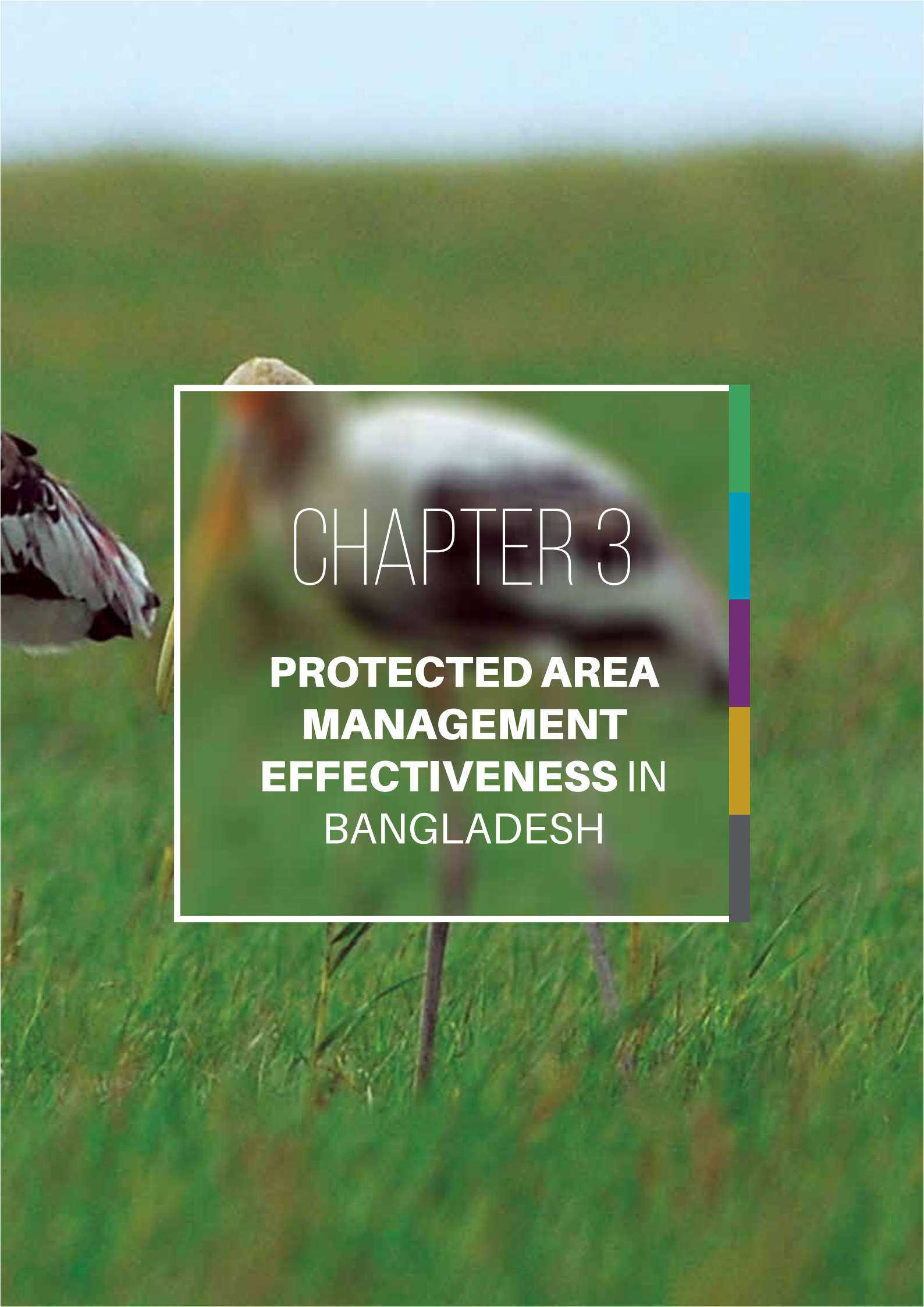
if increased METT scores were indicative of real improvements, but some 30 per cent experienced no change, or even declines, in overall scores. They conclude that this “is a considerable proportion had there been systematic manipulation of scores”. The authors noted that although this: “does not represent definitive causal evidence that scores are not manipulated, it does suggest that at least some of the observed changes can be attributable to actual changes in management effectiveness on the ground”.

There is little evidence that protected area staff routinely inflate scores to make themselves look better although trends can be observed. Carbutt and Goodman (2013) assessed use of the METT in South Africa. They noted that field staff members tend to be so closely involved with day-to-day activities that they lose objectivity, and tend to be too negative and score low. Senior management come with a more strategic viewpoint and, in the absence of the day-to-day realities, tend to score too high. Hence they stress the need to encourage a range of viewpoints and opinions and to facilitate dialogue until a consensus score is reached. Similarly Zimsky et al. (2010) found that when completed using a rigorous process in Zambia, the METT was assessed as a suitable performance metric for PAME, backing up the findings of WWF’s analysis of METT results in 2004 and 2006 (Dudley et al, 2007).

Photo credit: Samiul Mohsanin



Painted Stork



CHAPTER 3

PROTECTED AREA MANAGEMENT EFFECTIVENESS IN BANGLADESH

CHAPTER 3

PROTECTED AREA MANAGEMENT EFFECTIVENESS IN BANGLADESH

3.1 BANGLADESH CONTEXT OF TRACKING MANAGEMENT EFFECTIVENESS

As it was mentioned earlier that Management Effectiveness Tracking Tool (METT or Tracking Tool) has been developed to help track and monitor progress in the achievement of the World Bank/WWF Alliance worldwide protected area management effectiveness target. It is also hoped that the Tracking Tool will be used more generally where it can help monitor progress towards improving management effectiveness; for example it is now obligatory for all Global Environment Facility protected area projects to use the Tracking Tool three times during the projects lifespan and the tool has been modified for use in several national protected area systems. In addition, use of the Tracking Tool can help managers track progress in implementing protected areas commitments under the Convention on Biological Diversity and the Ramsar Convention on Wetlands.

Since the METT has been using by many different countries for measuring the effectiveness of the PA, Bangladesh too need to use this. By this, Bangladesh can compare her management efficiency with other countries. This can only be possible when each country uses the same tool. With this project forest department can identify the laps and gaps in the PA management of the country and hence can take management decisions for the betterment of the PA conservation.

3.2 LESSONS LEARNED FROM OTHER PROJECT

The Integrated Protected Area Co-management (IPAC) Project of Forest Department funded by USAID carried out an rapid assessment in 19 PA in 2010 (IPAC 2012). The assessment combined both Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) methodology and TNC's Site Consolidation Scorecard. The assessment found that the PAs were enduring a wide variety of pressure and threats (Fig 1). Amongst all, illegal logging, encroachment, fuel-wood collection, land-use change, hill cutting and slash burning, and non-timber forest products collection are the most pressing issues concerning the PAs (IPAC 2012). It was also found that almost half of these PAs have very limited management capacity to tackle the pressure on the ground (Fig 2). The management effectiveness of 19 PAs was not found satisfactory – most of those lacks limited budget, capacity, and infrastructure to carry out effective management.

The Forest Department has been focusing to reduce the pressure or threats through development programs (for example, Nishorgo Support Project 2004-2008; Integrated Protected Area Co-management Project 2009-2013; Climate Resilient Ecosystems & Livelihood project 2012-2017; Sundarbans Environmental And Livelihood Security – SEALS project 2010-2014; Strengthening Regional Cooperation for Wildlife Protection – SRCWP project 2012-2016). Common strategies of

Fig 1: Degree of Pressures and Threats on Protected Areas (source: IPAC 2012)

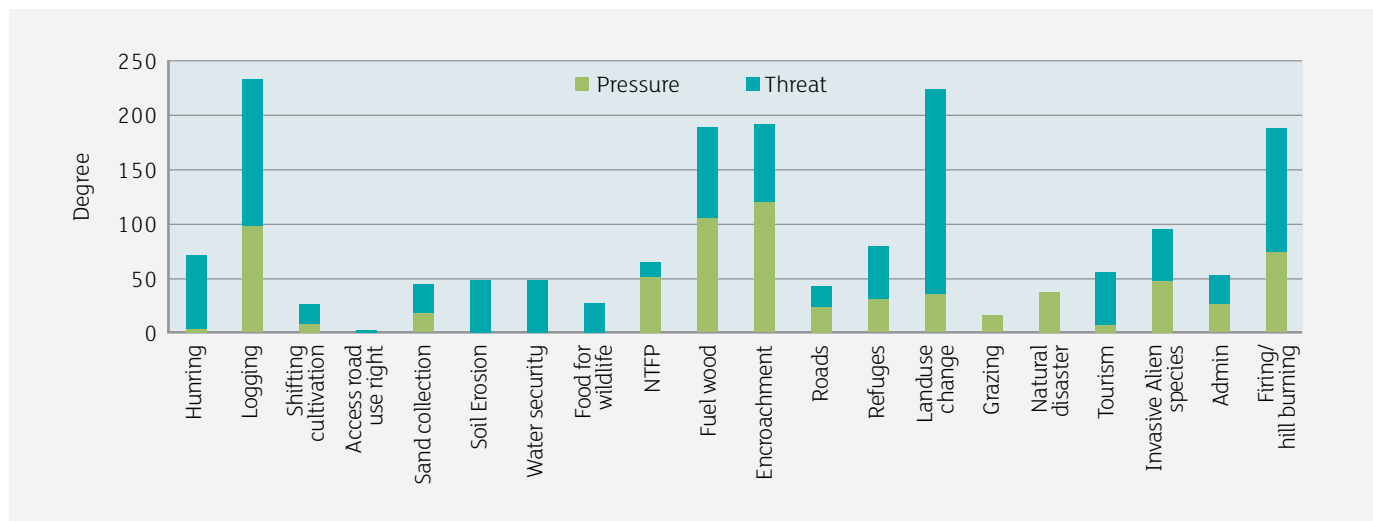
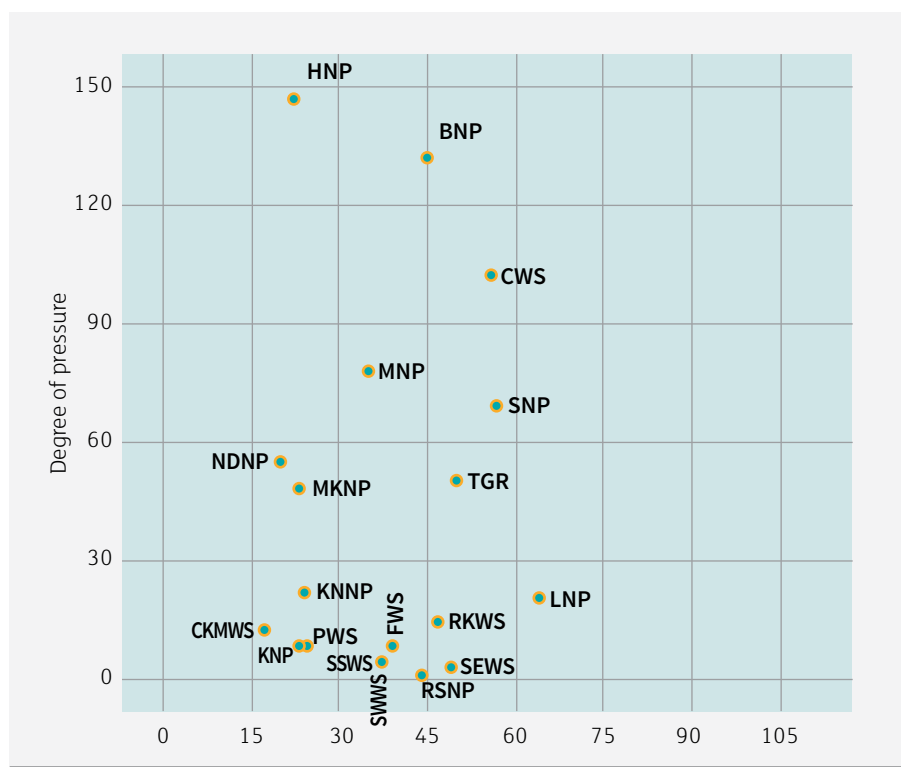


Fig 2: Pressure and Management Effectiveness (source: IPAC 2012)



these projects includes provisioning of alternative income generating (AIG) activities to dependent communities, dissemination of improved cook stove to reduce pressure on fuel-wood, improve protection either by community patrolling or by introducing MIST/

SMART patrolling system (under SEALS, SRCWPP and BAGH Project in the Sundarbans), development of physical infrastructure, capacity building training to PA staff, provisioning of innovative sustainable financing mechanism, and co-management system.

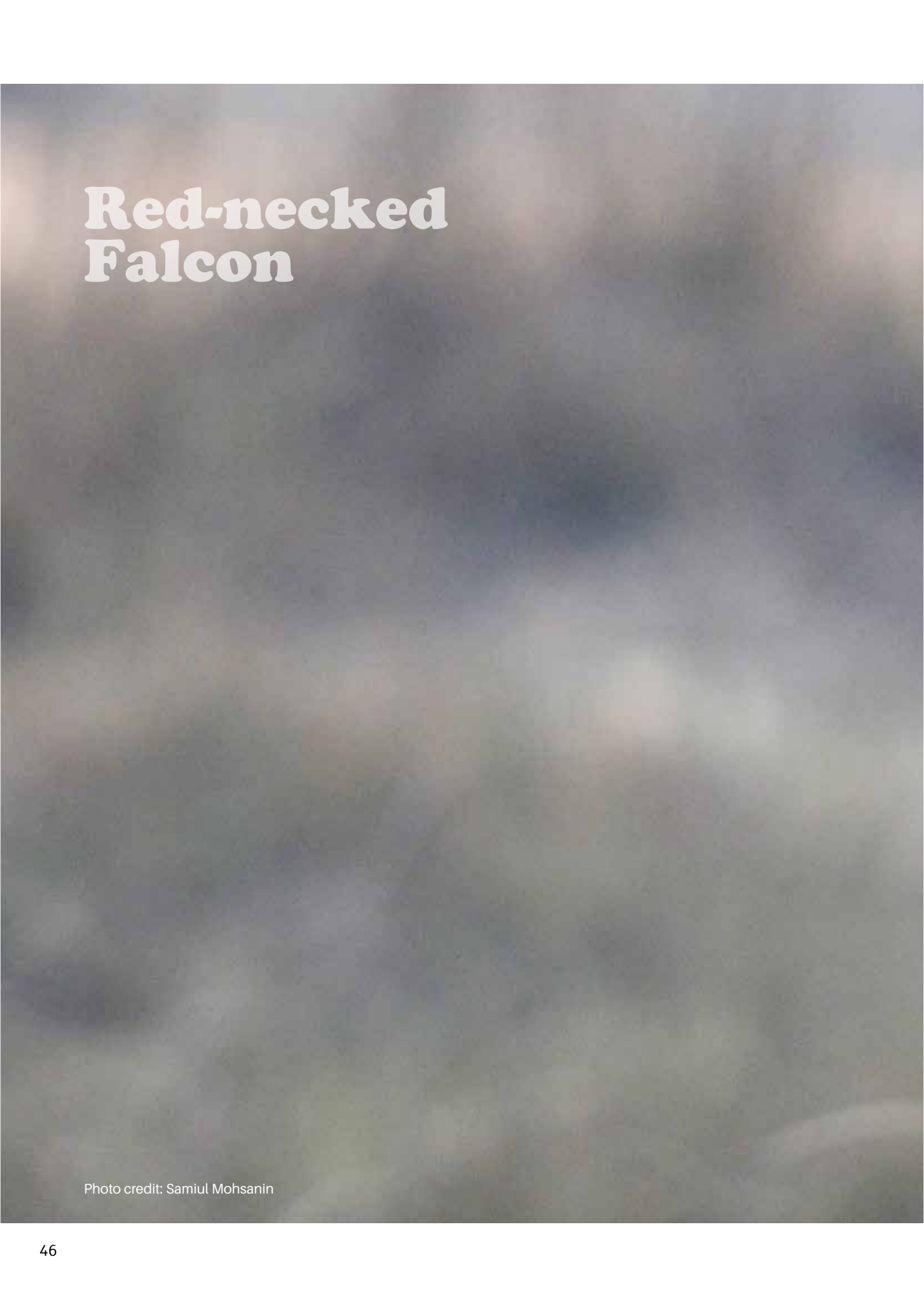
3.3 CURRENT STATE OF PROTECTED AREA MANAGEMENT EFFECTIVENESS

3.3.1 Introduction

The present assessment has the objective to use METT across all 37 PAs to evaluate management capacity as well as assess the utility as a regular / periodic monitoring tool to improve the capacity of the management to meet conservation objective. The main objective of the assessment was to assess the management effectiveness of all forest projected areas in the country.

3.3.2 Study Area

The exercise was carried out in two steps; first piloting was done in 6 PAs (Lawachara NP, Modhupur NP, Nijhum Dweep NP, Teknaf WS, Kaptai WS and Sundarbans South Wildlife Sanctuary) with the technical assistance from IUCN expert and later rest 31 PA was done via conducting workshops at the site level. . The map of the PAs is shown below:

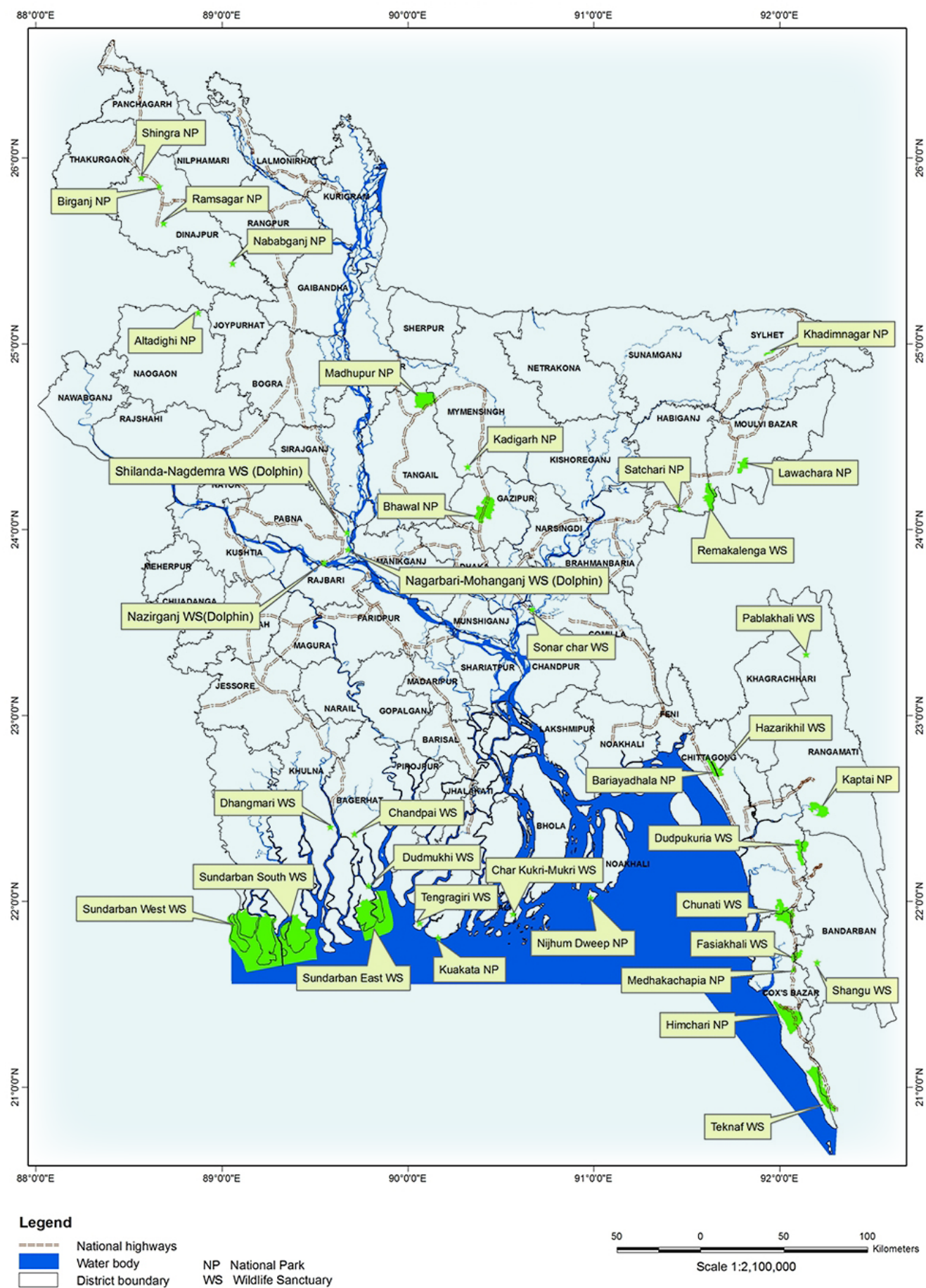


Red-necked Falcon

Photo credit: Samiul Mohsanin



Map 2: Map of Protected Areas of Bangladesh



3.3.3 Materials and method

The management effectiveness assessment was done based on the approach of the WWF / World Bank - Management Effectiveness Tracking Tool (METT) (Stolton et. al. 2007) as per the requirement of the project. The Tracking Tool has two main sections: datasheets (general and threat) and assessment form (questionnaire/indicators).

1. Datasheets: contextual information including objectives and threats are collected in datasheets. There are two datasheets with each having separate functions as follows:

- **Datasheet-1:** (a) data on the site, e.g., name, size, location, local & IUCN designation (NP, WS), ownership, staff numbers, budget. (b) A second sheet records international designations: i.e. World Heritage, Man and Biosphere sites and Ramsar wetland sites.
- **Datasheet-2:** provides a generic list of threats which protected areas can face and rank their impact on the protected area

2. Assessment Form: The questionnaire in the form assesses all elements of the WCPA Framework – context and planning elements to see if Design and Planning is clear, inputs and processes are adequate and appropriate and outputs and outcomes are delivered as per the plan. The assessment starts with assessing legal context (by use of questionnaire) followed by planning and input issues and process to achieve objectives of the PA itself. The assessment then continues to assess output and outcomes based on the planning, input and process involved.

3. Assessment Form: The questionnaire in the form assesses all elements of the WCPA Framework – context and planning elements to see if Design and Planning is clear, inputs and processes are adequate and appropriate and outputs and outcomes are delivered as per the plan. The assessment starts with assessing legal context (by use of questionnaire) followed by planning and input issues and process to achieve objectives of the PA itself. The assessment then continues to assess output and outcomes based on the planning, input and process involved.

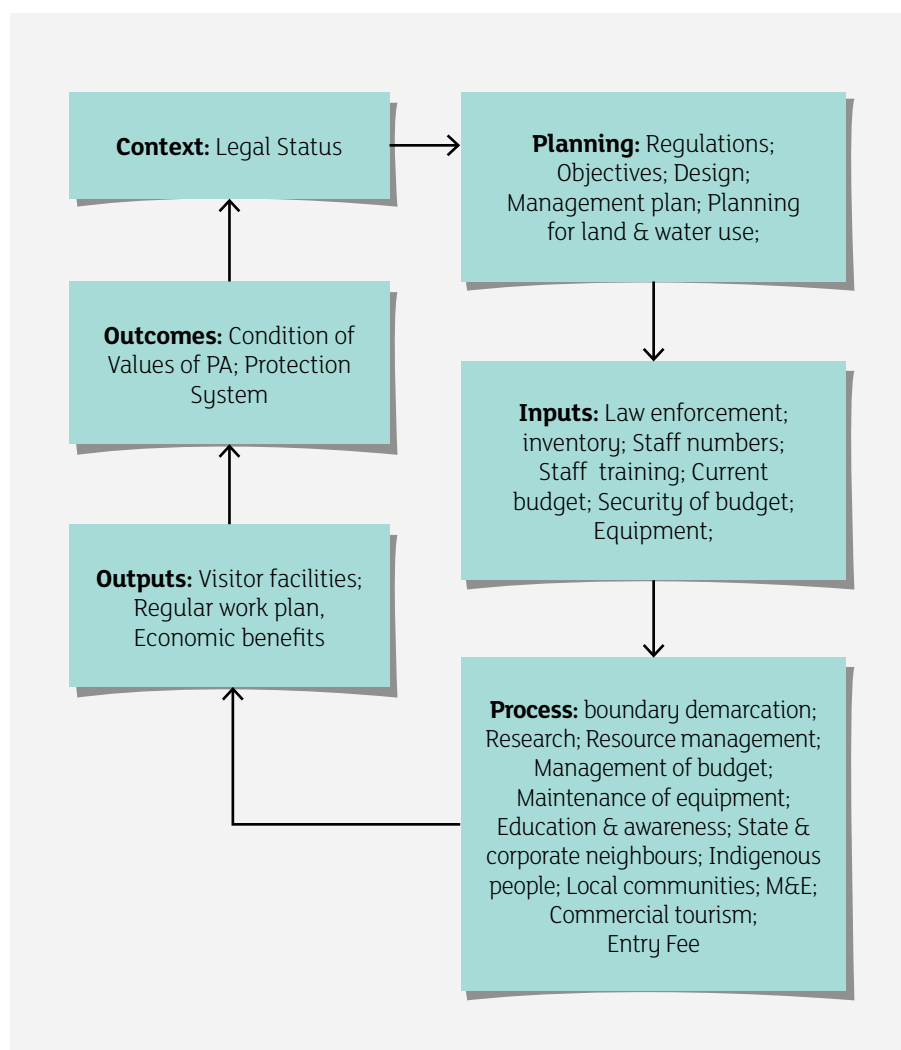
The assessment involves 4 alternative text answers (& corresponding scores from 0-3) to 30 questions to evaluate contextual, planning, inputs, process, outputs and outcome related issues. There are supplementary questions for

four (4) issues (see Table 1). The Assessment Form includes Text fields for recording justification for assessment, sources used and steps to be taken to improve the management issue.

Assessment and scoring starts by selecting any 4 alternative answers appropriate for the PA in question. The 4 alternative answers are assigned a score between 0 (poor) to 3 (excellent). The answer that best match the situation on the ground is selected. Supplementary questions elaborates on key themes & provide additional points (+1) if selected. Questions that are not relevant to a PA are omitted and area not included in final marking. Maximum score of the 30 questions and supplementary questions is 102. Final score is calculated as a % of 102 or % of total score from relevant questions.

Diagram 1: WCPA assessment framework



Diagram 2: Detailed issues for assessment of WCPA framework

3.3.4 Administering METT Assessment

As per the general guidelines (Stolton et. al. 2007) which suggests – no change in the data sheets / questionnaire to allow for comparison across countries. However additional questions can be added to suit country specific circumstances can be included rather than modify the Tracking Tool.

The necessity for additional questions was sought accordingly, during a pre-training workshop held on March 2015. Some additions were done for both the Data Sheet and

Questionnaire based on inputs from Forest Department Officials. The revised Data Sheet and Questionnaire is attached as Annex – 2.

After incorporating inputs, two-day Training of Trainers (TOT) training event was conducted for a total of 20 Forest Department Officials in the month of May 2015. The TOT included both lecture and practical sessions in the Bhawal National Park. The theory part included overview on METT, why it is important, use of METT in the world and how the assessment is carried out – including thorough discussion on the data sheets and assessment form.

The practical session was held in Bhawal National Park. Role play session was used where the TOT participants asked questions to the respondents – i.e., officials of the Bhawal National Park. Subsequent to TOT, the Forest Department carried out piloting in 6 PAs in the month of June-August 2015, involving trained officials in evergreen, deciduous and coastal ecosystem.

Based on the experience from piloting, detailed schedule / field plan was developed and full scale implantation of METT was carried out from December 2015 to December 2016. The assessment team generally welcomed all participants and briefed about the scope and objective of the assessment – sharing with them the data sheets and questionnaire. The Assessment Team filled out the forms, based on inputs from the respondents by holding workshops. In the workshops there were employees such as Divisional Forest Officers, Assistant Conservator of Forests, Forest Rangers, and Foresters from the forest department. On the other hand, members from Collaborative Management Committee (CMC) were also present in the workshops where CMOs exist. Apart from those, faculties from the University such as Shahjajal University of Science and Technology (SUST) and Khulna University (KU) were also present in some assessment workshops. Representatives from International Union for the Conservation of Nature and Natural Resources (IUCN) and Wildlife Conservation Society (WCS) were also present in some of the exercises. As per their collaborative discussion and agreement – a score for each question was given by the Assessment Team. After completion, summary score obtained was

Table 1 – Detailed issues assessed and corresponding scores

Sl	Issues	Score	Sl	Issues	Score
1.	Legal status	3	16.	Security of budget	3
2.	Protected area regulations	3	17.	Management of budget	3
3.	Law enforcement	3	18.	Equipment	3
4.	Protected area objectives	3	19.	Maintenance of equipment	3
5.	Protected area design	3	20.	Education and awareness programme	3
6.	Protected area boundary demarcation	3	21.	Planning for land & water use + supplementary questions	6
7.	Management plan + supplementary questions	6	22.	State & corporate neighbours	3
8.	Regular work plan	3	23.	Indigenous people	3
9.	Resource inventory	3	24.	Local communities + supplementary questions	6
10.	Protection System	3	25.	Economic Benefit	3
11.	Research	3	26.	M&E	3
12.	Resource management	3	27.	Visitor facilities	3
13.	Staff numbers	3	28.	Commercial tourism	3
14.	Staff training	3	29.	Entry Fee	3
15.	Current budget	3	30.	Condition of Values + supplementary questions	6
Sub-total		48	Sub-total		54
			Total Score		102

informed to the participants. The findings were analyzed at Dhaka Office and report was prepared.

3.4 CURRENT STATE OF PROTECTED AREAS IN BANGLADESH

3.4.1 Basic Information of Protected Areas

3.4.1.1 General

The 37 protected areas of the country has a total area of 265,981 ha, comprised of 17 national parks (NP) and 20 wildlife sanctuaries (WS) (Table 1). These PAs represents 1.8% of total land masses of the country, 10% of total forest land and 17% of forest land managed by Forest

Department (Table 2). The main objective of establishing protected areas in general is to conserve the representative ecosystems like mixed ever green forest, deciduous

forest, mangrove and coastal ecosystem (Table 2).

The mixed evergreen hill forests is 45% of total forest land of which

Table 2: Protected Areas by Category

Categories	Number	Area in ha
All Protected Areas	37	265,981.31
National Park	17	45,746.53
Wildlife Sanctuary	20	220,234.78

Table 3: Proportional representation of PAs System at Country level

Land statistics	Country Area	PAs in %
Forest area managed by Forest Department	1.520 m ha	17.50%
Total Forest land area	2.520 m ha	10.56%
Bangladesh Land area, BBS 2004	14.757 m ha	1.80%

Table 4: Proportional Representation of PAs by Ecosystem types

Ecosystem Types	Total Forest Area (ha)	Protected Area (ha)	%
Mixed evergreen Forest	508,991	85,466.97	17
Mangrove and coastal forest	489,872	163,779.78	33
Deciduous Forest	121,884	14,794.41	12
River & Coastal River		1,648.28	
Pond		291.87	
	1,120,747.00	265,981.31	37

17% is protected (Table 2). Hill forests being most productive land for timber production, has less representation in the PA system. The deciduous forest is 11% of total forest land of which 12% is protected and mangrove and coastal forest represent 44% of total forest area of which 33% is protected (Table 2). Higher representation of coastal forest in protective category is due to

its role not only in representing ecosystem and conserving biodiversity within but also the protection role it plays from cyclone and storm surge.

In general, the main management objectives of the PAs is to conserve the ecosystem, variety of trees, herbs and shrubs, and wildlife. Within these ecosystem live wildlife of national and

international significance (Table 3). For example, the entire Sundarban is world heritage site, and three sanctuaries are established at the outskirts due to undisturbed & remoteness nature to provide safe habitat to tiger and other wildlife. The PAs of mixed forests are home to Asian Elephant, Hoolock Gibbon, other primates, a wide variety of birds and other wildlife. Six protected areas are established to protect Ganges River Dolphin & Irrawaddy Dolphins in both tidal and sweet water ecosystem. Some of the PAs are of historical cultural places i.e., Ramsagar and Altadighi NPs. Some of the PAs have tourism value and objective.

3.4.2 Management & Ownership (administration)

The basic management of the protected areas lies with Forest Department. The Wildlife Management and Nature

Table 5: Management Objectives of Protected Areas

Sl	Protected Areas	Category	Ecosystem	Conservation Focus / Objective	Area	Date of designation	Location	IUCN Category	WDPA site code
1	Khadim-Nagar	NP	Mixed Evergreen	Conservation of forest type and recreation	678.80	13-Apr-06	Sylhet	IV	555543260
2	Lawachara	NP	Mixed Evergreen	Historical plantation, Hoolock Gibbon & other biodiversity, education, recreation and community benefit	1,250.00	7-Jul-96	Moulavi bazar	II	142993
3	Satchari	NP	Mixed Evergreen	Hoolock Gibbon, Leafy monkey, birds, small natural patch of forest conservation, community benefits	242.91	15-Oct-05	Habigonj	II	555543040
4	Rema-Kalenga	WS	Mixed Evergreen	Hoolock Gibbon, Leafy monkey, Malayan Giant squirrel, vulture, birds, natural forest conservation, community benefits	1,795.54	7-Jul-96; 12/22/1981	Hobigonj	II	9279

Sl	Protected Areas	Category	Ecosystem	Conservation Focus / Objective	Area	Date of designation	Location	IUCN Category	WDPA site code
5	Pabla khali	WS	Mixed Evergreen	Home to Asian Elephant and primates like, capped langur, Hoolock Gibbon, Rhesus Macaque, & other species including birds, Asiatic Black Bear	42,069.37	20-Sep-83	Chittagong Hill Tracts	II	9280
6	Kaptai	NP	Mixed Evergreen	Historical plantation of 1873, a wide variety wildlife including elephant, tourism	5,464.78	9-Sep-99	Chittagong Hill Tracts	II	4474
7	Sangu	WS	Mixed Evergreen	Rich biodiversity, mainly Elephant, tourism	2,331.98	6-Apr-10	Bandarban	II	555576106
8	Teknaf	WS	Mixed Evergreen	Asian Elephant, mixed forest including pure Dipterocarp patch, tourism	11,614.57	24-Mar-10; 17-Nov-83	Cox's Bazaar	IV	9281
9	Himchari	NP	Mixed Evergreen	Tourism; attraction water fall	1,729.00	15-Feb-80	Cox's Bazaar	IV	4480
10	Medha Kachchhapia	WS	Mixed Evergreen	Pure Dipterocarp stand, Asian Elephant, tourism	395.92	4-Apr-04	Cox's Bazaar	IV	555543261
11	Fashiakhali	WS	Mixed Evergreen	Home to Asian Elephant,	1,302.42	11-Apr-07	Cox's Bazaar	IV	555543041
12	Chunati	WS	Mixed Evergreen	Breeding habitat of Asian Elephant, mixed forest including pure dipterocarp patches	7,763.97	18-Mar-96	Chittagong	IV	12196
13	Dudh-pukuria-Dhopachari	WS	Mixed Evergreen	Hoolock Gibbon, Elephant, natural forest	4,716.57	6-Apr-10	Chittagong	IV	555543043
14	Hazarikhil	WS	Mixed Evergreen	Wild goat, & other plant and wildlife.	1,177.53	6-Apr-10	Chittagong	II	4471
15	Baroiyadhala	NP	Mixed Evergreen	Biodiversity, Nature & Tourism	2,933.61	6-Apr-10	Chittagong	II	555543042
16	Nijhum Dweep	NP	Mangrove Forest	Conservation & protection of coastal forest & communities	16,352.23	8-Apr-01	Noakhali	IV	317318
17	Char Kukri-Mukri	WS	Mangrove forest	Conservation of coastal forest	40.00	19-Dec-81	Bhola	IV	4470
18	Kuakata	NP	Coastal ecosystem	Landscape i.e., forest, sea beach, tourism	1,613.00	24-Oct-10	Patuakhali	II	555576102
19	Sonarchar	WS	Coastal Mangrove (planted)	Island, natural scenic beauty, planted coastal forest & wildlife	560.00	29-Jan-12	Patuakhali	II	555576109
20	Tengragiri	WS	Coastal ecosystem	Recreation and Tourism	4,048.58	24-Oct-10	Barguna	II	555576098

Sl	Protected Areas	Category	Ecosystem	Conservation Focus / Objective	Area	Date of designation	Location	IUCN Category	WDPA site code
21	Sundarban (East)	WS	Mangrove Forest	Mangrove forest, protection of Bengal Tiger	31,226.94	6-Apr-96	Bagerhat	IB	4476
22	Sundarban (West)	WS	Mangrove Forest	Mangrove forest, protection of Bengal Tiger	71,502.10	6-Apr-96	Satkhira	IB	4477
23	Sundarban (South)	WS	Mangrove Forest	Mangrove forest, protection of Bengal Tiger	36,970.45	6-Apr-96	Khulna	IB	4478
24	Chandpai	WS	Tidal River	Ganges River Dolphin & Irrawaddy Dolphins	560.00	29-Jan-12	Bagherhat	II	555576111
25	Dudmukhi	WS	Tidal River	Ganges River Dolphin & Irrawaddy Dolphins	170.00	29-Jan-12	Bagherhat	II	555576110
26	Dhaingmari	WS	Tidal River	Ganges River Dolphin & Irrawaddy Dolphins	340.00	29-Jan-12	Bagherhat	II	555576112
27	Bhawal	NP	Deciduous Forest	Deciduous Sal forest & Rhesus macaque & tourism	5,022.29	11-May-82	Gazipur	IV	4479
28	Modhupur	NP	Deciduous Forest	Deciduous Sal forest & Rhesus macaque & tourism	8,436.13	24-Feb-82	Tangail / Mymensingh	IV	4481
29	Kadigarh	NP	Deciduous Forest	Deciduous Sal forest & tourism	344.13	24-Oct-10	Mymensingh	IV	555576101
30	Ramsagar	NP	Man-made pond	Historical place (pond); Tourism	27.75	30-Apr-01	Dinajpur	IV	7972
31	Shingra	NP	Deciduous Forest	Natural Sal forest, tourism	305.69	24-Oct-10	Dinajpur	IV	555576108
32	Nababgonj	NP	Deciduous Forest	Natural Sal forest, tourism	517.61	24-Oct-10	Dinajpur	IV	555576103
33	Birgonj	NP	Deciduous Forest	Natural Sal forest, tourism	168.56	14-Dec-11	Dinajpur	IV	555576100
34	Alta Dighi	NP	Man-made pond	Historical water body, tourism	264.12	14-Dec-11	Nagaon	IV	555576099
35	Nagarbari-Mohongonj	WS	River	Ganges River Dolphin	408.11	1-Dec-13	Bera, Pabna	IV	555576104
36	Shilonda-Nagdemra	WS	River	Ganges River Dolphin	24.17	1-Dec-13	Sathia, Pabna	IV	555576107
37	Nazirgonj	WS	River	Ganges River Dolphin	146.00	1-Dec-13	Sujanagar, Pabna	IV	555576105

Conservation Circle was re-established in 2001 to manage the wildlife and PAs of the country. However, due to limited staff, the capacity of the circle is limited. Therefore, out of 37 PAs to date, only 3 PAs are managed by Wildlife and Nature Conservation Circle and

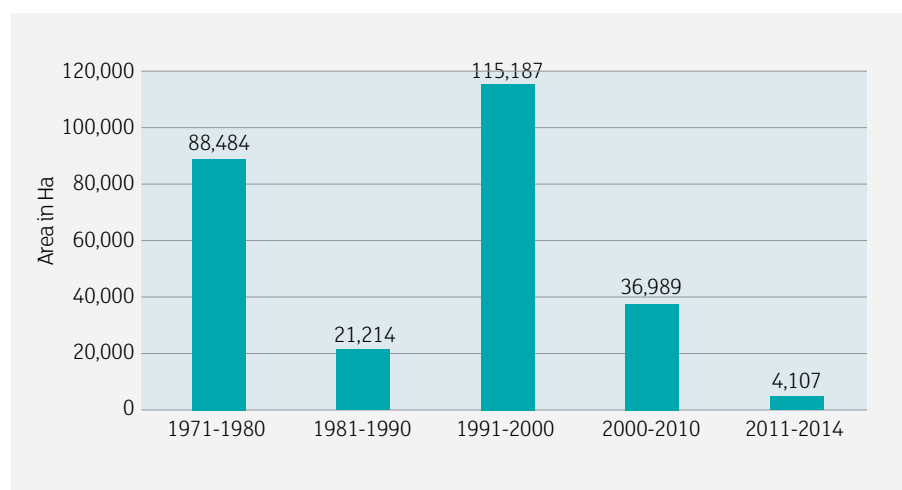
26 PAs are managed by territorial circle, 8 PAs managed by Social Forestry Circle (Table 4).

3.4.3 Staffing & Community Participation

The forest department lacks an acute shortage of manpower

which is one of the major factors in poor forest management let alone the protected area management. It was found in the management effectiveness exercise that many protected areas do not have dedicated staff for PA management. In most of the cases

Fig 3: Protected Area Designation by Decades



(except LNP, RKWS, SNP etc.) the staffs are generally remains busy with traditional duties. It was very difficult to get the real number of man power who is dedicatedly working for the PA. However it was

found during the exercise that there was a total of 378 permanent staff, 22 temporary project staff were involved in regular day to day management and protection of protected area.

Three PAs i.e., Chandpai, Dudmukhi and Dhaingmari WS are sections of river within the Sundarban reserve forests that do not have staff but are patrolled under the adjacent patrol station. The fresh water PAs of Nagarbari-Mohongonj, Shilonda-Nagdemra and Nazirgonj (Dolphin) Wildlife Sanctuaries also do not have any staff, and there is no adjacent forest area to enable official to enforce protection in a regular basis. These three PAs are partially seen by community groups formed by Fisheries Department.

3.4.4 Annual Budget

Annual budget except salary cost could not be obtained, as PAs are not managed separately. As mentioned in Section 3.1.2, 34 PAs are managed under territorial and social forest divisions. But

Table 6: Management of Protected Areas

Sl	Protected Areas	Ecosystem	Management Authority	People's participation	Date of notification of CMC
1	Khadim Nagar	Mixed Evergreen	Sylhet Forest Division	Yes	19/10/2009
2	Lawachara	Mixed Evergreen	Wildlife Management and Nature Conservation Division, Sylhet	Yes	25/09/2005
3	Satchari	Mixed Evergreen	Sylhet Forest Division	Yes	17/09/2006
4	Rema-Kalenga	Mixed Evergreen	Sylhet Forest Division	Yes	10/09/2005
5	Pabla khali	Mixed Evergreen	Chittagong Hill Tracts North Forest Division, Rangamati	No	-
6	Kaptai	Mixed Evergreen	Chittagong Hill Tracts South Forest Division, Rangamati	Yes; two CMCs	23/08/2009
7	Sangu	Mixed Evergreen	Bandarban Forest Division, Bandarban	No	-
8	Teknaf	Mixed Evergreen	Cox's Bazaar South Forest Division	Yes; two CMCs	29/08/2005 & 06/08/2006
9	Himchari NP	Mixed Evergreen	Cox's Bazaar	Yes	07/07/2010
10	Medha Kachchhapia	Mixed Evergreen	Cox's Bazar North Forest Division	Yes	17/11/2009
11	Fashiakhali	Mixed Evergreen	Cox's Bazaar	Yes	23/12/2009
12	Chunati	Mixed Evergreen	Wildlife Management and Nature Conservation Division, Chittagong	Yes; two CMCs	28/08/2005 & 09/11/2006
13	Dudhpukuria-Dhopachari	Mixed Evergreen	Chittagong North Forest Division	Yes; two CMCs	22/05/2011 & 09/01/2012
14	Hazarikhil	Mixed Evergreen	Chittagong South Forest Division	Yes	27/11/2014

Sl	Protected Areas	Ecosystem	Management Authority	People's participation	Date of notification of CMC
15	Baroiyadhala	Mixed Evergreen	Chittagong North Forest Division, Chittagong	No	-
16	Nijhum Dweep	Mangrove Forest	Coastal Forest Division, Noakhali	Yes	24/9/2014
17	Char Kukri-Mukri	Mangrove Forest	Coastal Forest Division, Bhola	No	-
18	Kuakata	Coastal Mangrove	Coastal Forest Division, Patuakhali	No	-
19	Sonarchar	Coastal Mangrove	Coastal Forest Division, Patuakhali	No	-
20	Tengragiri	Coastal Mangrove	Coastal Forest Division, Patuakhali	No	-
21	Sundarban (East)	Mangrove Forest	Sundarban East Forest Division, Bagerhat	Yes; two CMCs	04/02/2010 & 12/04/2010
22	Sundarban (West)	Mangrove Forest	Sundarban West Forest Division,, Khulna	Yes	17/08/2011
23	Sundarban (South)	Mangrove Forest	Sundarban West Forest Division, Khulna	Yes	13/12/2011
24	Chandpai	Tidal River Ecosystem	Sundarban East Forest Division, Bagerhat	No	-
25	Dudmukhi	Tidal River Ecosystem	Sundarban East Forest Division, Bagerhat	No	-
26	Dhaingmari	Tidal River Ecosystem	Sundarban East Forest Division, Bagerhat	No	-
27	Bhawal	Deciduous Forest	Wildlife Management and Nature Conservation Division, Dhaka	No	-
28	Modhupur	Deciduous Forest	Tangail Forest Division, Tangail	Yes; two committees	27/12/2010 & 14/03/2011
29	Khadigar	Deciduous Forest	Mymensing Forest Division	No	-
30	Ramsagar	Man-made pond	Dinajpur Social Forestry Division	no	-
31	Shingra	Deciduous Forest	Dinajpur Social Forestry Division	No	-
32	Nababgong	Deciduous Forest	Dinajpur Social Forestry Division	No	-
33	Birgonj	Deciduous Forest	Dinajpur Social Forestry Division	No	-
34	Altadighi	Deciduous Forest	Rajshahi Social Forestry Division	No	-
35	Nagarbari-Mohongonj	Riverine Ecosystem	Pabna Social Forestry Division	Yes, under fisheries dept	-
36	Shilonda-Nagdemra	Riverine Ecosystem	Pabna Social Forestry Division	As above	-
37	Nazirgonj	Riverine Ecosystem	Pabna Social Forestry Division	As above	-

nevertheless, PAs are generally ill funded apart from irregular support from project funds.

3.4.5 Designations International Category

Most of the PAs fall in IUCN Category II i.e. National Park, Category IV i.e., Habitat / Species management Area and Category Ib i.e., Wilderness Area. The Wildlife Sanctuary are equivalent to species

management and wilderness Area category. But in true sense the PAs are not managed according to the objectives of the PAs.

3.5 THREATS TO PROTECTED AREAS OF BANGLADESH

Scoring system of threats

A scoring system was used to compare threats among the PAs,

where 5, 3, 1 & 0 was assigned for level of threats i.e., High, Medium, Low and Not Applicable respectively. Highest score becomes 305 for any PA and for comparison, percentage figure was used. Although scoring is not used for threat assessment under the METT's approach, but was used to provide a comparative assessment across threats categories and across PAs. However, some of

the major observations of the assessment are mentioned below:

Threat Score

Percentage score for the THREAT was highest for Bhawal NP (36%), followed by Himchari NP 32%, Medha-Kachchhapi NP (30%), Fasiakhali WS (28%), and Chunati WS (28%) (Graph 5). Threat score for rest of the PAs falls below 20%. Char Kukri-Mukri WS obtained the least score of only 2%.

Among the 12 threat categories, human intrusion and disturbance (24%) is of main concern to PA managers, followed by biological resource use (22%), agriculture and aquaculture (17%), and residential and commercial development within a PA (17%), geological events (15%) (Graph6). Threats facing the PAs are described in descending order below.

3.5.1 Human Intrusions and Disturbance within a Protected Area

Within the human disturbance regime, deliberate vandalism and/or destructive activities are the major contributing factor for the Sundarban South WS and Kaptai NP (see Figure 3 and Table 4).

In Sundarban South WS, human intrusion during the Rashmela (cultural event) has been identified as a major threat, although the event took place outside of WS boundary. As per the PA staffs, during the event, about 0.2-0.3 million people enter within 3-day event. The need for fuelwood, fishing, deer meat are illegally met from the PA.

For Kaptai NP, the situation is quite different. Here human disturbances are in the form of military exercise, insurgency problem and traditional

agricultural practice (Jhum cultivation) poses threats for the PA.

3.5.2 Biological resource use and harm within a protected area

Biological resource use and harm within a PA is characterized by hunting, killing and collecting of terrestrial animals, collection of plants and products, logging and wood harvesting including charcoals, and collection, killing or harvesting of aquatic resource including fish. Overall, threat for Sundarban South WS is killing / poaching of wildlife especially tiger and deer followed by fishing.

In summary, among various biological resource use categories, logging is the highest, followed by hunting and killing of terrestrial animals and collection of terrestrial plants (i.e., NTFPs). Fishing or collection of aquatic resources is a problem where PAs have river system.

Both Kaptai NP and Teknaf NP scored equal in threat category, wherein logging is the common problem, but the magnitude is high in Kaptai. In Teknaf NP, collection of terrestrial plants or products (NTFPs) is more than Kaptai NP. From both PAs, hunting or poaching of wildlife (elephant, deer, jungle fowl, wild boar, snake, toad) occurs but in lower level.

Lawachara and Madhupur NPs are ranked third in the threat category. In Lawachara NP, illegal logging and wood harvesting as well as for fuel wood is categorized medium threat, and the same for Madhupur NP is hunting / killing of wildlife (deer and monkey). Wildlife (deer, wild boar, snake) killing occurs in Lawachara at lower level. Gather of NTFPs also occurs in both PAs at lower level.

3.5.3 Agriculture and aquaculture within a Protected Area

This threat is characterized by – (a) annual and perennial non-timber crop cultivation (including shifting cultivation), (b) drug cultivation (tobacco), (c) wood and pulp plantations, (d) livestock farming and grazing, and (e) marine and freshwater aquaculture.

Madhupur NP ranked top (Figure 3) among the PAs and activities rated high threat category are - annual and perennial crop cultivation, plantations (rubber and acacia) and livestock grazing inside the park. Lawachara and Nijhum Dweep NP are ranked 2nd position together where Lawachara is characterized by threat from betel leaf and lemon cultivation by indigenous communities (undergrowth clearance for cultivation) and the later is threatened by heavy grazing (excessive livestock grazing for coastal grasses following natural succession). Taknaf NP marked third in this category, is characterized by medium threat from agriculture, lower level of threat from plantation and livestock grazing.

3.5.4 Residential and commercial Development within a PA

This threat is categorized by (a) housing and settlement (including refugee settlements), (b) commercial and industrial areas (brickfield, bazaar, etc), (c) tourism and recreation infrastructure, (d) institutions (school, religious establishment), and (e) encroachment (or any other development).

Again, Madhupur NP ranked top (Figure 3) among the PAs

and the only activity rated high threat category is - housing and settlement, followed by establishment of institutions as moderate threat category and commercial and industrial areas as low category. Both Kaptai and Teknaf are ranked 2nd position where the former is characterized by settlements over 1000 households and the later is characterized by settlements as well as encroachment of land. Lawachara is ranked third due to medium threat from indigenous settlements and low threat from tourism.

3.5.5 Geological events

Among the geological events i.e., volcanoes, earth quack/ tsunamis, avalance / landslide and erosions and siltation. The last one is ranked high for Kaptai and Madhupur NP, moderately for Nijhum Dweep and Sundarban South WS, and low for Lawachara and Teknaf NP.

3.5.6 Natural system modifications

The natural system modification is characterized by Fire, Dam, Fragmentation of PA, Isolation, Edge effect, Keystone species loss, Species composition change and Loss of viable population. Among these, most notable one is fire, occurring high in Kaptai, followed by moderately in Teknaf and low in Lawachara NP. Next sub-threat is change in species composition i.e., mostly from natural to monoculture plantations. Loss of keystone species is ranked low but concern showed for Hoолоck Gibbon in Lawachara, Asian Elephant in Teknaf and Capped Langur in Madhupur NP.

3.5.7 Transportation and service corridors within a protected area

Lawachara ranked highest followed by Madhupur in this category. This threat is mainly characterized by road and railway line in Madhupur and Lawachara NP respectively. Utility line i.e., gas pipe line underneath Lawachara NP is also major concern. Shipping lines are seen as threats for Sundarban South WS.

3.5.8 Climate change and severe weather

This threat is highest for Nijhum Dweep NP (being a coastal PA) characterized by storms and flooding (cyclone, twister, tidal surge etc) and increasing salinity, where both these characteristics are ranked moderate. Sundarban South WS is ranked second due to storms and also due to low threat from salinity and sea level rise. Lawachara also has been facing severe storms.

3.5.9 Pollution entering or generated within protected area

Lawachara NP is ranked top which is attributed by sewage and waste water from protected area facilities (mainly toilets) from heavy visitor load and agricultural and forestry effluents (e.g. excess fertilizers or pesticides) from betel leaf cultivation. Madhupur NP is the second ranked mainly due to use of fertilizers and pesticides for agricultural activities.

3.5.10 Invasive and other problematic species and genes

At Lawachara NP, this threat is attributed with invasive plant

(Christmas Bush) and the Nijhum Dweep NP is attributed with introduced spotted deer.

3.5.11 Specific cultural and social threats

This threat is high in Madhupur NP, where - loss of traditional knowledge and /or management practices is attributed as main reason followed by to a lesser extent at Lawachara NP.

3.5.12 Energy production and mining within a protected area

Only Lawachara has threat from mining of natural gas, although not mined inside the PA, but adjacent to it. The pipe line running underneath and the previous history of fire from adjacent gas plant have led to this threat.



Photo credit: Samiul Mohsanin

Fig 4: Comparative Threats of Protected Areas

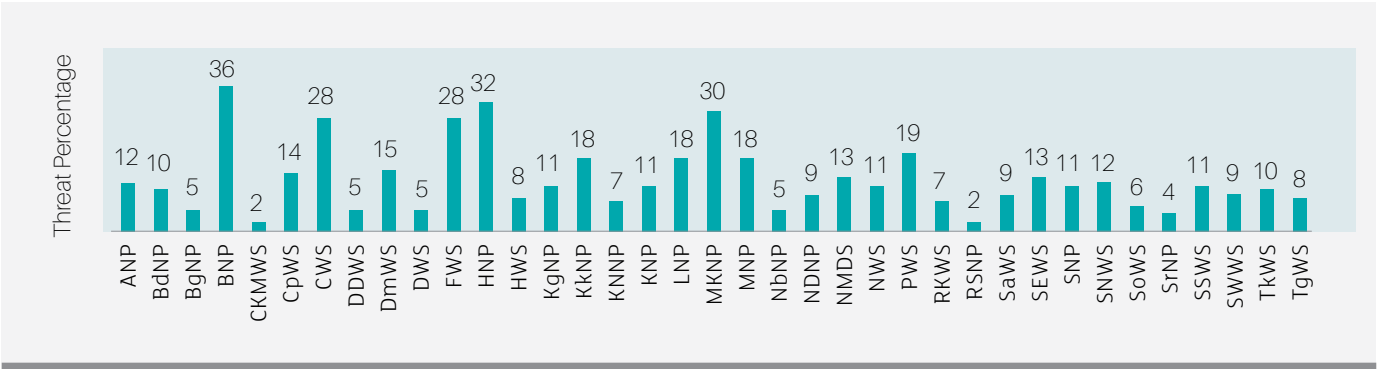


Fig 5: Category of Threats on Protected Areas

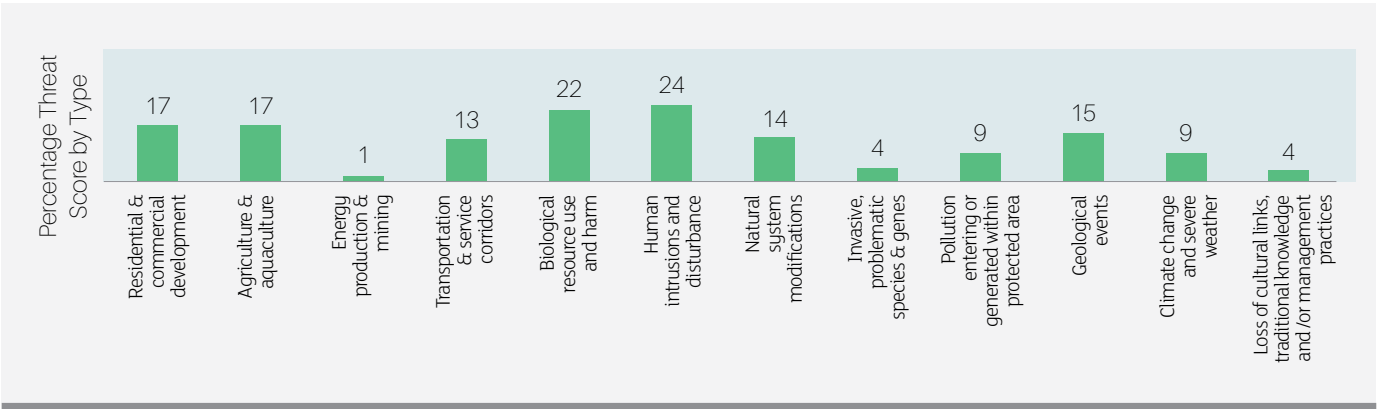






Photo credit: Samiul Mohsanin

3.6 RESULTS

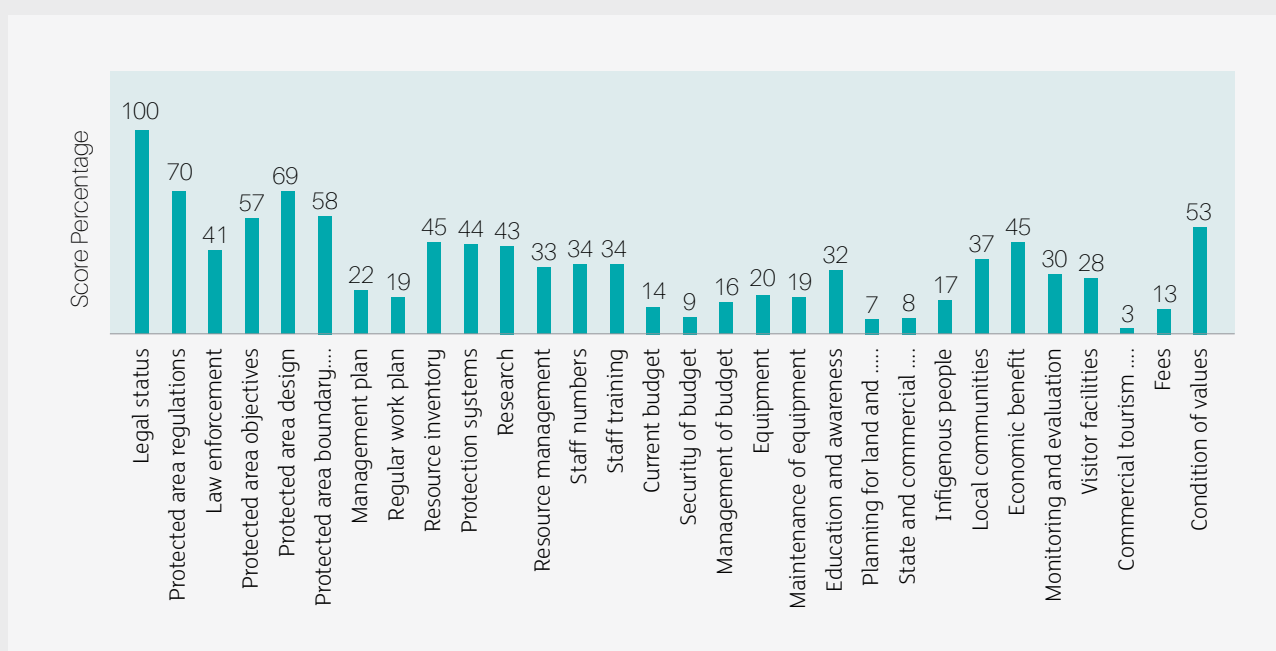
3.6.1 Design and Planning

3.6.1.1 Context: LEGAL STATUS

Q: Does the protected area have legal status?

Legal status of any protected areas (PA) gives it a strong footing for effective management. With respect to 37 PAs, all have been declared through due legal processes. Therefore, legal status obtained 100% score among all issues of the assessment (Graph-7).

Fig 6: Management Effectiveness Scores by Assessment Issues of Protected Areas



3.6.2 Planning

3.6.2.1 PROTECTED AREA REGULATION

Q: Are appropriate regulations in place to control land use and activities (e.g. hunting)?

Rules and regulations act as tools for effective management of PAs. In general, the PA managers opined that the rules and regulations concerning PA for controlling land use and activities exist but there are some weaknesses or gaps. The Protected Areas Regulation obtained a score of 70%, second highest score following legal status (Graph-7).

As per the PA staff of Kaptai NP, Teknaf WS and Nijhum Dweep NP, the existing rules and regulations provide an excellent basis for management. On the other hand, staff of rest three PAs i.e., Lawachara NP, Sundarban South and East WS and Madhupur NP and others opined that there are some weaknesses or gaps exist.

Some of the problems mentioned by the PA managers are - Forest Department (FD) officials have no protection under the Section 42 of Wildlife (Conservation and Security) Act of 2012. It undermines the difficulty in proving wildlife related crimes in the context of legal skills and absence of capacity. Officials of the Madhupur NP also pointed out that application of social forestry in PA contradicts with PA management regulation. Another important aspect pointed out was that Territorial Division has currently no obligation to protect wildlife. A suggestion was given to empower the DFO Territorial Division by the Chief Wildlife Warden to execute the Wildlife Act in his/her jurisdiction as and when needed.

3.6.2.2 PROTECTED AREA OBJECTIVES

Q: Is management undertaken according to agreed objectives?

In Bangladesh, each PA is mainly declared to conserve a particular ecosystem and/or to protect key species. So the main objective becomes protection. However, most PAs are partially able to meet the objective of landscape function and harbor biodiversity.

The PAs not being able to meet the objectives are – Khadimnagar NP, Satchari NP, Sangu WS, Teknaf WS, Kaptai NP, Chandpai WS, Dudmukhi & Dhaingmari WS. The only PA said to have meet the objective is Kaptai NP. Some of the key issues identified by the PA officials are lack of funding, logistic support, manpower have led to gradual degradation of the PAs leading to gap to attain PA objective. Overall, the average score for PA Objective is 57%. In some of the PAs such as Himchari NP the objective, as per gazette, is to develop visitor facilities in the area. This really undermines the sanctity of the natural resources of the area. As a bi-product the tourism facility would come in future therefore there is a chance of revisiting the objectives of the protected area.

3.6.2.3 DESIGN

Q: Is the protected area the right size and shape to protect species, habitats, ecological processes and water catchments of key conservation concern?

When asked if the protected area the right size and shape to protect species, habitats, ecological processes and water catchments of key conservation concern, the PA participants of the workshops opined design is not a major constraint to achieve PA objective.

PA managers identified major design flaw are – Khadimnagar NP, Kaptai NP, Medha-Kachchhapia NP, Fasiakhali WS, Chunati WS, Ramsagar NP, Altadighi NP, and Nagarbari-Mohanganj Dolphin Sanctuary.

For example, Kaptai NP pointed out that the PA once had a lot of public and private installations (dam, school, college, bazaar etc) inside. Although these areas (849.64 acre) has been de-reserved, but these areas are inside the PA like a pocket. These areas create a lot of problem for the managers. Similar problems for Altadighi and Nawabganj NP, where private land exist in side the PA and agriculture is practiced. PA managers of Bhawal, Chuanti, Birganj, Medha-Kassapia, Fasiakhali informed that due to highly irregular shape of PAs, agricultural lands are well inside the PAs allowing access to inside the PA creating disturbances. Some PA managers indicated there was absence of buffer area (Chandpai, Dhaingmari and Dudmukhi WS). PA managers of Nagarbari-Mohongonj, Shilonda-Nagdemra Wildlife and Nazirgonj Wildlife (Dolphin) Sanctuary informed that design comprised of core and buffer area.

3.6.2.4 MANAGEMENT PLAN

Q: Is there a management plan and is it being implemented?

With respect to management planning, for most PAs, wildlife management plans are being prepared under the SRCWP, CREL, and other projects of Forest Department (Graph 7) therefore, the score is low (22%). Lawachara has been receiving funds and attention and therefore is able to implement some of the activities of the management plan partially. Kaptai although does not have a plan but, has been able to partially implement some of the activities. Sundarban South WS although does not have a management plan, but the PA managers are doing management activities within the framework of older plan. MNP official informed that management plan has been prepared in the past and well as present, but generally is not implemented due to shortage of funds.

One issue pointed out that from different project, different information and management plan is generated. For example, there are co-management plan (NSP or IPAC supported), wildlife management plan, or PA management plan (from SRCWP project). But there should be an integrated plan in order to implement activities in a coherent manner.

With regards to the issues of outside stakeholder's engagement, Khadimnagar, LNP, Satchari and Kaptai NP opined that Co-Management Committee (CMC) members are able to provide inputs to the temporary schemes taken by the Forest Department outside of the PAs.

Protection being the main activity, the PA managers often do not see the need for an management plan or unwilling to say that there is no management plan. Interestingly, though, protection need is not reflected to that extent in the threat assessment. Nevertheless, the PAs without any management plan (or not even being prepared) are – Sangu WS, Fasiakhali WS, Char Kukri-Mukri WS, Sundarban East & South WSs, Madhupur NP, Kadigarh NP, Ramsagar NP, Shingra NP, Nababgonj NP, Birgonj NP, Altadighi NP, Nagarbari-Mohongonj Dolphin Sanctuary, Shilonda-Nagdemra Wildlife Sanctuary, Nazirgonj Wildlife (Dolphin) Sanctuary. Two PAs namely-Khadimnagar NP and Chuanti WS ensure participation of key stakeholders in management planning, regularly updated and monitoring or research data is used in the planning process.

3.6.2.5. PLANNING FOR LAND AND WATER USE

Q: Does land and water use planning recognise the protected area and aid the achievement of objectives?

This element obtained 7% score. For example, in Lawachara NP, there are many tea gardens are found around it and the tea gardeners do not take into account the needs of the protected area and activities/policies are detrimental to the survival of the area and same are true for the PA like Taknaf WS, Sundarban South WS and Madhupur,

TWS	District Commissioner permits brickfields to operate within 3 km boundary of PA despite existences of rules under Brick Field Act to not allow.
SSWS	The transport route through the boundary of PA does not take into account of the risks the cargo ships pose to PA. Several accidents have occurred so far. Although there are discussion to stop Boleshwar to Mongla Route, but it is less likely to happen.
MNP	Agricultural activities occur both inside and outside of PA. These practices use pesticides and fertilizers & other chemicals leading to death of Wildlife sometimes.
MKNP & FWS	Shrimp culture and salt production creates problems for the PAs

According to LNP and NDNP participants, adjacent land and water use planning does not takes into account the long term needs of the protected area, but activities are not detrimental to severe extent to the area. PA specific examples are:

NDNP	Rice is cultivated in PA, people think such land use is allowed in PA. Grazing is allowed in the Island where the PA is situated and is creating problems for natural regenerations.
LNP	Insecticide and pesticides are used in the adjacent tea gardens.

For Kaptai NP, adjacent land and water use planning partially takes into account the long term needs of the protected area but there are avenue for further improvement. The problem KNP is facing is related to access right:

KNP	• As the PA has de-reserved areas inside it housing electric dam, the PA staff has to take permission each time they need to go through the DAM area. This hampers even the basic patrolling activities they carry out. Need some sort of agreement that ensures quick access through the DAM area. • Although there is no management of corridors, but the PA and adjacent forest land use provides connection to wildlife with areas like Bandarban and Rajsthali. • There is no specific planning at the ecosystem level, but the PA and adjacent areas provides watershed or ecosystem level services (flow of water). However, the water level has been in decreasing trend since 2009.
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3.6.3 Inputs

3.6.3.1 LAW ENFORCEMENT

Q: Can staff (i.e. those with responsibility for managing the site) enforce protected area rules well enough?

With respect to enforcing protected area rules, majority of PAs official agreed that there exist major deficiencies in staff capacity/resources to enforce protected area legislation and regulations. Some of the managers also argued for acceptable capacity or resources but with some deficiencies. The law enforcement issue obtained a score of 41% (see graph 7 above). For the KNP and NDNP, the capacity / resources to enforce protected area legislation is at acceptable level but some deficiencies remain.

According to all officials, the major problems are – lack of patrol budget (fuel), lack of transport (Jeep or Speed boat), old arms, lack of ammunition, lack of skills and manpower. Increasing budget for protection can improve the management to a greater extent as per the opinion of the PA officials. Some PA managers also identified lack of collaboration, support with law enforcement agencies, or NGOs with Forest Department.

PA managers of Nagarbari-Mohongonj, Shilonda-Nagdemra Wildlife, Nazirgonj Wildlife (Dolphin) Sanctuary and Dudmukhi and Daingmari WS face problem as the PA objective also requires ban on fishing for support to Dolphin population, which they cannot enforce on fisheries law. Enforcement from Fisheries Department is also not possible due to remoteness of the PAs. As a result, huge amount of fishing or post larvae collection go on to these PAs.

3.6.3.2 RESOURCE INVENTORY

Q: Do you have enough information to manage the area?

For most PAs, there has been some inventories i.e., carbon assessment, vegetation or wildlife survey under different projects of Forest Department. So information is available but not at the level of PA. According to them, this information need to be made available or incorporated in the management plan being updated. Specific comments from some PAs are as follows:

LNP	Several assessments were carried out i.e., Carbon Assessment in 2014, Hoolock Gibbon Survey in 2006, and Vegetation Inventory in 2009 – 10. Information from these inventories needs to be incorporated in Management Plan.
KNP	The PA has a denuded area of 500-600 acre. Remaining areas have tree cover. Recently carbon inventory was carried out, but there is no information available on the ground.
SSWS	Plant survey was done under SEALS project during 2013-14; For estimation of Tiger population, Camera Trapping was done in 2013-14, Carbon assessment done in 2009-2010
MNP	Carbon inventory and flora and fauna inventory was done, but the information is not available
RKWS	Vulture habitat identified based on survey
CKMWS	Flora & fauna survey done by Dhaka University and Jahangirnagar University

3.6.3.3. STAFF NUMBERS

Q: Are there enough people employed to manage the protected area?

This element obtained 34% score (see graph 7). With regard to staff number, LNP opined that although there are only 7 staff members, however they are being provided adequate protection support by 33 members of Community Patrolling Group (CPG) under Co-Management Committee. KNP, TWS and NDNP opined staff numbers are below optimum level for performing critical management activities. For Sundarban South WS and Madhupur NP current staff numbers are inadequate. Nijhum Dweep NP said that the current staff average age is 50 years, which makes it more difficult to perform general tasks.

3.6.3.4 STAFF TRAINING

Q: Are staffs adequately trained to fulfill management objectives?

This element obtained 34% score. Except for Sundarban South WS, all PAs opined that - staff training and skills are low relative to the needs of the protected area. The staffs of SSWS received various training under SEALS project like MIST, and GPS. For staffs of the rest of the PAs, immediate training is required on the following issues:

- Law & enforcement;
- Arms & ammunition
- PA surveillance
- Wildlife survey
- Habitat management
- MNP: Need training on Sal management

3.6.3.5 CURRENT BUDGET

Q: Is the current budget sufficient?

This element obtained 14% score. The budget given to PAs is inadequate for basic management needs and presents a serious constraint to the capacity to manage. The main budgetary allocation is for the salary of the staff. This makes foot patrol to happen at least. An attempt was taken to figure out the current year's allocation, however, information is not readily available at the field level. Hazarikhil Wildlife Sanctuary and Baroiyadhala National Park is currently obtaining support from ongoing CREL project.

3.6.3.6 SECURITY OF BUDGET

Q: Is the budget secure?

This element obtained 9% score. Officials of the three PAs said that there is no or very little secure budget for the protected area and management is wholly reliant on outside or highly variable funding. Lawachara NP opined they are in a reasonably secure core budget for regular operation of the protected area but many innovations and initiatives are reliant on outside funding. Reason for LNP's secured budget is the sharing of entrée fee to the park as well as consistent support from the project since 2004 as well as its permanent source of financing from entrée fee.

3.6.3.7. EQUIPMENT

Q: Is equipment sufficient for management needs?(logistic, computer, vehicle & survey & monitoring equipment, GPS, others

Availability of equipment is inadequate in all of the PAs for most management needs. The PAs provided the following requirements:

KNP	There are arms, but need – ammunition, engine boat, bicycle, computers, and staff Barak
NDNP	Currently there are 2 nos motor cycles and 1 trawler. Need - Jeep 1, motorcycle – 8 nos, speed boat – 1 and trawler – 6 nos
SSWS	GPS's battery charge does not stay. This is hampering MIST patrolling. Charge provided by Solar Charging system does not stays. As DC electricity will not be available, alternative system needs to be sorted out
TWS	1 jeep, 1 pick-up, 10 rifles, patrol budget
MNP	Need following equipment: raincoat, torchlight, survey equipment, motor cycle – 5 nos, Jeep – 1, Photocopy machine, computer – 3, GPS – 3, Table, Chair, shelf
KgNP	Motorcycle 01, Bicycle 02

3.6.4 Process

3.6.4.1 RESEARCH

Q: Is there a programme of management orientated survey and research work?

Generally there is no set program of research or priority issues for research work. The PA managers see inventory works or data collection for management plan is similar to research works. Nevertheless, under different projects, information on various aspects i.e., vegetation, wildlife, carbon etc carried out. However, information from these surveys does not come to the hand of the PA managers. Research students from various universities carry out research, however, according to PA managers, those are not management oriented.

3.6.4.2 PROTECTED AREA BOUNDARY DEMARCATION

Q: Is the boundary known and demarcated?

For most cases, the boundary of PA is known by the management authority and local residents / neighboring land users but is not appropriately demarcated. For Nijhum Dweep, the boundary of the protected area is known by the management authority but is not known by local residents/ neighboring land users. As a result, they enter into the forest land for agriculture operations. At Madhupur NP, boundary demarcation started several years ago but could not continue due to dispute in rights of land with indigenous communities. At Kaptai NP, boundary pillars have been uprooted to encroach the land and there are currently some on-going court cases. During the workshop the participants emphasized on resolving the following issues urgently:

KNP	needs boundary pillar for 20 km
MNP	need to resolve land issues; need boundary pillars for adjacent Reserve Forest as well
NMDS,	
SNWS & NWS	Need demarcation properly using buoy, and initiation of conservation education programs

3.6.4.3 RESOURCE MANAGEMENT

Q: Is active resource management being undertaken?

This element obtained 33% score. All PA officials opined that very few of the requirements for active management of critical habitats, species, ecological processes and cultural values are being implemented. They are mainly focused on protection. According to the participants:

LNP	Only recently enrichment plantation and water hole excavation has been done (in 2006)
KNP	Protection is the main resource management activity that is being carried out from revenue budget. Other resource management activities are carried out from projects on ad-hoc basis.
TWS	Habitat improvement work is done on project basis only. There should be a long term management plan, which managers should follow irrespective of project's perspective
NDNP	Apart from protection, no other important resource management activities are done.
SSWS	Engendered species should be given priority like – Sada Bain, Par, Dhundul, Kripa, Amur.
MNP	Sal coppice management does not occur; some enrichment plantation is done using species not related to this area like Amlaki (Phyllanthus emblica), Haritoki (Terminalia Chebula), Bohera (Terminalia belerica).

3.6.4.4 MANAGEMENT OF BUDGET

Q: Is the budget managed to meet critical management needs?

With respect to fund management, the PA staff stated fund management is adequate but could be improved. This improvement is in the areas of timely disbursement.

3.6.4.5 MAINTENANCE OF EQUIPMENT

Q: Is equipment adequately maintained (logistics, computer, vehicle & survey & monitoring equipment, GPS, others)?

All PA officials mentioned that there is some ad hoc maintenance of equipment and facilities, which is not even enough to maintain even on item. For example, Kaptai NP mentioned that the current year's allocation of maintenance is BDT 10,000/-. With this amount, maintenance of an item could not be completed.

3.6.4.6 EDUCATION AND AWARENESS

Q: Is there a planned education programme linked to the objectives and needs?

There is no planned conservation education programme designed for the PAs in general. However, the PA managers carry out educational events supported by project, if available. Protected Area managers however, try to leverage awareness on PA under different day celebration programs (i.e., Biodiversity day, Environment Day, National Tree Planting Program, Global Tiger Day) when funds are available. Officials of LNP noted that the PA officials need training on what to communicate and how to communicate.

3.6.4.7 STATE AND COMMERCIAL NEIGHBOURS

Q: Is there co-operation with adjacent land and water users?

For all PAs except for Nijhum Dwip NP, there is contact between managers and neighboring official or corporate land and water users, but only some or little co-operation.

LNP	Very limited contact with adjacent state or commercial tea estate neighbors
KNP	Although there is communication, but bureaucracy exist with Power Development Board authority.
SSWP	A central task force will be necessary for issues like law enforcement and shipping routes.
NNP	The beel (water body) is used agricultural field when dried. Upazilla Nirbahi Officer (UNO) leases beel

3.6.4.8 INDIGENOUS PEOPLE

Q: Do indigenous and traditional peoples resident or regularly using the protected area have input to management decisions?

Apart from Nijhum Dweep NP where there is no indigenous people living inside or adjacent areas, other PAs opined that there is some contribution of indigenous and traditional peoples but there are avenues to improve the level of involvement. For PAs like LNP, TWS, SSWP, MNP, KNP, NNP, HWS, BNP the indigenous communities are involved as member of community patrol group or co-management committee. They are providing protection support to the PA only. They could be engaged at the planning and implementation level as well.

3.6.4.9 LOCAL COMMUNITIES

Q: Do local communities resident or near the protected area have input to management decisions?

All PAs opined that there is some contribution of local peoples but there are avenues to improve the level of involvement. Like indigenous people, they are member of community patrol group and co-management committee. They are providing protection support to the PA only. They could be engaged at the planning and implementation level as well.

They also informed that there is open communication and trust between local and/or indigenous people, stakeholders and protected area managers, and that there are programmes (project supported) to enhance community welfare, while conserving protected area resources, are being implemented. Local and/or indigenous people actively support the protected area which is shown by their involvement in the co-management committee or in community patrol group.

HNP	CMC formed and members put their comments in the monthly meeting
TWS	Local people are part of CPG and actively protect PA.
SNP	CMC- ADP is prepared by CMC, all done by BFD.

Q: Is the protected area providing economic benefits to local communities, e.g. income, employment, payment for environmental services?

The PAs provide economic benefits to local communities more or less. The most economic support goes to Lawachara, given the high number of visitation and corresponding 50% entrée fee earning. Although there is no entrée fee to enter into the Kaptai and Nijhum Dweep NP, but visitors do come and spend in the area just to see the park. The most economic benefits people derive from the PAs are NTFPs. Some specific issues from PAs are as follows:

KNP	Although the KNP has potential and receives a lot of visitors, but it has no entrée fee and other facilities. Introduce entrée fee, develop tour guide and handicraft shops for better economic contribution.
NDNP	There are visitors during winter season of about 10,000 – 15,000. This contributes to the local economy although small.
SSWS	The PA delivers economic benefit, but this applies to whole Sundarban.
MNP	Ecotourism development; security needs to be improved; local and indigenous people can market their traditional handicraft goods.
KrNP	Constructing ticket counter is under way. This will help more direct economic benefits to the community

3.6.4.10 MONITORING AND EVALUATION

Q: Are management activities monitored against performance?

With regard to monitoring and evaluation, there is some ad-hoc monitoring and evaluation, but no overall strategy and/or no regular collection of results. According to LNP and KNP participants a good monitoring and evaluation system exists, is well implemented and used in adaptive management. However for Teknaf and Sundarban, the monitoring and evaluation system does not provide feedback into management. For Madhupur, there is some ad-hoc monitoring and for Nijhum Dweep there is simply no monitoring.

3.6.4.11 COMMERCIAL TOURISM OPERATORS (Process)

Q: Do commercial tour operators contribute to protected area management?

Apart from the officials of the Sundarbans South WS, there is no connection with commercial tour operators with PA management. Sundarban South WS opined that co-operation between managers and tourism operators are limited, although they contribute to the PA management.

3.6.4.12 FEES

Q: If fees (i.e. entry fees or fines) are applied, do they help protected area management?

There is no entrée fee to enter into the Kaptai and Nijhum Dweep NP. Entrée fee is charged to enter into any part of the Sundarbans, not separated out for WSs alone. The rate of visitation is relatively low at Madhupur NP, leading to earnings of only 5-6 lacs per year. The entrée fee generated from Lawachara and Teknaf current year are shared at 50% in the next year. However, visitation is low in Teknaf therefore it helps little in PA management.

Altadighi NP: Entry fee permission is under approval by MOEF.

Ramsagar National Park: entrée fee goes to government and highest bidder.

3.6.5. Output

3.6.5.1 REGULAR WORK PLAN OR ADP

Q: Is there a regular work plan and is it being implemented?

Presence of regular works plan / Annual Development Plan is absent for all most all PAs. According to the PA officials, the main activity of protection i.e., foot patrol goes on based on the staff salary. From projects ad-hoc basis activities are done from time to time. ADP for LNP and RKWS are implemented based on availability of funds. For Khadimnagar NP at present, Collaborative Management Committee (CMC) and Forest Department have different ADPs. Forest Department is constructing picnic shed & other infrastructures and CMC is constructing of ticket counter, bench, parking place etc. The Nijhum Dweep NP is currently getting funds from CRPARP project. They stressed that enrichment plantation and assisted natural regeneration for species like Bain (*Avicennia Officinalis*) and Kholsi (*Aegiceras corniculatum*) need to be carried out regularly. Similarly, Madhupur NP highlighted the need to restore Sal Forest in the degraded areas. PA manager of newly declared Nagarbari-Mohongonj, Shilonda-Nagdemra and Nazirgonj Dolphin Sanctuary informed the management pland as well as regular work plan need to be developed.

3.65.2 VISITOR FACILITIES

Q: Are visitor facilities adequate?

Visitor facilities and services are inappropriate for current levels of visitation as per TWS, NDNP, MNP & SSWS. SSWS however opined that they do not want any visitor facilities to be in the pristine state. All facilities should be in the periphery. Lawachara and Kaptai NP mentioned that visitor facilities and services are adequate for current levels of visitation but need to be improved. Their comments are as follows:

LNP	Only 2 toilets exist. Security has becoming an issue. toilets, need support from policy, sitting benches and improved interpretation center.
KNP	- cottages – 2 nos - rest house – 2 nos - Round shed - umbrella - washroom – 3 nos - need boundary wall, picnic spots, entrée fee, guide and maintenance of the existing infrastructures above.
TWS	Very few visitor facilities, need more.
SSWS	Visitor facilities are not required. Needs the area to be pristine as much as possible.
MNP	Need more recreation facilities.
RKWS	Inadequate Cottage, Watch tower, Water, Road, Tourist police.

3.6.6 Outcome

3.6.6.1 PROTECTION SYSTEMS

Q: Are systems in place to control access/ resource use in the protected area?

With respect to protection system, PA managers believe partial effective to moderately effective system is current in place. As per the officials of Lawachara NP, Kaptai NP and Teknaf WS, protection systems are moderately effective in controlling access /resource use. On the other hand, protection systems are only partially effective for Madhupur NP, Nijhum Dwip NP and Sundarban South WS. Illegal felling is showing decreasing trend according the official of LNP.

All most all PAs, lower manpower and logistic are to be blamed for reduced level of protection. As a result recruitment at the level of forest guard against the already approved organogram was the main suggestions put forward by the officials followed by logistic support. Officials of Teknaf WS informed that staff should be deported as per organogram at least. Officials looking after Nagarbari-Mohongonj, Shilonda-Nagdemra and Nazirgonj Wildlife (Dolphin) Sanctuary informed that there is currently no protection system in place. The PAs are in the middle of the river and there is no Forest Department office nearby. A collaborative and participatory protection system is needed there.

3.6.6.2 CONDITION OF VALUES

Q: What is the condition of the important values of the protected area as compared to when it was first designated?

This element obtained 26% score. The Himchari NP identified as PA where many important biodiversity, ecological or cultural values are being severely degraded. Some biodiversity, ecological or cultural values are being severely degraded is the condition for majority of the PAs. Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted –is true for LNP, KNP and SSWS. Kuakata National Park Biodiversity improved, Area has been decrease because of natural calamity. For NDNP biodiversity, ecological and cultural values are predominantly intact. For Madhupur and Teknaf WS many important biodiversity, ecological or cultural values are being severely degraded. For example, wildlife those existed in 1983 some of them do not exist today. Elephant habitat is severely degraded at Teknaf. At Nijhum Dweep NP recently buffalo and sheep grazing on the raise and this needs to be addressed otherwise there will be problem in natural regeneration. However, for Altadighi NP, some species like wild cat, civet, monitor dove are again coming.

However, specific management programs are not being implemented to address threats to biodiversity, ecological and cultural values, apart from protection, which is also poor due to lack of funding and logistic support.

Photo credit: Dr. Zahangir Alom





3.7 MANAGEMENT EFFECTIVENESS SCORE

After analyzing all the factors it is found that Lawachara NP scored highest (58%), followed by Kaptai NP (54%), Rema-Kalenga WS (52%) and Satchari NP (49%) in terms of management effectiveness. However, the lowest score obtained by Nagarbari-Mohanganj Dolphin Sanctuary (8%) (See Graph 8). A majority (24 PAs) of the PA obtained score in the 21-40's

3.8 DISCUSSION

3.8.1 Planning Issue

It is interesting to note that for all planning issues-regulations, objectives; design, management plan; planning for land & water use - Lawachara NP scored only 47% (See Graph 9), a mark also scored by Dudhpukuria-Dopachari WS, Bariardhala NP, Nijhum Dweep NP, Sangu WS, Teknaf WS and Bhawal NP.

3.8.2 Input Issue

Lawachara NP showed better performance and or condition for Inputs related issues (score: 48%) (See Graph 10) (i.e., - law enforcement; inventory; staff numbers and training, current budget and its security) as well as processes related issues - i.e., - boundary demarcation, protection system, research, resource management, management of budget, maintenance of

Figure 7: Management Effectiveness Score of Protected Areas

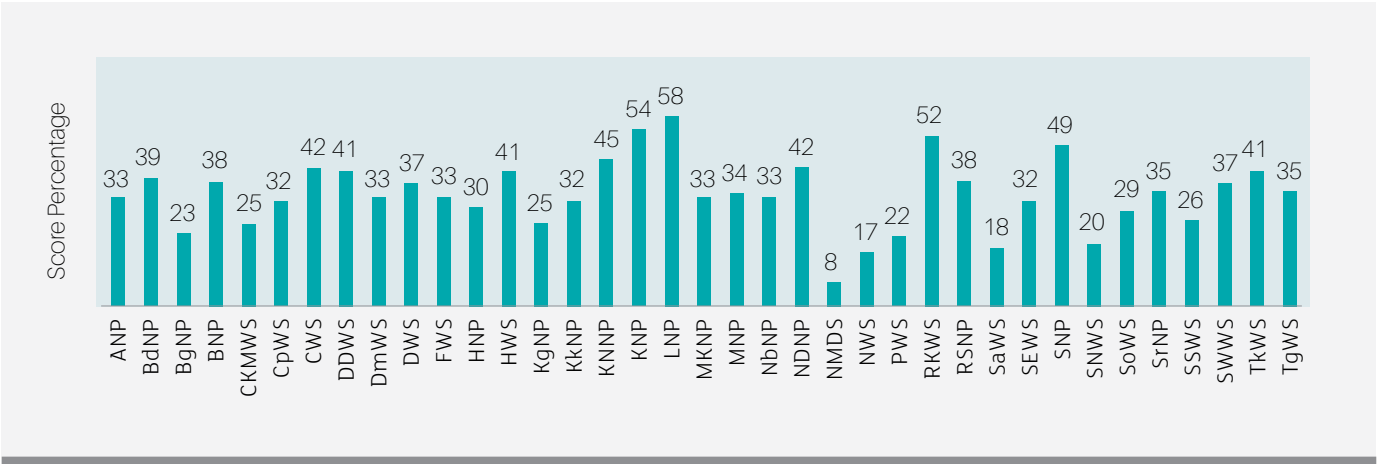
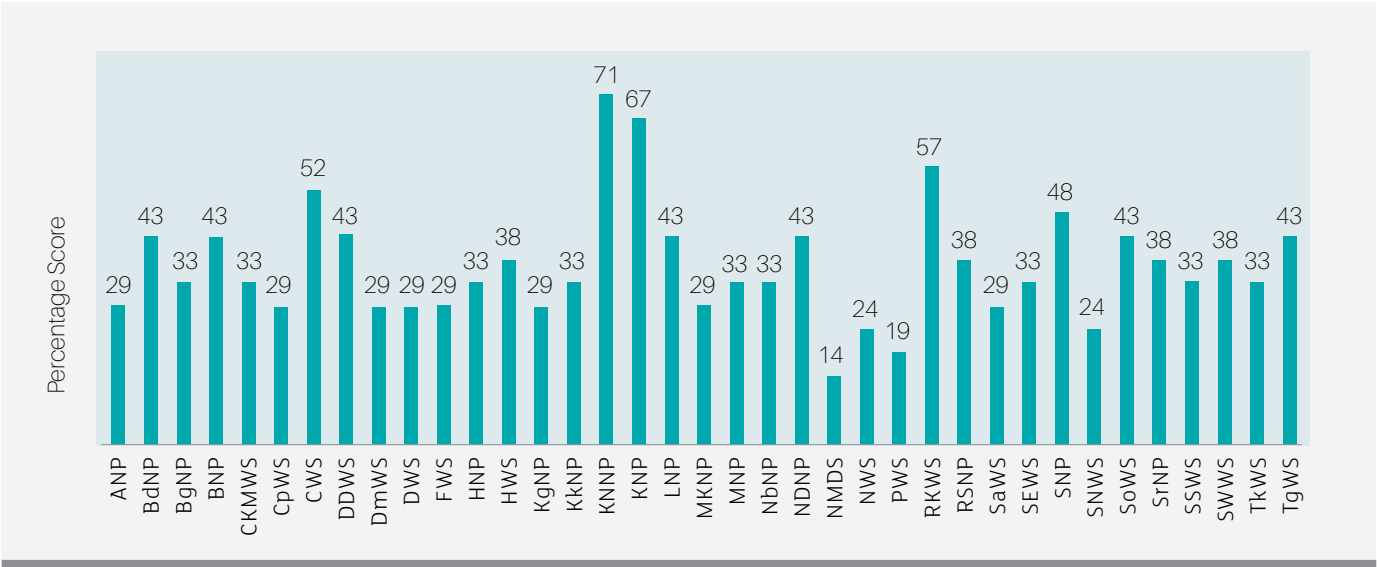


Figure 8: Management Effectiveness Scores in Planning Issues of Protected Areas



equipment, education & awareness, interaction with State & corporate neighbors, involvement of indigenous people local communities, M&E, commercial tourism and in entry fee. The NMDS, NWS, SNP scored the lowest which means this PA did not

receive any input in any time after the declaration of PA.

3.8.3 Process Issue

The LAwachara NP has shown better performance in the process related issues and scored 57 % and on the other hand Nagarbari-

Mohongonj (Dolphin) Wildlife Sanctuary (0%) and Sangu Wildlife Sanctuary scored the lowest (2%). This means there is a huge scope of intervention in the process issues to increase the management effectiveness of the PA (See Graph 11).

Figure 9: Management Score of all Input Issues

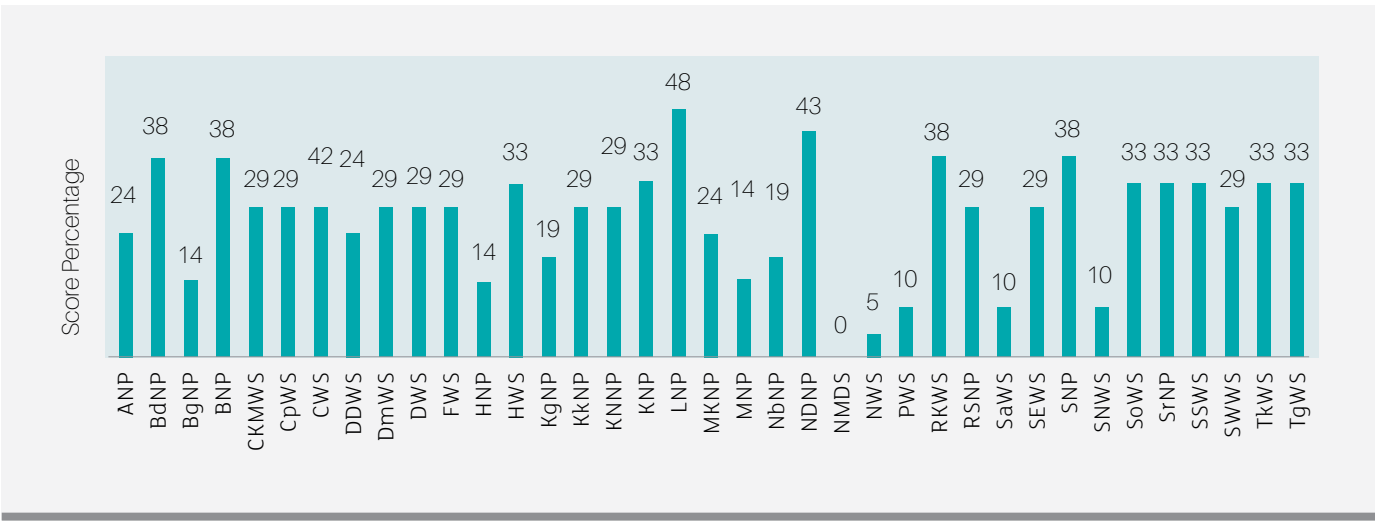
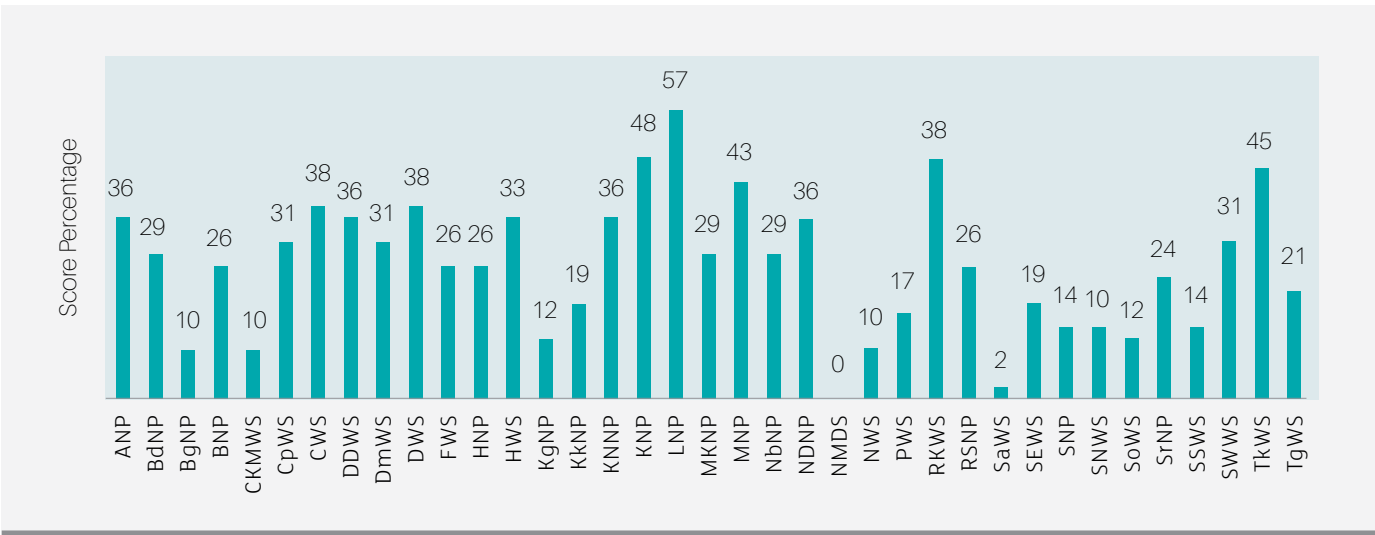


Figure 10: Management Effectiveness Score of all Process Issues



3.8.4 Output Issue

This has been found that the LNP has scored 78% in “Output” related issue (See Graph 12). This is interesting to note that 8 PAs scored 44% while 6 PAs scored 22% and 11 PAs scored 11% in this case. The result underlies two issues – (1) more support is necessary to achieve desired level

of output in relation to condition of values and (2) with some input and process related support, there are PAs that can achieve better performance in relation to attainment of objective.

3.8.5 Outcome Issue

In case of “Outcome” issue this is very interesting to mark that the

LNP scored 78% and followed by 7 PAs which scored 67% (See Graph 13). On the other hand, the PAs like HNP, MNP, NMDS, NWS, TKWS and SWWS scored the minimum. This gives a notion that not a single input cannot increase the management effectiveness rather need inputs from all aspects.

Figure 11: Management Effectiveness Score of all Output Issues

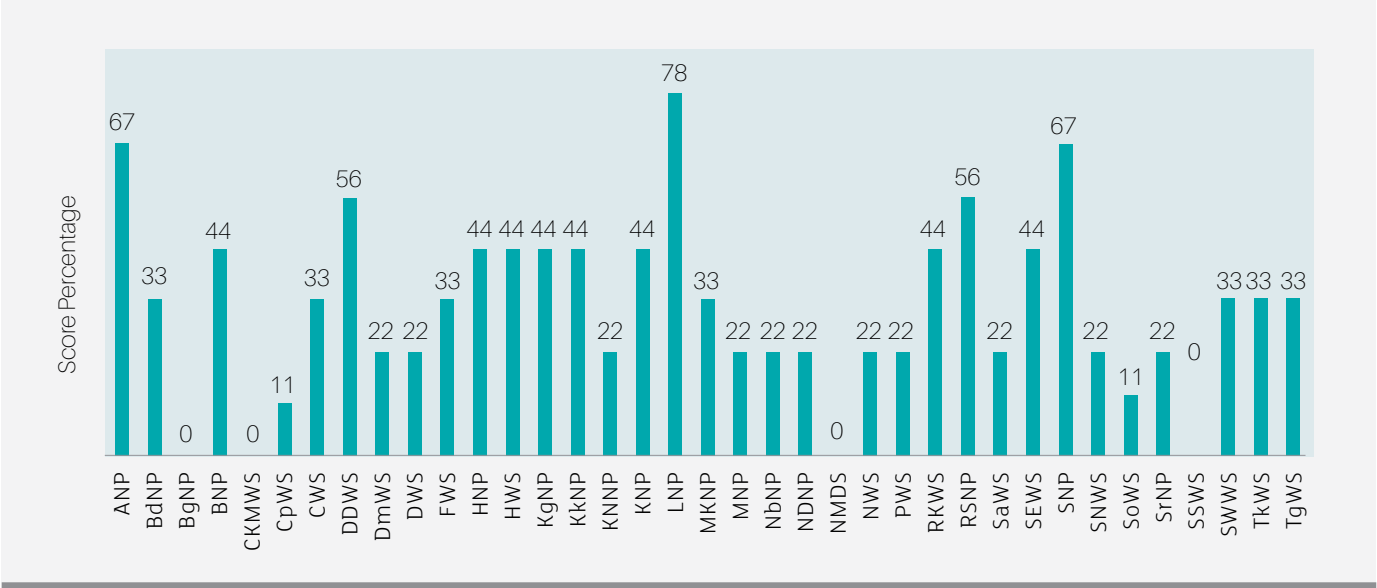


Figure 12: Percentage Effectiveness Score for Outcome

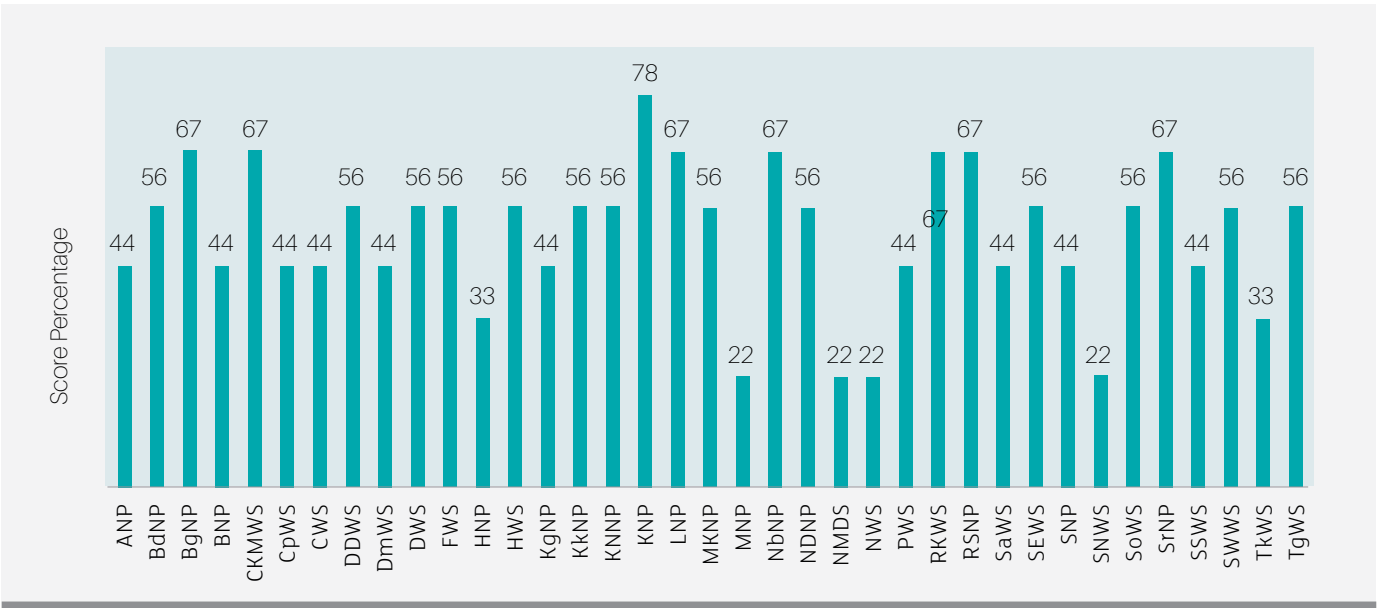


Photo credit: Md. Modinul Ahsan



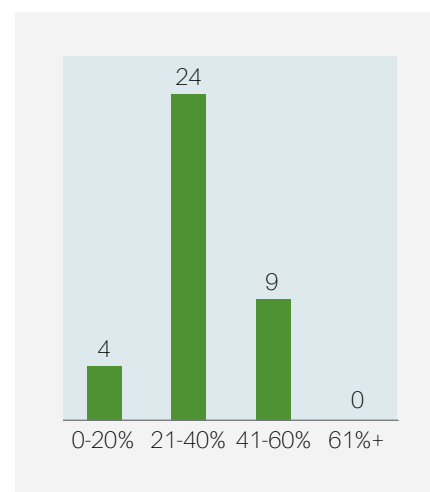
Brahmini Kite

3.9 CONCLUSION

In general, Issues like law enforcement, management plan, regular work plan (annual development plan), budget, budget security, staff number and capacity are found to have seriously impede critical management activity like protection or even basic resource management activities for PAs resulting in poor condition of values of protected areas. When all issues are grouped under WCPA assessment elements (Diagram 2), it shows that the PAs have strong legal footing i.e., all PAs have been designated under due

legal processes and have scored full marks. However, across PAs, issues under Planning (Graph 9), Inputs (Graph 10) and Processes (Graph 11) elements have not scored well resulting in poor output (Graph 12) and ultimately poor outcome (Graph 13), i.e., conservation of either habitat or biodiversity therein. It supports the logic that if planning is good, inputs are provided, and processes are better maintained, better outputs and outcomes can be achieved. However, depending on the achieved scores by the PAs, the Protected Areas of Bangladesh can be categorized in four categories such as A (more than 61%), B (41-

Figure 13: PA Grading



60%), C (21-40%) and D (0-20%). Thus the PA grades are shown below (Graph 14)

Photo credit: Samiul Mohsanin



3.10 RECOMMENDATIONS

3.10.1 METT Questionnaire

While administering the METT questionnaire the following learning's were made:

- **Data Sheet 1:** Annual Budget: this information is not available at the PA level. Basically there is no targeted allocation for PA. Budget is allocated at the Divisional Level, which contains budgetary allocation for regular division as well as PAs. To obtain this information, considerable time and/or prior notification should be given at the Divisional level, so that, it can be calculated.

- **Data Sheet 1:** Management Objective: PAs do not have explicit management objectives i.e., written statement. Generally in Bangladesh, PAs are declared to protect remnant patch of forest ecosystem or biodiversity therein. So in all most all cases, the primary management objective is protection of biodiversity.

- **Data Sheet 2:** Threats: Residential and commercial development within a protected area: As per the suggestions of the Forest Department Officials during the pre-piloting meetings, two sub-threat categories were included – (1) 1.4 Institutions and (2) 1.5

Encroachment. However, during administering METT at local level, it was found that encroachment was not necessary, as any installations inside the PA are an encroachment. The inclusion of Institution is sufficient to bring any social installations. We therefore suggest excluding – Encroachment sub-category.

- **Data Sheet 2:** Threats: Agriculture and aquaculture within a protected area: As per the suggestions of the Forest Department Officials during the pre-piloting meetings, one sub-threat category was included – (1) 2.5 Other to bring any other sub-threat category that does not fall



within the given threats. However, during administering METT at local level, no other specific threats were found in order to justify the “other” sub-threat category. We therefore suggest excluding – Other sub-threat category.

• **Data Sheet 2: Threats:** Human intrusions and disturbance within a protected area: As per the suggestions of the Forest Department Officials during the pre-piloting meetings, an additional attribute (or example of human intrusion) - law enforcement was included under 6.2 War, civil unrest, and military exercises. During piloting, there was no example found of “law enforcement” related threat. This also created confusion, therefore suggesting omitting this term.

• **Data Sheet 2: Threats:** Human intrusions and disturbance within a protected area: As per the suggestions of the Forest Department Officials during the pre-piloting meetings, an additional characteristic of human intrusion was added as “6.6 – lack of law enforcement and coordination”. While this issue is certainly is found to a problem as indicated during PA piloting, the threat issue in concern is basically highlight intrusion in various ways rather than “lack of entry due to lack of enforcement”. Lack of law enforcement and coordination can also be reflected in Assessment Form – 3. Law Enforcement, where lack of support can be explained in the comment section.

• **Data Sheet 2: Threats:** Natural System Modifications: As per the suggestions of the Forest Department Officials during

the pre-piloting meetings, two additional characteristic of natural system modification was added as “7.4 – change of natural species composition / monoculture” and “7.5 Loss of viable population”. While change in composition is certainly is found to a problem, however, loss of viable population was found to create confusion, as not being specific and somewhat redundant with 7.3d (Loss of keystone species). Therefore we suggest omitting 7.5 – Loss of viable population.

• **Data Sheet 2: Threats:** Climate Change and Severe Weather: During piloting, one PA officials highlighted rainfall issues (excess, erratic variation in seasonal changes) is a threat to their PA. During pre-piloting meeting, as per the suggestions of FD officials Salinity and Sea level rise issues were incorporated. We therefore suggest including rainfall as an additional parameter.

• **Assessment Form:** Current Budget: As per the suggestions of the Forest Department Officials during the pre-piloting meetings, in addition to qualitative information, actual information on budgetary allocation and desired allocation or need, was sought. However, it was found that information on current allocation is not available at PA level. There is no separate budgetary allocation for PA. Such information is available at the Divisional level, and therefore it will require early request to obtain such information. We recommend that let the Assessment form be act as an indicative tool, rather than tool for actual in-depth information collection system.

3.9.2 Implications for Protected Area Management

In general, if better planning, continued inputs, strong process exist, then better output and outcome can be expected. Critical issues amongst all is the budgetary allocation to PAs and its security. This is a common issue stressed by the PA managers if better performance is expected out of them. Not all issues under an element, i.e., planning can be addressed immediately, but the key issues that can have a great impact on improve management are highlighted below:

• **Minimizing Threats facing PAs:** Given that threats against Bhawal NP, Himchari NP, Medha-Kassapia NP, Fasiakhali WS and Chunati WS is more than their capacity to handle, the management must investigate further to design and take proper action to minimize threats. Highest threat against least management capacity makes these PAs vulnerable and therefore requires immediate attention. Reducing threats against PAs generally paves way for better contiditon of value for which they are established.

• **Management Planning:** At present, for most PAs, there is no management plan. However, good news is, projects like SRCWP, CREL etc developing management plan (with a focus on wildlife management). However, we also need to pay attention to financial resources required to implement these plans. Government can seek budget from its own resources (revenue budget) and / or seek some funds from development partners as well.

- **Staff Number:** All PAs are in shortage of manpower against its approved organogram. The shortage of staff resulting in deficiencies in protection. It has to be noted that in the absence of resource management (see section 3.3.12), protection is the only activity or management objective. And when this activity is hampered, it becomes difficult to protect biodiversity. While community petrol groups (CPG) are helping Forest Department to some extent, even then, the CPG members cannot provide 24x7 protections without forgoing their earnings. Another issue raised during the assessment that the average age of the field level staff (i.e., forest guards) is around 58+ years. This is hampering regular field activity specially protection. New recruitment should follow immediately to rejuvenate the staff.
- **Staff training:** In addition to recruitment, staff training especially in areas of protected area management, wildlife management, inventory, wildlife crime control, prosecution, tourism etc needs to be carried out in order for them to contribute to PA management.
- **Equipment:** all PAs are in shortage of equipment like arms and ammunitions, vehicles, fuel. These are the critical equipment support needed for the purpose of protection. At present, without these supports, protection is being hampered.
- **Increase budgetary allocation:** At present, the PAs are either being

supported from project budget or without any financial support apart from staff salary. The PA managers are not being about the resource management activities.

- **Entrée Fee:** At present, not all PAs charges entrée fee (i.e., Kaptai NP and Nijhum Dweep) and not all entry fees charged returns to PA for (i.e., Sundarban) protected area management. As the PAs are in shortage of fund, the existing 50% revenue sharing mechanism from entrée fee from only 5 PAs (under Nishorgo Support Project) be extend to all. In addition, the current approved system only allows return of 50% revenue to the PA it was generated. However, as some of the PAs generally receives fewer visitors (i.e., Nijhum Dweep) due to accessibility, decision can be made to allow allocation based on needs rather than source of origin. This can greatly help reallocation of funds where needed. There should also be a program to promote visitation to PAs to allow for more revenue generation (within the limit of carrying capacity).

- **Maintain liaisons with Commercial Tourism Operators:** Commercial tourism operators have high potentials to generate revenue for protected areas as well as promote education. There is an increasing trend in tourism in natural areas in the country. Protected Areas harbors rich biodiversity which are source of attraction. Some of these PAs are also equipped with infrastructures (i.e., rest house) in degraded condition

due to lack of maintenance budget. These facilities can be rented to commercial operators for sustainable tourism and management of infrastructure.

- **Rules, regulations and Law enforcement:** There are couples of critical issues raised by the PA staff with respect to law and regulation. The Wildlife Act 2012 does not take into account or recognize the inherent difficulty in proving an offence case and makes FD Officials liable for the failure. As a result, the officials are not interested to register cases. Officials also pointed out that program that is not consistent with PA management objective is applied in PA management i.e., establishment of social forestry plantations. Another important aspect pointed out that Territorial Division currently provides no support to protect wildlife just because they have not been given mandate. Empowering DFOs of Territorial Divisions adjacent to PA by the Chief Wildlife Warden to execute the Wildlife Act in his/her jurisdiction will have a positive impact on protected area and biodiversity conservation.

- **A central committee to oversee the PA management effectiveness:** There should be unit which will oversee the PA management effectiveness at a regular interval (3 to five years interval). This unit should be formed under the leadership of Wildlife and Nature Conservation Circle and this should be the part of the duty of the circle.



Brown-headed Gull

Photo credit: Samiul Mohsanin





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A photograph of a Phayre's leaf monkey (Presbytis phayrei) perched on a thick, textured tree branch. The monkey has dark grey fur and a prominent, lighter-colored, bushy crest on its head. It is looking towards the camera. The branch is heavily laden with clusters of small, round, green fruits. The background is filled with large, green, heart-shaped leaves and a clear blue sky.

Phayre's leaf monkey

Photo credit: Samiul Mohsanin





ANNEX I

METT GUIDANCE

The third edition of the METT (Stolton et al., 2007) includes basic guidance on how to complete the assessment. This should be carefully read before any assessment

begins. The additional explanatory notes given below can help explain specific elements of the METT.

EXPLANATORY NOTES: DATA SHEET

Most of the information needed to fill out the datasheets should be readily available; either in documentation on site or easily accessible via websites (see links given below). However some sections, such as identification of management objectives, will take longer if these have not previously been identified and recorded.

DATA SHEET 1

Name of protected area: this should be the full name; and the same as that included on any official list (from the government, World Database of Protected Areas etc). If the site is known by more than one name, or if the name has changed recently, include alternatives, stressing which one is now the “official” name.

WDPA Code: Each protected area has a code, which is listed on the World Database of Protected Areas and is a unique identifier. Nowadays this can be found most easily on

the Protected Planet website¹². Type the name of the protected area into the “Start Exploring” box, open the record for the site and the WDPA ID is listed on the top left of the page.

Designations: National: this refers to the national category – such as national park, wilderness reserve, nature reserve, etc. Identification is important because in most countries particular designations will have their own policies, rules and sometimes legislation.

Designation: IUCN category: most, but by no means all, protected areas are also identified by the national government as falling into one of the six IUCN management categories. This is important, because the way that individual countries define something like a national park might be very different in terms of the way that it is managed: the IUCN category provides an international standard. IUCN categories are also listed on the WDPA. The UNEP World Conservation Monitoring Centre, which manages the WDPA, only lists the IUCN category if it is proposed by the government, so if none exists, this section should be left blank. Further information: Guidelines for Applying Protected Area Management Categories (Dudley, 2008).

Designation: international: explained in more detail on the second page of the data sheet. This collects information on regional or global designations, such as UNESCO World Heritage or ASEAN Heritage.

Date of establishment: this is sometimes complicated, depending on the type of protected area and the legal process involved. In the case of state protected areas it would usually be date of legal establishment, but sometimes government-run protected areas operate for years before the legal process of establishment is completed and in this case a common-sense approach is needed, listing the date when the protected area was agreed by the government. In sites where the designation has changed over time (for instance if a nature reserve has been changed to a national park) list both dates: first establishment of a protected area and later change in national designation. For privately protected areas this is generally easier: usually the date of purchase or the date when an area of land or water was announced as a protected area.

What are the main values for which the area is designated: this may sometimes be written down formally (for instance in application for World Heritage status or in the protected area management plan), or it may be implicit. It is important to note whether the protected area is designated primarily to protect a whole habitat (such as a coral reef or rainforest) or whether it is to protect a certain species or group (like a seabird colony or a rare plant).

List two primary protected area management objectives: objectives should be in the management plan, although there will often be more than two. In

this case, or if objectives are not formally written down, people compiling the METT will need to agree the two most important management objectives. These should be conservation objectives rather than, for instance, tourism management or supply of ecosystem services, although these will also be important for many protected areas. Identifying the management objectives of the site being assessed is important as the assessment of management then made in the rest of the METT should be made against these objectives.

Number of people involved in completing the assessment: it is important that the assessment should not be carried out by one or two people in isolation but that it should be a discussion between various rightsholders and stakeholders (see section 4.2.5). Use this section to identify who is involved.

Information on international designations: UNESCO World Heritage site: most of the information needed should be on the UNESCO World Heritage list¹³, which is in alphabetical order of country. Each site entry includes key information on date listed (the date when the World Heritage Committee recognised the site as belonging to the WH List), the name, which may be different from the name used in the country, and area. It will also include the criterion or criteria for which the site were listed, which can just be identified by their number in the METT, and the statement of Outstanding Universal Value (what

makes the site unique), which should be pasted into the relevant space in the METT form. Further information: Outstanding universal value: Standards for natural world heritage (Badman et al, 2008).

Information on international designations: Ramsar site: all information needed is available on the Ramsar site in the section Ramsar Sites Information Service¹⁴.

Information on international designations: Man and the Biosphere Reserves: again key data should be on the website. However, identification of the three main functions of MAB may be more difficult because most MAB reserves have not been formally assessed (nor is there a system for doing so within UNESCO). The website¹⁵ will give basic data on establishment, size etc but criteria for designation and fulfilment of the three main aims of the biosphere reserve will need to be worked out by protected area staff and other stakeholders.

DATA SHEET 2

Threats data sheet: this should be fairly self-evident. Threats are ranked as of high significance if they are seriously degrading values; medium if they are having some negative impact and low if they are present but not seriously impacting values. Not applicable (N/A) is selected when the threat is either not present or **not applicable** in the protected area. In most cases threats refer to activities within the protected area in a few activities beside or

near the protected area might also be important (for example a mine on the edge of a protected area would bring new people into the area and might increase pressure within the protected area itself, or mine tailings could pollute otherwise protected watercourses). The data sheet is limited as it does not look at either the spatial impact (e.g. does the threat impact the whole area or just a small part) or temporal impact (e.g. is the impact all the time or only during certain parts of the year), nor does it suggest management actions. As the title implies, this element of the METT is intended to record data already known and protected areas really should have a more detailed threat assessment/monitoring system to aid management planning

and implementation. Other more detailed threat assessments exists (see for example Hockings et al., 2008), and adaptations of the METT have developed more detailed assessments, based on this datasheet but providing more detailed information for management.

Additional points follow:

Threat 2.1a Medicinal plant cultivation: Note that the collection of species from the wild is covered in threat 5.2

Threat 3.3 Energy generation including HEP: This question looks specifically at threats within protected areas. Hydropower developments outside protected areas can still impact on the protected area, the impact of such threats is covered in threat 7.2.

Threat 4.3 Flight paths: It should be stressed that this threat is considering flight paths of aeroplanes, hot air balloons, gliders etc, not the flight paths of birds

Threat 6.2 War, civil unrest and military exercises: this can include intrusion of political insurgency from across national borders

Threat 7. Natural system modification: Whereas threat 3 looked at impacts of infrastructure development in protected areas, threat 7 looks at impacts which may occur from developments far away from the protected area.

Threat 7.2 should record impacts on habitat or changes in the way the ecosystem functions, such as changing water flow patterns.

Tiger



Photo credit: Samiul Mohsanin

EXPLANATORY NOTES: ASSESSMENT FORM

The following notes provide specific guidance on individual multiple choice questions, which make up the main assessment element of the METT, and where necessary further sources of information. The questions are dealt with in the order they appear on the METT.

For each topic noted below an overarching question is provided and four possible answers. As well as ticking the appropriate answer to the questions the notes and justification narrative section should be used to provide details of why the specific answer was given. If the METT has not been adapted then notes may

also be needed on why a specific answer has been given, particularly if the situation described in the by the answer/score does not totally fit the realities of the protected area. The narrative section detailing next steps should be used to outline adaptive management actions if the response to the assessment reveals management weaknesses.

1. Legal status: this usually only refers to state-managed protected areas. In the case of many private reserves and indigenous and community conserved areas (ICCAs) legal status is not an option and this question is not applicable. Where such protected areas do have some formal status (e.g. a covenant or legal recognition of Indigenous Protected Areas) this should be listed. Further information: Guidelines for Protected Area Legislation (Lausche, 2011).

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2. Protected area regulations: the term “regulation” can refer to both legal and customary controls; for instance protected areas managed by private individuals, trusts or communities should still have clear rules regarding use of land and water.

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3. Law enforcement: here “staff ” relates to both those formally employed and those responsible for management in other governance types. The question refers to both personal capacity (training, skills) and sufficiency of equipment and infrastructure (vehicles, routes to access remote areas, etc.) The next steps section should identify needs if the score is low.

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4. Protected area objectives: this question refers back in part to the key management objectives already identified in the datasheet. Were these obvious or did the assessment group have to work them out? If the latter, this probably means that overall management has not considered the objectives of the protected area in sufficient detail. Key references include the original legislation establishing the reserve, in the case of state-run protected areas, and management plans, information and knowledge of day-to-day activities. Lack of clear objectives probably means that management is itself undirected and likely inefficient: a process for firming up objectives (for instance a stakeholder workshop) should if necessary be noted in next steps.

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5. Protected area design: issues to consider here include whether key species are adequately protected (for instance it would be an issue if a marine protected area omitted a nearby area where many of the constituent species bred), whether it is large enough to support viable populations and whether events outside the protected area could undermine its value (for instance if a hydroelectric power project dammed a river and interrupted flow). It is also important to consider, where possible, projected future climate change influence in this assessment: for instance if sea level rises is there space in the protected area for a mangrove forest to retreat inland?

6. Protected area boundary demarcation: it is important staff, stakeholders and rightsholders recognise the boundary and that people know if they are encroaching the protected area. Note that a few boundaries will by their nature be unstable: if the boundary is a river bank or a shoreline the precise location can change quite markedly over time. Such changes may become more marked under climate change: for example the coastline may retreat inland.

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7. Management plan: in most cases this will be a formal management plan, written down and in the case of government protected areas also approved by the relevant department or ministry. In other cases management plans may be less formal, agreed through discussion with community members, and existing only as oral agreements, minutes of meetings or other less formal arrangements. The aim of this question is to see whether or not management is following a set and logical course. Further information: Guidelines for Management Planning of Protected Areas (Thomas and Middleton, 2003).

There are a number of additional questions in the METT (7a,b,c; 21a,b,c; 24a,b,c; and 30a,b,c), which go beyond the basic assessment and identify whether particular best practices are in place. All of these additional questions should be considered during the assessment (as with the other METT questions, the extra best practice questions add up to a total score of 3 and therefore fit the scoring framework). However it is common for assessors to answer only one of the 3 additional points possibly because assessors do not understand that they can score any or all of the additional points. If any further additions of the METT are produced it should be made clear that they should give 1 or 0 as an answer to ALL the additional questions.

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7a. Planning process: opportunities for key stakeholders to influence planning: “key stakeholders” in this case refers to people beyond the immediate management authority; such as local communities or indigenous peoples living in or near the protected area, sometimes also tourism operators, local government and industry: if there have been no such involvement the next steps column should identify those people who should in future be involved.

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7b. Planning process: periodic review: many formal management plans cover 5-10 year periods. But many things can change over this length of time; such as new pressures, changing weather patterns, new opportunities. This question captures whether there is a way to make sure such changes are integrated into management, and lessons learned as management proceeds.

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7b. Planning process: monitoring results: the fact that monitoring takes place, and assessments are carried out, is no guarantee that the results are incorporated into management. The question addresses this and if answered negatively the next steps column should include concrete, time-bound proposals to address the lack. Further information: Enhancing our Heritage Toolkit: Assessing management effectiveness of natural World Heritage sites (Hockings et al., 2008).

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8. Regular work plan: this will usually refer to an annual plan, aimed at implementing the next stage of the management plan.

9. Resource inventory: in this case “resources” refers primarily to biological and cultural values of the site. Have there been recent surveys of plant and animal species? Do managers know where culturally important sites or sacred natural sites exist so these can be protected? In next steps it is important to identify knowledge gaps and suggestions for future surveys.

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10. Protection systems: the question focuses particularly on enforcement, and will be applicable in places where there is pressure from poaching, encroachment, illegal mining etc. In protected areas with no such pressures, designation and management in itself can be judged “largely or wholly effective”. This is less about capacity and resources for enforcement (already addressed in question (3) and more aimed at whether this capacity is being used effectively enough. Highly trained and well-resourced rangers are being out-manoeuvred by poaching gangs with even better resources; this question aims to determine whether current enforcement activities are sufficient for the pressures being faced.

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11. Research: this could include both research work carried out by the protected area itself but more usually by associates, volunteers, students and academics. In the case of protected areas run by communities or indigenous peoples it would include, for instance, surveys of species being used for subsistence, such as fish or non-timber forest products, to ensure a sustainable supply. Monitoring and evaluation is addressed in another question (26); here the emphasis is on particular research projects that can help to understand and thus better manage the site. The presence of researchers is not enough to evoke the top score, but only if research is properly integrated into the needs of protected area management.

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12. Resource management: Management here refers to activities in addition to enforcement, such as various forms of restoration and habitat creation, monitoring of population numbers, fencing where necessary and the control of invasive species. Where sustainable resource extraction is permitted, management will include monitoring of these resources, possibly introduction of temporary zoning etc. Management also includes active steps to protect culturally and spiritually important sites.

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13. Staff numbers: answering this question might be slightly more difficult for community-managed sites; here the issue will be more generally one of having sufficient number of people involved for there to be capacity to manage rather than “employment” in a traditional sense. In some remote protected areas, with few pressures, there may be no permanent staff but rather one person will have oversight of several protected areas: in this case the answer would fall somewhere between the second and fourth of the answers.

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14. Staff training: again this question can refer to both formal staff members and/ or others involved in management. Training needs to be in relevant disciplines; it is not uncommon for protected area staff to be seconded from other institution, such as forestry; although these people have received training it is largely irrelevant to the job in hand. Next steps should list any important training gaps.

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15. Current budget: this question relates to the total amount of budget, rather than to budget security, addressed in question (16). Virtually every protected area rates themselves as inadequately financed! This is not aimed at identifying whether more money would be useful but whether there is sufficient budget to carry out effective management and to implement a realistic management plan.

16. Security of budget: the main question here is whether the budget is reliant on intermittent project funding or whether there is a reasonable chance of it being maintained over time – for instance because it is a core part of a government budget, or maintained through a private trust, or has low costs and strong volunteer support.

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17. Management of budget: is budget expenditure properly planned and monitored through the year or is there usually a serious overspend or under spend? Are accounts published annually? If the answer reveals serious weaknesses the next steps column should suggest concrete ways forward, such as drawing up an annual budget, hiring a qualified accountant or bringing in a permanent or temporary business manager.

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18. Equipment: this could include, for example, vehicles, communication systems, tools, uniforms, shows; but also contributory materials like fuel.

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19. Equipment maintenance: large amounts of money are wasted in protected areas because equipment is broken and never repaired; either because there is no-one available with the skills to carry out simple maintenance or because a culture develops where replacement becomes the norm. If this question scores low next steps should suggest practical ways of addressing this, either by identifying or employing a maintenance officer (for instance from the local community) or introducing training to ensure that protected area staff have the requisite skills themselves.

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20. Education and awareness: this question covers education both for learning establishments, such as schools programmes, and the provision of more general educational opportunities for local communities or recreational visitors.

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21. Planning for land and water use: note that this question relates to planning processes outside the protected area. Protected area effectiveness can be seriously undermined by actions that take place beyond its boundaries, such as pollution, alterations to hydrology, and development of infrastructure such as roads and rail links. Does the protected area have any influence on surrounding decisions? Do managers or communities managing protected areas engage in wider planning discussions? Does the government take account of the protected area when undertaking broader planning exercises?

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21a. Land and water planning for habitat conservation: this additional question narrows down the focus of question (21) by focusing on surrounding environmental conditions, such as pollution levels, hydrology etc. Relatively few protected areas will be able to score this additional point.

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21b. Land and water planning for connectivity: is the protected area connected to other similar habitats or is it isolated? Particular issues here is the potential for animal migration or animal movement to prevent species becoming inbred, opportunities for fish migration along rivers, and the presence of buffer zones around protected areas to prevent edge effects and encroachment. If not, is there anything that can be done to improve the situation?

21c: Land and water planning for ecosystem services: this is a complicated question because it could involve two different issues: managing ecosystems to protect particular species (e.g. use of fire to maintain savannah habitat) or management for ecosystem services beneficial to human society, such as managing cloud forest habitat to maintain downstream water supplies. The comments section should stipulate what ecosystem services are being considered here.

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22. State and commercial neighbours: this is particularly aimed at land and water users that either benefit from or directly impact ecosystems within the protected area: for instance water users (mineral water suppliers, municipal water supplies, hydroelectric projects); but also ranchers, forest companies and those involved in extractive industries. Note that tourism operators are the subject of their own question (28). Question 22 is aimed at pinpointing the extent to which a protected area either cooperates or remains isolated from the wider community that influences it: if it scores zero, next steps could list key neighbours that should be contacted.

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23. Indigenous and traditional peoples: this will be not applicable in cases where there are no indigenous people present. Note that different countries use a range of terms to describe such cultures: ethnic minorities, traditional peoples etc. Further information: Indigenous and Traditional Peoples and Protected Areas: Principles, Guidelines and Case Studies (Beltrán, 2000); Indigenous and Local Communities and Protected Areas: Towards Equity and Enhanced Conservation (Borrini-Feyerabend et al., 2004)

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24. Local communities: to score 2 or 3 in this question the communities should also have a reasonable amount of influence on the overall decision: mere consultation is not sufficient.

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24a. Impact on communities – open communication and trust: some explanatory comment is particularly important if this score is given, justifying why. Further information: Indigenous and Local Communities and Protected Areas: Towards Equity and Enhanced Conservation (Borrini-Feyerabend et al., 2004).

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24b. Impact on communities – programmes of community welfare: this could include both programmes directly related to the protected area, such as managed use of non-timber forest products or fish resources, and programmes initiated by the protected area for the general good, such as developing schools or supporting healthcare.

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24c. Impact on communities – active support: again evidence is needed if this additional score is given; examples could include voluntary patrolling, help with surveys, provide political support amongst local government etc.

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25. Economic benefit: this question is aimed explicitly at local communities rather than outside businesses, such as tourism companies; the latter might be included if they employ a significant number of local people. Economic benefits include direct jobs, Payment for Ecosystem Service schemes, indirect benefits from increased tourism or sales to visitors, and other options such as guiding.

26. Monitoring and evaluation: most monitoring will be directly by protected area staff; in some cases volunteers or local communities will also be involved. In the comments section list what is monitored and how often. In next steps identify any important gaps in monitoring that need to be filled.

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27. Visitor facilities: not all protected areas need visitor facilities; this question is judging against the perceived need.

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28. Commercial tourism operators: tourism can either be a help or a hindrance to protected areas; in addition the presence of a protected area is a draw to tourists and thus a boost to trade. Tourism operators should be natural partners but this doesn't always happen. If this question generates a low score next steps could identify in very concrete terms some of the key people it would be important to talk to and develop cooperation with.

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29. Fees: not all protected areas should or do collect fees; this question is not applicable in these cases. The aim here is more to find out, where fees are an expected part of the protected area management, whether they are used to help management or simply disappear into the government and provide no support for the generating resource.

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30. Condition of values: the METT really measures management and outputs and does not consider outcomes in detail; this one question covers both biological and cultural values and is simply an indication of whether staff and other stakeholders believe that the fundamental objectives are being met. The comments section can give further details, including data if this is available, and also can distinguish between the relative success of conserving biological and cultural values if there are differences between the two.

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30a. Condition of values: monitoring: if scoring yes for this question, details of type of monitoring should be given in the comments section.

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30b. Condition of values: management programmes: again, if yes, list the programmes in the comments section.

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30c. Condition of values: routine part of management: in a growing number of the most popular protected areas, most staff are assigned to visitor management or possibly enforcement, and actual conservation management gets sidelined. This question is aimed at identifying where such management is lacking and next steps should list any identified needs.



Bronze-winged jacana



Photo credit: Samiul Mohsanin

METT QUESTIONNAIRE

Reporting Progress at Protected Area Sites: Data Sheet 1

Name, affiliation and contact details for person responsible for completing the METT (email etc.)					
Date assessment carried out					
Name of protected area					
WDPA site code (these codes can be found on www.unep-wcmc.org/wdpa/)					
Designations	National	IUCN Category	International (please also complete sheet overleaf)		
Country					
Location of protected area (province and if possible map reference)				N:	
				E:	
Date of establishment					
Ownership details (please tick)	State	Private	Community	Other	
Management Authority					
Size of protected area (ha)					
Number of staff	Permanent		Temporary	No of Staff required by category	
	In position	Vacant			
Annual budget (BDT) – excluding staff salary costs	Recurrent (operational) funds		Project or other supplementary funds	Required fund	
What are the main values for which the area is designated					
List the two primary protected area management objectives					
Management objective 1					
Management objective 2					
No. of people involved in completing assessment					
Including (Tick boxes)	PA manager ☐	PA staff ☐	Other PA agency staff ☐	NGO ☐	
	Local community ☐	Donors ☐	External experts ☐	Other ☐	
Please note if assessment was carried out in association with a particular project, on behalf of an organisation or donor.					

Information on International Designations					
UNESCO World Heritage site (see: whc.unesco.org/en/list)					
Date listed	Site name		Site area	Geographical co-ordinates	
				N	E
Criteria for designation (i.e. criteria i to x)					
Statement of Outstanding Universal Value					
Ramsar site (see: www.wetlands.org/RSDB/)					
Date listed	Site name		Site area	Geographical co-ordinates	
				N.....	E.....
Reason for Designation (see Ramsar Information Sheet)					
UNESCO Man and Biosphere Reserves (see: www.unesco.org/mab/wnbrs.shtml)					
Date listed	Site name		Site area	Geographical co-ordinates	
			Total: Core: Buffer: Transition:	N.....	E.....
Criteria for designation					
Fulfilment of three functions of MAB (conservation, development and logistic support)					
Please list other designations (i.e. ASEAN Heritage, Natura 2000) and any supporting information below					
Name:			Detail:		
Name:			Detail:		
Name:			Detail:		
Name:			Detail:		
Name:			Detail:		

PROTECTED AREAS THREATS: DATA SHEET 2

Please tick all relevant existing threats as either of high, medium or low significance. Threats ranked as of high significance are those which are seriously degrading values; medium are those threats having some negative impact and those characterised as low are threats which are present but not seriously impacting values or N/A where the threat is not present or not applicable in the protected area.

1. Residential and commercial development within a protected area

Threats from human settlements or other non-agricultural land uses with a substantial footprint

High	Medium	Low	N/A	
				1.1 Housing and settlement
				1.2 Commercial and industrial areas
				1.3 Tourism and recreation infrastructure
				1.4 Institutions
				1.5 Encroachment / others

2. Agriculture and aquaculture within a protected area

Threats from farming and grazing as a result of agricultural expansion and intensification, including silviculture, mariculture and aquaculture.

High	Medium	Low	N/A	
				2.1 Annual and perennial non-timber crop cultivation
				2.1a Drug cultivation
				2.2 Wood and pulp plantations
				2.3 Livestock farming and grazing
				2.4 Marine and freshwater aquaculture
				2.5 Other (specify)

3. Energy production and mining within a protected area

Threats from production of non-biological resources

High	Medium	Low	N/A	
				3.1 Oil and gas drilling
				3.2 Mining and quarrying
				3.3 Energy generation, including from hydropower dams

4. Transportation and service corridors within a protected area

Threats from long narrow transport corridors and the vehicles that use them including associated wildlife mortality

High	Medium	Low	N/A	
				4.1 Roads and railroads (include road-killed animals)
				4.2 Utility and service lines (e.g. electricity cables, telephone lines,)
				4.3 Shipping lanes and canals
				4.4 Flight paths

5. Biological resource use and harm within a protected area

Threats from consumptive use of “wild” biological resources including both deliberate and unintentional harvesting effects; also persecution or control of specific species (note this includes hunting and killing of animals)

High	Medium	Low	N/A	
				5.1 Hunting, killing and collecting terrestrial animals (including killing of animals as a result of human/wildlife conflict)
				5.2 Gathering terrestrial plants or plant products (non-timber)
				5.3 Logging and wood harvesting
				5.4 Fishing, killing and harvesting aquatic resources

6. Human intrusions and disturbance within a protected area

Threats from human activities that alter, destroy or disturb habitats and species associated with nonconsumptive uses of biological resources

High	Medium	Low	N/A	
				6.1 Recreational activities and tourism
				6.2 War, civil unrest, law enforcement and military exercises
				6.3 Research, education and other work-related activities in protected areas
				6.4 Activities of protected area managers (e.g. construction or vehicle use, artificial watering points and dams)
				6.5 Deliberate vandalism, destructive activities (fire, hill cutting, fishing net) or threats to protected area staff and visitors
				6.6 Lack of law enforcement & coordination

7. Natural system modifications

Threats from other actions that convert or degrade habitat or change the way the ecosystem functions

High	Medium	Low	N/A	
				7.1 Fire and fire suppression (including arson)
				7.2 Dams, hydrological modification and water management/use
				7.3a Increased fragmentation within protected area
				7.3b Isolation from other natural habitat (e.g. deforestation, dams without effective aquatic wildlife passages)
				7.3c Other 'edge effects' on park values
				7.3d Loss of keystone species (e.g. top predators, pollinators etc)
				7.4 Change of natural species composition / monoculture

8. Invasive and other problematic species and genes

Threats from terrestrial and aquatic non-native and native plants, animals, pathogens/microbes or genetic materials that have or are predicted to have harmful effects on biodiversity following introduction, spread and/or increase

High	Medium	Low	N/A	
				8.1 Invasive non-native/alien plants (weeds)
				8.1a Invasive non-native/alien animals
				8.1b Pathogens (non-native or native but creating new/increased problems)
				8.2 Introduced genetic material (e.g. genetically modified organisms)

9. Pollution entering or generated within protected area

Threats from introduction of exotic and/or excess materials or energy from point and non-point sources

High	Medium	Low	N/A	
				9.1 Household sewage and urban waste water
				9.1a Sewage and waste water from protected area facilities (e.g. toilets, hotels etc)
				9.2 Industrial, mining and military effluents and discharges (e.g. poor water quality discharge from dams, e.g. unnatural temperatures, de-oxygenated, other pollution)

High	Medium	Low	N/A	
				9.3 Agricultural and forestry effluents (e.g. excess fertilizers or pesticides)
				9.4 Garbage and solid waste
				9.5 Air-borne pollutants
				9.6 Excess energy (e.g. heat pollution, lights etc)
				9.7 Other (specify)

10. Geological events

Geological events may be part of natural disturbance regimes in many ecosystems. But they can be a threat if a species or habitat is damaged and has lost its resilience and is vulnerable to disturbance. Management capacity to respond to some of these changes may be limited.

High	Medium	Low	N/A	
				10.1 Volcanoes
				10.2 Earthquakes/Tsunamis
				10.3 Avalanches/ Landslides
				10.4 Erosion and siltation/ deposition (e.g. shoreline or riverbed changes)

11. Climate change and severe weather

Threats from long-term climatic changes which may be linked to global warming and other severe climatic/ weather events outside of the natural range of variation

High	Medium	Low	N/A	
				11.1 Habitat shifting and alteration
				11.2 Droughts
				11.3 Temperature extremes
				11.4 Storms and flooding

12. Specific cultural and social threats

High	Medium	Low	N/A	
				12.1 Loss of cultural links, traditional knowledge and/or management practices
				12.2 Natural deterioration of important cultural site values
				12.3 Destruction of cultural heritage buildings, gardens, sites etc

ASSESSMENT FORM

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
1. Legal status Does the protected area have legal status (or in the case of private reserves are covered by a covenant or similar)?	The protected area is not gazetted/covenanted	0		
	There is agreement that the protected area should be gazetted/covenanted but the process has not yet begun	1		
	The protected area is in the process of being gazetted/covenanted but the process is still incomplete (includes sites designated under international conventions, such as Ramsar, or local/traditional law such as community conserved areas, which do not yet have national legal status or covenant)	2		
	The protected area has been formally gazetted/ covenanted	3		
Context 2. Protected area regulations Are appropriate regulations in place to control land use and activities (e.g. hunting)?	There are no regulations for controlling land use and activities in the protected area	0		
	Some regulations for controlling land use and activities in the protected area exist but these are major weaknesses	1		
	Regulations for controlling land use and activities in the protected area exist but there are some weaknesses or gaps	2		
	Regulations for controlling inappropriate land use and activities in the protected area exist and provide an excellent basis for management	3		
Planning 3. Law enforcement Can staff (i.e. those with responsibility for managing the site) enforce protected area rules well enough? Input	The staff have no effective capacity/resources to enforce protected area legislation and regulations	0		
	There are major deficiencies in staff capacity/resources to enforce protected area legislation and regulations (e.g. lack of skills, no patrol budget, lack of institutional support)	1		
	The staff have acceptable capacity/resources to enforce protected area legislation and regulations but some deficiencies remain	2		
	The staff have excellent capacity/resources to enforce protected area legislation and regulations	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
4. Protected area objectives Is management undertaken according to agreed objectives? Planning	No firm objectives have been agreed for the protected area	0		
	The protected area has agreed objectives, but is not managed according to these objectives	1		
	The protected area has agreed objectives, but is only partially managed according to these objectives	2		
	The protected area has agreed objectives and is managed to meet these objectives	3		
5. Protected area design Is the protected area the right size and shape to protect species, habitats, ecological processes and water catchments of key conservation concern? Planning	Inadequacies in protected area design mean achieving the major objectives of the protected area is very difficult	0		
	Inadequacies in protected area design mean that achievement of major objectives is difficult but some mitigating actions are being taken (e.g. agreements with adjacent land owners for wildlife corridors or introduction of appropriate catchment management)	1		
	Protected area design is not significantly constraining achievement of objectives, but could be improved (e.g. with respect to larger scale ecological processes)	2		
	Protected area design helps achievement of objectives; it is appropriate for species and habitat conservation; and maintains ecological processes such as surface and groundwater flows at a catchment scale, natural disturbance patterns etc	3		
6. Protected area boundary demarcation Is the boundary known and demarcated? Process	The boundary of the protected area is not known by the management authority or local residents/ neighbouring land users	0		
	The boundary of the protected area is known by the management authority but is not known by local residents/ neighbouring land users	1		
	The boundary of the protected area is known by both the management authority and local residents / neighbouring land users but is not appropriately demarcated	2		
	The boundary of the protected area is known by the management authority and local residents/ neighbouring land users and is appropriately demarcated	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
7. Management plan Is there a management plan and is it being implemented? Planning	There is no management plan for the protected area	0		
	A management plan is being prepared or has been prepared but is not being implemented	1		
	A management plan exists but it is only being partially implemented because of funding constraints or other problems	2		
	A management plan exists and is being implemented	3		
Additional points: Planning				
7a. Planning process	The planning process allows adequate opportunity for key stakeholders to influence the management plan	+1		
7b. Planning process	There is an established schedule and process for periodic review and updating of the management plan	+1		
7c. Planning process	The results of monitoring, research and evaluation are routinely incorporated into planning	+1		
8. Regular work plan	No regular work plan exists	0		
Is there a regular work plan and is it being implemented Planning/Outputs	A regular work plan exists but few of the activities are implemented	1		
	A regular work plan exists and many activities are implemented	2		
	A regular work plan exists and all activities are implemented	3		
	There is little or no information available on the critical habitats, species and cultural values of the protected area	0		
9. Resource inventory	Information on the critical habitats, species, ecological processes and cultural values of the protected area is not sufficient to support planning and decision making	1		
Do you have enough information to manage the area? Input	Information on the critical habitats, species, ecological processes and cultural values of the protected area is sufficient for most key areas of planning and decision making	2		
	Information on the critical habitats, species, ecological processes and cultural values of the protected area is sufficient to support all areas of planning and decision making	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
10. Protection systems Are systems in place to control access/resource use in the protected area? Process/Outcome	Protection systems (patrols, permits etc) do not exist or are not effective in controlling access/resource use	0		
	Protection systems are only partially effective in controlling access/resource use	1		
	Protection systems are moderately effective in controlling access/resource use	2		
	Protection systems are largely or wholly effective in controlling access/ resource use	3		
11. Research Is there a programme of management orientated survey and research work? Process	There is no survey or research work taking place in the protected area	0		
	There is a small amount of survey and research work but it is not directed towards the needs of protected area management	1		
	There is considerable survey and research work but it is not directed towards the needs of protected area management	2		
	There is a comprehensive, integrated programme of survey and research work, which is relevant to management needs	3		
12. Resource management Is active resource management being undertaken? Process	Active resource management is not being undertaken	0		
	Very few of the requirements for active management of critical habitats, species, ecological processes and cultural values are being implemented	1		
	Many of the requirements for active management of critical habitats, species, ecological processes and, cultural values are being implemented but some key issues are not being addressed	2		
	Requirements for active management of critical habitats, species, ecological processes and, cultural values are being substantially or fully implemented	3		
13. Staff numbers Are there enough people employed to manage the protected area? Inputs	There are no staff	0		
	Staff numbers are inadequate for critical management activities	1		
	Staff numbers are below optimum level for critical management activities	2		
	Staff numbers are adequate for the management needs of the protected area	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
14. Staff training Are staff adequately trained to fulfill management objectives? Inputs/Process	Staff lack the skills needed for protected area management	0		
	Staff training and skills are low relative to the needs of the protected area	1		
	Staff training and skills are adequate, but could be further improved to fully achieve the objectives of management	2		
	Staff training and skills are aligned with the management needs of the protected area	3		
15. Current budget Is the current budget sufficient? Inputs	There is no budget for management of the protected area	0		
	The available budget is inadequate for basic management needs and presents a serious constraint to the capacity to manage	1		
	The available budget is acceptable but could be further improved to fully achieve effective management	2		
	The available budget is sufficient and meets the full management needs of the protected area	3		
16. Security of budget Is the budget secure (flow of fund)? Inputs	There is no secure budget for the protected area and management is wholly reliant on outside or highly variable funding	0		
	There is very little secure budget and the protected area could not function adequately without outside funding	1		
	There is a reasonably secure core budget for regular operation of the protected area but many innovations and initiatives are reliant on outside funding	2		
	There is a secure budget for the protected area and its management needs	3		
17. Management of Budget Is the budget managed to meet critical management needs? Process	Budget management is very poor and significantly undermines effectiveness (e.g. late release of budget in financial year)	0		
	Budget management is poor and constrains effectiveness	1		
	Budget management is adequate but could be improved	2		
	Budget management is excellent and meets management needs	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
18. Equipment Is equipment sufficient for management needs? (logistic, vehicle & others) Input	There are little or no equipment and facilities for management needs	0		
	There are some equipment and facilities but these are inadequate for most management needs	1		
	There are equipment and facilities, but still some gaps that constrain management	2		
	There are adequate equipment and facilities	3		
19. Maintenance of Equipment Is equipment adequately maintained? Process	There is little or no maintenance of equipment and facilities	0		
	There is some ad hoc maintenance of equipment and facilities	1		
	There is basic maintenance of equipment and facilities	2		
	Equipment and facilities are well maintained	3		
20. Education and Awareness Is there a planned education programme linked to the objectives and needs? Process	There is no education and awareness programme	0		
	There is a limited and ad hoc education and awareness programme	1		
	There is an education and awareness programme but it only partly meets needs and could be improved	2		
	There is an appropriate and fully implemented education and awareness programme	3		
21. Planning for land and water use Does land and water use planning recognise the protected area and aid the achievement of objectives? Planning	Adjacent land and water use planning does not take into account the needs of the protected area and activities/ policies are detrimental to the survival of the area	0		
	Adjacent land and water use planning does not takes into account the long term needs of the protected area, but activities are not detrimental the area	1		
	Adjacent land and water use planning partially takes into account the long term needs of the protected area	2		
	Adjacent land and water use planning fully takes into account the long term needs of the protected area	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
Additional points: Land and water planning				
21a: Land and water planning for habitat conservation	Planning and management in the catchment or landscape containing the protected area incorporates provision for adequate environmental conditions (e.g. volume, quality and timing of water flow, air pollution levels; upstream & downstream water share etc) to sustain relevant habitats.	+1		
21b: Land and water planning for connectivity	Management of corridors linking the protected area provides for wildlife passage to key habitats outside the protected area (e.g. to allow migratory fish to travel between freshwater spawning sites and the sea, or to allow animal migration).	+1		
21c: Land and water planning for ecosystem services & species conservation	"Planning addresses ecosystem-specific needs and/or the needs of particular species of concern at an ecosystem scale (e.g. volume, quality and timing of freshwater flow to sustain particular species, fire management to maintain savannah habitats etc.)"	+1		
22. State and commercial neighbors	There is no contact between managers and neighbouring official or corporate land and water users	0		
Is there co-operation with adjacent land and water users?	There is contact between managers and neighbouring official or corporate land and water users but little or no cooperation	1		
Process	There is contact between managers and neighbouring official or corporate land and water users, but only some co-operation	2		
	There is regular contact between managers and neighbouring official or corporate land and water users, and substantial co-operation on management	3		
23. Indigenous People	Indigenous and traditional peoples have no input into decisions relating to the management of the protected area	0		
Do indigenous and traditional peoples resident or regularly using the protected area have input to management decisions?	Indigenous and traditional peoples have some input into discussions relating to management but no direct role in management	1		
	Indigenous and traditional peoples directly contribute to some relevant decisions relating to management but their involvement could be improved	2		
Process	Indigenous and traditional peoples directly participate in all relevant decisions relating to management, e.g. co-management	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
24. Local communities resident or near the protected area have input to management decisions? Process	Local communities have no input into decisions relating to the management of the protected area	0		
	Local communities have some input into discussions relating to management but no direct role in management	1		
	Local communities directly contribute to some relevant decisions relating to management but their involvement could be improved	2		
	Local communities directly participate in all relevant decisions relating to management, e.g. co-management	3		
24 a. Impact on communities	There is open communication and trust between local and/or indigenous people, stakeholders and protected area managers	+1		
24b. Impact on communities	Programmes to enhance community welfare, while conserving protected area resources, are being implemented	+1		
24c. Impact on communities	Local and/or indigenous people actively support the protected area	+1		
25. Economic benefit Is the protected area providing economic benefits to local communities, e.g. income, employment, payment for environmental services? Outcomes	The protected area does not deliver any economic benefits to local communities	0		
	Potential economic benefits are recognised and plans to realise these are being developed	1		
	There is some flow of economic benefits to local communities	2		
	There is a major flow of economic benefits to local communities from activities associated with the protected area	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
26. Monitoring and Evaluation Are management activities monitored against performance? Planning/Process	There is no monitoring and evaluation in the protected area	0		
	There is some ad hoc monitoring and evaluation, but no overall strategy and/or no regular collection of results	1		
	There is an agreed and implemented monitoring and evaluation system but results do not feed back into management	2		
	A good monitoring and evaluation system exists, is well implemented and used in adaptive management	3		
27. Visitor facilities Are visitor facilities adequate? Outputs	There are no visitor facilities and services despite an identified need	0		
	Visitor facilities and services are inappropriate for current levels of visitation	1		
	Visitor facilities and services are adequate for current levels of visitation but could be improved	2		
	Visitor facilities and services are excellent for current levels of visitation	3		
28. Commercial tourism operators Do commercial tour operators contribute to protected area management? Process	There is little or no contact between managers and tourism operators using the protected area	0		
	There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1		
	There is limited co-operation between managers and tourism operators to enhance visitor experiences and maintain protected area values	2		
	There is good co-operation between managers and tourism operators to enhance visitor experiences, and maintain protected area values	3		
29. Fees If fees (i.e. entry fees or fines) are applied, do they help protected area management? Inputs/Process	Although fees are theoretically applied, they are not collected	0		
	Fees are collected, but make no contribution to the protected area or its environs	1		
	Fees are collected, and make some contribution to the protected area and its environs	2		
	Fees are collected and make a substantial contribution to the protected area and its environs	3		

Issue	Criteria	Score: Tick only one box per question	Comment/Explanation	Next steps
30. Condition of Values What is the condition of the important values of the protected area as compared to when it was first designated?	Many important biodiversity, ecological or cultural values are being severely degraded	0		
	Some biodiversity, ecological or cultural values are being severely degraded	1		
	Some biodiversity, ecological and cultural values are being partially degraded but the most important values have not been significantly impacted	2		
	Biodiversity, ecological and cultural values are predominantly intact	3		
Outcomes				
Additional Points: Condition of values				
30a: Condition of values	The assessment of the condition of values is based on research and/or monitoring	+1		
30b: Condition of values	Specific management programmes are being implemented to address threats to biodiversity, ecological and cultural values	+1		
30c: Condition of values	Activities to maintain key biodiversity, ecological and cultural values are a routine part of park management	+1		
TOTAL SCORES				
A				
B				
C				
D				

Photo credit: Samiul Mohsanin

Asian Paradise Flycatcher



The **Strengthening Regional Cooperation for Wildlife Protection (SRCWP)** project, the first World Bank supported regional project in South Asia, aims to build country capacity and incentives for tackling the illegal wildlife trade and other selected regional conservation threats to habitats in border areas. The project was launched in 2011 in Bangladesh and Nepal in the first phase and Bhutan joined in the second phase to bring regional collaboration in combating wildlife crime through strengthened legislative and regulatory frameworks and well-equipped specialized agencies and systems, as well as relevant training and awareness programs for staff responsible for enforcement of wildlife laws and regulations. The project is also supporting the institutional strengthening of the South Asia Wildlife Enforcement Network (SAWEN) which was established by SAARC countries in 2011 to combat wildlife crime in the South Asia Region.

The Bangladesh Forest Department (BFD) is implementing the project through a partnership with research institutes, universities and environmental NGOs. A total of 36 sub-projects have been supported to improve the management of protected areas and conservation of flagship species through a landscape approach. Some of the sub-projects are addressing human-wildlife conflict through engagement with the local communities and civil society to foster an enduring culture of wildlife stewardship and protection. The regional wildlife project has supported the establishment of a Wildlife Crime Control Unit (WCCU) within the Wildlife Circle, three Wildlife divisions in the Forest Department, and a Wildlife Centre to undertake training, research, education and awareness on the issues of wildlife conservation and protection. This publication has documented the outcome of the assessment of the management effectiveness of the protected areas of Bangladesh.

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