

Government of Bangladesh
Department of Fisheries, Forest Department, Department of Environment

**The Nishorgo Network Strategy and Action Plan:
Collaborative Management of Bangladesh's Natural Protected Areas**

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Foreword

The Nishorgo Network Strategy and Action Plan presents a vision and the steps needed to put into place a national network of conservation areas that provides economic benefits for the neighboring communities, protects against impending climate change, and ensures the continuity of those cultural elements associated with nature for the good of all citizens of Bangladesh. Based on the principles of co-management, this Strategy and Action Plan strives to mainstream conservation of forests, wetlands and other natural areas as an integral contribution to Bangladesh achieving its Vision 21 of sustainable development in the face of growing climate change and food security challenges.

The Nishorgo Network Strategy and Action Plan is a living document, and presents interested government and civil society stakeholders an on-going opportunity to further refine and strengthen this Strategy and Action Plan into something meaningful and real. Importantly, this document does not strive to displace other Strategies and Action Plans. Rather, it strives to compliment related Strategies and Action Plans addressing poverty alleviation and food security, climate change adaptation and mitigation, and biodiversity conservation. It strives to provide a framework and entry point for future donor assistance in integrated conservation and development as well as climate change adaptation and mitigation, to ensure such assistance matches Bangladesh's visions and needs.

In the spirit of co-management, we look forward to working with you in implementing the Nishorgo Network Strategy and Action Plan to ensure effective co-management of Bangladesh's natural protected areas.

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The Nishorgo Network Strategy and Action Plan: Collaborative Management of Bangladesh's Natural Protected Areas

1. Introduction

1.1 Context and Need

Mach e Bhat e Bangali

*Tu lal paharer deshe ja
Rangamati r desh e ja,
Hethai tore mania sena go
Ekkebare mania se na go*

Fish and Rice makes a real Bengali

*People of forests and hills
return to your red earth
The chaos of the concrete world is
no match to your nature's heaven*

The well-being of Bangladesh's rural and urban population has been closely associated with the bounty of nature for centuries. An abundance of native fish fed a growing population, while forests and upland vegetation ensured a stable supply of clean water, steadily flowing rivers, and protection from storms. The diversity of wildlife – most notably the Bengal Tiger – is embedded within both Bengali culture and the other diverse cultures that make up Bangladesh today.

In recent decades, the native fish from open waters have given way to commercial species cultivated in ponds – as those ponds have become more productive, and generated revenue for wealthier land-owners, the productivity and richness of open waters has fallen. . In an absence of observed rules to regulate fishing, native fish have been over-extracted to the point of disappearance.

The richness of forest lands have also suffered. Outside of the Sundarbans, large blocks of contiguous forest throughout the country have given way to degraded forests. Wildlife once common are now rare. The poor that maintained their livelihoods by supplementing income and fuel wood from forest lands are now increasingly cut off from a fallback.

As wild natural resources of forest and water have succumbed to the pressures of Bangladesh's economy, our culture itself has come under threat. Rural festivals that were closely associated with animals, fish and other wildlife are changing in response to loss of nature. The diversity of indigenous cultures associated with our forests lose their links to the forest. The loss of wild and open water and forests, therefore, bring with them a direct threat to the cultures of Bangladesh.

1.2 The Nishorgo Strategy and Action Plan

In response to these threats, communities, NGOs, the private sector and the Government have undertaken efforts to find ways to conserve the very nature from which food, fish, livelihoods and culture have been provided. Cultural norms of the past have been combined with management models from today to find new ways to conserve nature. Indeed, Bangladesh has become a global leader for embracing co-management, bringing together a diversity of stakeholders and perspectives to ensure sustainable development is built on a foundation of ecological conservation.

This Nishorgo Network Strategy and Action Plan for Bangladesh has been prepared with the Forest Department and Department of Environment of the Ministry of Environment and Forests, and with the Department of Fisheries of the Ministry of Fisheries and Animal Resources, to support their efforts to strengthen, scale-up and institutionalize a national and collaboratively managed network of ecologically significant wetlands and forests.

The strategy has been further strengthened based on the inputs of a wide range of interested stakeholders, forming an informal network of conservation partners committed to benefitting people through the conservation of biodiversity, environmental protection and sustainable use of natural resources in Bangladesh.

The protection, conservation and improved management of ecologically and economically significant landscapes is of vital importance to stakeholders across Bangladesh, including rural communities and natural resource user groups dependent on wetland and forest resources, local government officials and technical services with a mandate to serve the needs of people, alleviate rural poverty and conserve the environment, and government officials and aid agencies providing leadership to address climate change, biodiversity conservation, food security and poverty reduction. University faculty and researchers, NGO and business leaders, students and the general public also have a stake in raising awareness about the consequences of continued degradation and loss of natural forests and wetlands, and in fostering effective interventions to maintain ecosystem services, support sustainable economic development and secure a better future for the people of Bangladesh.

This Strategy and Action Plan is intended to help articulate a common vision and to orient needed interventions by these stakeholders to capitalize on the potential benefits to be gained from the improved, collaborative management of a network of protected wetlands and natural forests ecosystems in Bangladesh. The strategy aims to address the current gaps and overcome the policy and regulatory barriers, institutional capacity constraints and other obstacles to more effective conservation of a scaled up, institutionalized and integrated national Protected Area system. In preparing this strategy, a particular effort has been made to capitalize on the lessons learned and good practices emerging from the pilot experiences of community based, co-management of wetlands and inland capture fisheries, protected forests and Ecologically Critical Areas, piloted by CBFM, MACH, NSP, CWBMP, Arannayk Foundation, IUCN and others. The strategy is also designed to build upon recent advances in conservation financing, and to ensure the long term sustainability of the emerging “Nishorgo Network” of co-managed protected areas through innovative carbon financing as well as revenue sharing and promotion of public-private partnerships.

While Bangladesh has made great progress towards sustainable development since independence in 1971, substantial challenges still exist. Maintaining the recent pace of economic growth and poverty reduction has become overshadowed by negative impacts of global climate change. Bangladesh is already experiencing erratic weather patterns resulting in increased incidence of flooding and drought, as well as increased incidence and severity of cyclones and other natural disasters. Continued success toward achieving sustainable development in Bangladesh requires ensuring that economic growth is build upon a solid foundation of ecological and economic resilience. Key to this is an effectively managed and integrated Protected Area (PA) network. Incorporated as a centerpiece to the national development strategy, an effectively managed PA network provides a foundation for food security, climate change adaptation and mitigation, and poverty alleviation. This PA network will provide a buffer against climate change impact, and contribute to the stabilization of environmental services – especially water flow – that so many Bangladeshis rely on for their day-to-day survival and long-term well-being.

This strategy document presents a vision and action plan toward mainstreaming the conservation of an integrated PA network for Bangladesh into the country’s national sustainable development strategy. Most important, it serves as a rally cry and call-to-action for government and other stakeholders to work together, and to invest financial and other resources to achieve ambitious integrated PA management objectives that contribute to Bangladesh achieving its 2021 Vision of sustainable development in the face of growing global climate change and food security challenges.

The goal of this strategy document is to establish the steps needed to put in place a national network of conservation areas that provide for the neighboring populations, protect against impending climate change, and ensure the continuity of those cultural elements associated with nature, for the good of all citizens.

In order to achieve that goal, this document identifies an action plan for establishing an effective, co-managed and integrated PA network in Bangladesh that contributes to sustainable development objectives especially related to food security, climate change adaptation and mitigation, and poverty alleviation. Specific objectives of this strategy include the following:

1. Identification of key forests, wetlands, marine and environmentally-critical areas (ECAs) and landscapes for inclusion in an integrated PA network;
2. Clarification of the policy framework to harmonize co-management efforts and activities;
3. Strengthen institutional capacity among government, community and other stakeholders necessary to effectively co-manage this integrated PA network;
4. Establish a long-term financing plan to fund effective co-management of this PA network;
5. Demonstrate tangible and intangible economic/financial/livelihoods benefits to PA-dependent communities, especially the poor;

6. Implement a comprehensive monitoring and evaluation system to ensure efficient investment of limited financial and technical resources achieves the greatest positive impact in terms of PA conservation.

Achieving this goal and objectives requires a clear set of principles and approaches to move forward. These are described below in terms of three main *Principles* and five *Pillars* required to achieve an effective national PA network for Bangladesh.

Principles of this integrated PA network include:

1. An integrated network of ecologically as well as economically-significant natural areas (or PA) should represent key forest and wetland ecosystems across Bangladesh and should build ecological and economic resilience by conserving biodiversity and stabilizing critical environmental services (especially water);
2. Effective management of ecologically-significant natural areas (or PA) is predicated upon the institutionalization of co-management among key stakeholders, including various government agencies, local communities, NGOs, universities, the donor community and the private sector;
3. Integrated conservation area management (or PA management) should be considered a centerpiece of Bangladesh's sustainable development strategy, providing meaningful livelihoods development opportunities for people living adjacent to and dependent upon PA resources.

This national integrated PA strategy is based on five main *pillars*:

1. *National-level policy and legal framework* that formally establishes a robust network of forest, wetland and other PAs as a centerpiece of the national sustainable development strategy; harmonizes policies amongst various government agencies to most effectively support integrated PA co-management; and communicates the significance of integrated PA co-management to long-term sustainable development;
2. *Landscape-based co-management of forest, wetland and other PAs* based on low-emission development plans that integrate PA conservation with sustainable livelihoods development particularly for poor people living adjacent to and dependent on PA resources;
3. *Institutional strengthening and human resource capacity building* to strengthen effective co-management of PAs. This includes but is not limited to the effective facilitation of co-management approach and activities that lead to conservation of PAs, low emission development for poor people living adjacent to and dependent on PA resources, and elucidation of the significant role of a PA network for national sustainable development. This also includes the facilitation of public-private partnerships to leverage additional financial, in-kind and technical resources required for effective PA conservation co-management;
4. *Marshaling of science and community involvement for monitoring and evaluation.* The best evidence based science needs to be brought to bear to ensure adequate

selection of PAs in the national network, and then to ensure that environmental, and socio-economic objectives are being adequately met, especially in light of expected changes due to climate change and resulting food insecurity;

5. *Sustainable conservation financing* to establish, grow and manage a robust PA network. This includes financing for co-managed conservation of PAs, low emission development initiatives for the poor living adjacent to and dependent on PA resources, and public outreach to build national-level awareness of and commitment to Bangladesh's PA network. It requires an integrated financing approach to include GoB recurrent and development budget allocations, and alternative conservation financing generated from Payment for Environmental Services (PES), especially water and carbon, as well as various user fees, debt-for-nature swaps, etc.

This strategy document is structured into five key chapters following this introduction:

Chapter 2 provides a *background of PA management in Bangladesh*. It includes a brief account of the history of PA management in Bangladesh (and around the world); the legal basis for PA management, including international conventions and national policies; and the institutional basis for co-management of various kinds of PAs.

Chapter 3 provides a *snapshot of Bangladesh's PA system today*. It includes a map (or maps) of various PAs that are coded by type. The section also includes a matrix summarizing key features of Bangladesh's current PAs.

Chapter 4 looks at *PA management challenges and opportunities*. The section starts with a brief threats assessment, identifying direct and indirect drivers that threaten PA conservation. The section then looks at the management of ecological services, focusing especially on water, carbon and biodiversity. This is followed by a brief assessment of global climate change adaptation and mitigation approaches. Finally, the section looks at a sustainable landscape approach to pro-poor low-carbon development to generate support from communities living adjacent to and dependent on PA resources.

Chapter 5 provides an *action plan for the Bangladesh Nishorgo PA network*. Broken down by pillar (national-level policy framework; landscape-based co-management of PAs; institutional strengthening and human resource capacity building; monitoring and evaluation; and sustainable financing), specific activities and actions are presented in order to move this integrated PA network forward as effectively and efficiently as possible.

Chapter 6 includes a resource list, including key contacts and resources to guide Bangladesh's Nishorgo PA network from its nascent establishment toward a robust centerpiece of the nation's sustainable development strategy.

2. Background of Protected Area Management in Bangladesh

Efforts to establish a national protected areas system in Bangladesh commenced in the 1960s with creation of a number of National Parks and Wildlife Sanctuaries. The conservation movement received a push in the 1980s and then expanded rapidly into the 1990s. Concentrating almost entirely on protected areas under management of the Forest Department, this interest in the 1980s correlated with global trends for terrestrial protected areas and nature conservation.

2.1 Early PA Management: An Enforcement Approach

Managed by the Forest Department, initial PA conservation management was based on an enforcement approach as per the Forest Act of 1927 and the Wildlife Preservation Act of 1974. This included the designation of protected areas, appointment of field staff, and enforcement efforts to keep people out of protected areas in order to reduce incidence of illegal logging and forest encroachment. In Bangladesh, like other densely populated developing countries, the enforcement approach to PA management proved inefficient and costly. Forest Department could not provide enough field staff to significantly reduce threats to PA resources. Moreover, the enforcement approach proved to be a heavy financial burden on limited budget. Forest Department was not endowed with sufficient human or financial resources necessary to effectively manage a growing PA system, and the pressures being put upon it by a growing population and economy

2.2 Integrated Conservation and Development

By the 1990s, Bangladesh joined other developing countries in evolving the Integrated Conservation and Development Project, or ICDP, approach to conservation. The ICDP approach shifted objectives of PA management from strict conservation within PAs to a more positive and integrated strategy of generating support for conservation by providing development benefits to communities living adjacent to PAs. While enforcement activities continued, Forest Department began working with other stakeholders striving to provide economic development opportunities to communities living in the buffer zones of PAs.

The ICDP approach to PA management improved efforts to better conserve Bangladesh's PAs, but faced problems and inefficiencies. Development activities, while often appreciated by the beneficiaries, did not necessarily correlate to threats reduction. Beneficiaries often were not the ones encroaching on PAs, and the level of economic benefits was insufficient to sway people away from illegal encroachment activities. The ICDP approach required strong facilitation skills and human resources that were not sufficiently available within the Forest Department. Meaningful development activities required a budget that far exceeded the regular budget of the Forest Department. The ICDP approach could be beneficial on a project basis, with significant human and financial resources made available over a fixed period of time. Conservation objectives might be achieved during the life of the project, but long-term sustainability of PA conservation remained questionable. In fact, in Bangladesh and around the world, once ICDP projects ended, project beneficiaries became disenchanted and threats

to conservation quickly began to increase. ICDPs provided a band-aid but lacked sustainability.

2.3 Sustainable Landscape Conservation and Co-management

Over the past decade, PA conservation management in Bangladesh has evolved to a landscape-based co-management approach. Drawing lessons learned from successful PA management around the developing world, co-management shares the responsibilities and rights of PA conservation management with all responsible stakeholders. This includes broad-based and equitable engagement of government agencies at all levels and communities dependent on PA resources, as well as relevant private sector, university, and NGO partners. It involves building awareness of the long-term economic development benefits that effective PA conservation provides, and then working together at a landscape level to balance conservation and with long-term, equitable and sustainable development.

The Vision for Nishorgo Network in Bangladesh

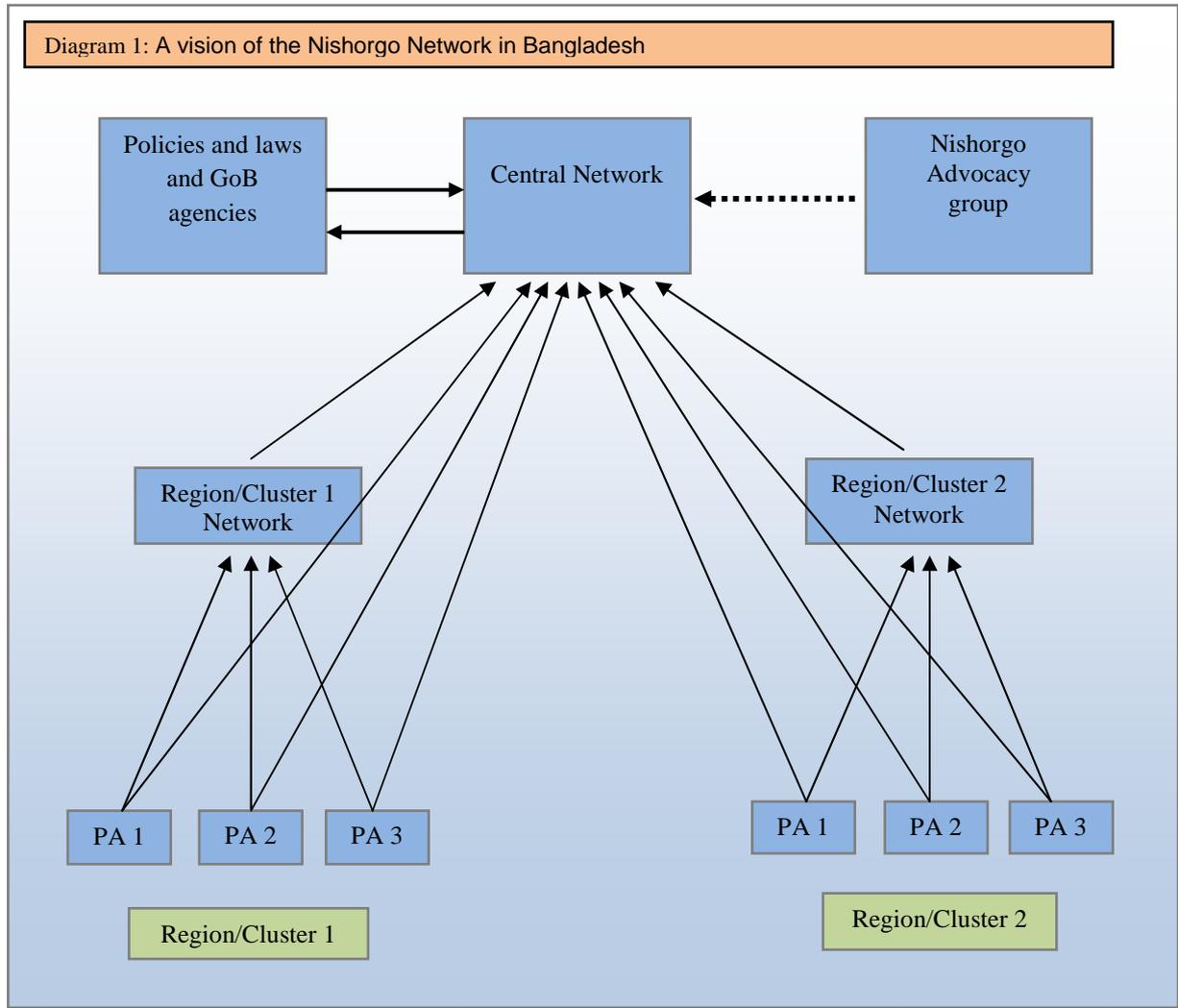
Nishorgo Network is the affiliated network of co-managed protected forest, wetland and ECAs throughout the country. With the assistance of Bangladesh Government, communities are working with the Government to conserve bio-diversity of the protected forest, wetlands and ECAs through co-management organizations. Co-management Organizations in forest and wetlands are represent the participation of local community and Government agencies in a new structure for protected area governance. The enthusiasm of the local community to participate and work for conservation with Government agencies represents a significant paradigm shift.

USAID's Nishorgo Support Project, MACH and IPAC projects expanded the co-management approach in different PAs. As a result, CMOs have been developed and organized in those Protected Areas and Wetlands. To date 16 CMOs in forest PAs and 17 CMOs in wetlands have been established and actively working in management process. Most of the CMOs are registered from the Department of Social Welfare and have their own identity. They have management plan according to the nature and features of the PAs and yearly activity plan based on the management plan.

Although, there are many differences of the PAs, challenges and threats are almost common. Bangladesh is a highly populated country with high density. In Bangladesh there are tremendous pressures on land and at the same time poverty is the important issue to address. Due to poverty, people living adjacent to the natural resources are highly dependent on resources. Climate refugees are dependent on forest land for their habitat.

To address the challenges and threats of biodiversity conservation is difficult for individual CMOs because of the magnitude of the issues. It needs huge mobilization of community people at the same time other partner organizations like GoB agencies and organizations working for conservation purpose. As example we can note here the issue of water pollution in Mokosh Beel, which is still unresolved. However, to promote larger campaign within the country in favour of conservation and building constituency, initiate and hold advocacy with policy makers for influencing them, ensure rigorous community mobilization, need united effort of the CMOs. Need regional and central forum of CMOs where they can share their experiences and move jointly to address and influence the challenges.

What would be the vision of Nishorgo network in Bangladesh? The basic perception of the network is a collective response to the demand of the environmental eco-system which is in vulnerable situation. This is an approach to work jointly by the community and Government through co-management organizations for revering the present trend. Focusing the conservation, collaborative management and pro-poor activities are the main principles of the network. Today, climate change is not only important but urgent issue to address by the Government for the community living around the forest, wetland and ECAs. People are becoming vulnerable day by day due climate change. Reduction of vulnerability Climate change mitigation and adaptation is necessary and at the same time need to mainstream the issue of these areas with our national development agenda.



While ICDP activities were project-based, co-management for PA conservation is an entire paradigm shift in governance. The government shares management rights and responsibilities for conservation with PA-dependent communities. These communities actively support conservation management through participation in joint patrols and committing to development activities based on conservation or sustainable resource utilization. Government and community work together to identify and develop economic opportunities that enhance PA conservation (ecotourism, forest rehabilitation) and reduce dependence on PAs (intensifying agriculture, agroforestry and fisheries value chains through both intensifying and diversifying production on land outside of PAs).

2.4 Co-Management Initiatives in Bangladesh

Bangladesh has developed effective co-management approaches in both forest and wetland ecosystems. Initially implemented at a pilot scale, Bangladesh is now working with the international donor community to bring co-management for PA conservation to scale. Examples of important co-management initiatives include the following:

The Arannayk Foundation

The Arannayk Foundation, also known as the Bangladesh Tropical Forest Conservation Foundation, facilitates the conservation, protection, restoration and sustainable use and management of tropical forests in Bangladesh. The Arannayk Foundation serves as a catalyst for the protection and sustainability of forest biodiversity in Bangladesh. It adopts an ecosystem approach and considers the entire range of possible goods and services in order to optimize the mix of benefits for a given ecosystem.

The Foundation provides grants and other technical support to NGOs, community organizations, universities and research institutions, and other organizations working to conserve forest biodiversity in Bangladesh. The foundation incorporates rigorous monitoring and evaluation to ensure effectiveness of its projects, and develops forward looking assessments to incorporate lessons learned and guide future initiatives.

The Arannayk Foundation is a strong proponent of co-management for effective conservation of forests in Bangladesh. For example, Arannayk Foundation has facilitated the formation of a co-management committee (CMC) in the proposed Inani National Park near Cox's Bazar. This has generated significant support from both the Forest Department as well as the local community for the conservation of this important area. Additionally, Arannayk Foundation is providing grants to co-management committees for existing Protected Areas to support integrated conservation and development.

IUCN Bangladesh's Initiative in Chittagong Hill Tracts (CHT)

The IUCN Bangladesh Country Office (IUCNB) initiated a program in 2000 to link people with nature conservation in the hilly areas of southeast Bangladesh. The goal of the program was to develop a socially acceptable, economically viable and "biodiversity friendly" development model for a given landscape in which the ethnic people of the CHT can live "in harmony with nature". The expected outputs of the program include: (i.) awareness raising of local people on sustainable use of natural resources, (ii.) building capacity at local level for conservation and sustainable development, (iii.) development and implementation of sustainable land use plans, (iv.) ecological regeneration of depleted tropical forests, (v.) support to rural livelihoods by increasing productivity of their farming systems, and (vi.) making provision for alternative income generating activities (IUCNB 2003).

Krykhong Para, one of the villages of *Mouza* Hafaikhong in the Baderban Hill District, was selected as the pilot area. A Village Development Committee (VDC) was established to manage all activities of the program with technical support from IUCNB. The participatory and capacity building approaches of the pilot initiatives have been well accepted by the community as well as the district council and district administration. Ethnic people from

other villages of the same *Mouza* as well as nearby areas approached the project for assistance with undertaking similar programs in their villages (IUCNB 2003).

UNDP-GEF Coastal and Wetland Biodiversity Management Project

The Coastal and Wetland Biodiversity Management Project (CWBMP) is a UNDP-GEF funded project implemented by the Department of Environment (DoE) under the Ministry of Environment and Forests, working to conserve wetlands in Cox's Bazar and Hakaluki Haor.

It is designed to establish and demonstrate an innovative system for management of Ecologically Critical Areas (ECAs) in Bangladesh that will have a significant and positive impact on the long term viability of the country's biodiversity resources. Among the eight ECA sites declared under the Bangladesh Environment Conservation Act 1995, CWBMP is working on four of them. The project supports DoE to operate the ECA concept at two main geographical areas. One area (which includes three ECA sites) is the country's biodiversity rich long coastal zone and the other is the largest and most important inland freshwater wetlands of the country.

USAID Support for Co-Management: MACH, Nishorgo Support Project and IPAC

USAID has worked with the Government of Bangladesh since 1998 to develop effective pilot-level co-management approaches to wetlands and forest PAs through the respective MACH and Nishorgo Support Project (NSP), and then to support the development of an overall PA co-management strategy through IPAC since 2008.

The MACH and NSP pilot efforts focused on 3 freshwater wetland sites and 5 forest protected areas covering about 45,000 hectares and affecting the lives of several hundred thousand people in three areas of the country (central region north of Dhaka, northeast region around Srimongal and southeast Teknaf peninsula). Both projects developed a model for co-management, and tested this approach through support for a number of best practices that proved effective in conserving biodiversity while increasing local socio-economic benefits. A variety of community based organizations (CBOs) including resource user groups and resource management organizations were established and supported with revolving funds, access to credit, training and technical support. Upazila Fisheries Committees, Co-management Committees and Councils and other forms of co-management organizations (CMO) were also organized, and endowment funds were established to support UFC and revenue sharing agreements were developed to help support CMC.

These projects contributed to a reduction in the loss of biodiversity in wetlands and forests, the productivity of the local fisheries was increased, local communities became engaged in working collaboratively with local government authorities and GoB technical services, and considerable socio-economic benefits were documented, particularly among households engaged in wetland restoration and community-based fisheries management, and through ecotourism developments associated with protected forests.

As MACH and NSP project assistance ended in 2008, USAID and the Government of Bangladesh launched IPAC to support bringing these pilot projects to scale. It was anticipated that the three concerned technical departments would work together to consolidate and

harmonize their approaches for community based, collaborative management of these PA landscapes, and integrate the network of declared PA into a national system, jointly supervised by the Dept of Fisheries, Forest Dept and Dept of Environment. IPAC was funded to provide assistance in key areas, including the strengthening of a favorable policy and legal framework, development of communications and outreach, increased support for training and capacity building, and increased support for site level implementation of PA co-management

2.5 Legal Basis for Co-Management in Bangladesh

Bangladesh has taken important steps in establishing a legal basis for co-management especially with regard to conservation of forest Protected Areas. Department of Fisheries has a long history of strong collaboration with local communities in managing wetlands, but this is yet to be codified specifically for the conservation of wetland Protected Areas. Co-management is implicit in management of Ecologically Critical Areas, though could be made more explicit with strengthened legislation. A strong precedent for conservation of Protected Areas based on co-management exists in Bangladesh. An important next-step is to streamline and integrate policy through a Law or Act, clarified through relevant Government Orders, to nurture coo-management of forest, wetland and other Protected Areas in Bangladesh's Nishorgo Network.

The legal basis for co-management of Protected Areas in Bangladesh is founded upon the following:

Revised Forest Act, 1927. This Act provides a framework for forest management in Bangladesh. Current revisions to the Act incorporate principles of co-management including provisions for joint management of forests to ensure shared responsibilities and benefits of conservation between government and local communities. Co-management is formalized through a provision to constitute local forest management committees. The revised Act has been approved by Cabinet and has been sent to Parliament where it should be passed as a bill.

Revised Wildlife (Conservation) Act. This Act provides a framework for conservation management of Bangladesh's wildlife. Section 17 of the revised Act codifies a commitment to co-management, stipulating that the co-management approach is employed to ensure proper utilization, conservation and management of Protected Area natural resources. It empowers the government to promulgate the co-management approach as a partnership mechanism that ensures the active participation of all parties, especially the Forest Department and local communities. It encourages the government to form and support co-management committees and organizations. The revised Act is currently with Parliament where it is expected to be passed as a bill.

Social Forestry Rules. Bangladesh's Social Forestry rules provide clear guidance for collaborative management of forest areas through reforestation with fast-rotation tree crops, providing a clear revenue-sharing scheme for harvesting and then replanting follow-up generations of tree crops. Most relevant for forest areas outside of Protected Areas, this rule provides an important basis for income-generating co-management opportunities between government and local communities engaged in forest Protected Area conservation as it provides a basis for income generating reforestation in the greater landscape beyond the core zone of forest Protected Areas. Social Forestry Rules also form the basis for draft Protected

Area rules that will clarify rights, roles and responsibilities between government and local communities in co-management of forest Protected Areas.

Protected Area Revenue Sharing Guidelines. Forest Department has prepared and implemented guidelines for collecting user fees and sharing benefits between government and forest Protected Area co-management committees. Currently, this enables co-management committees to collect and then utilize 50% of revenues generated from entrance fees to National Parks and Wildlife Sanctuaries. These guidelines provide a precedent for additional revenue sharing opportunities. This includes user fee revenue sharing for the Sundarbans as well as possible revenue sharing for forest carbon financing initiatives.

Wetland Co-Management Guidelines. The Department of Fisheries has developed draft guidelines for co-managed conservation of wetland areas. This draft Government Order adapts co-management principles from forest Protected Area management to the unique challenges and opportunities of Bangladesh's wetlands.

2.6 National Program & Strategies Supporting and to be Supported by the Nishorgo National PA Network:

To be effective, the Nishorgo National PA Network strategy must recognize, support and be supported by a number of national programs, strategies and action plans with overlapping interests. Espousing its co-management values, it is critical that this new Nishorgo National PA Strategy leads to greater cohesiveness among national programs, strategies and action plans related to conservation, sustainable natural resources management, poverty alleviation, food security, and global climate change adaptation and mitigation. Some of the key programs, strategies and action plans include the following:

Poverty Reduction Strategy

One of the most important strategies for Bangladesh that has relevance to all sustainable development activities undertaken in the country is the National Strategy for Accelerated Poverty Reduction. The poverty reduction strategy paper (PRSP) for Bangladesh is based on a road map that addresses the multiple dimensions of poverty reduction while “unlocking the potential” from an optimal mix of public action, private initiatives and community mobilization. There are eight specific avenues outlined, including at least three of direct relevance to the scope and objectives of the Nishorgo Network: participation and empowerment of the poor, especially women, ethnic minorities and other marginalized or ecologically vulnerable groups; promoting good governance; and caring for the environment and its sustainability.

The PRSP explicitly recognizes that:

“human lives and livelihoods in Bangladesh are intricately intertwined with nature. Consequently, no process of development and eradication of poverty can be conceived of without putting care for environment and sustainable development at the centre-stage. On the other hand, as the poor depend heavily on nature for their livelihood, without the whole-hearted involvement of the poor, caring for environment becomes an extremely difficult task....it is important to keep in mind that in a country where the majority of the poor are

highly dependent on natural resources, the improved management of natural resources is a prerequisite for poverty reduction....the linkage between poverty and conservation of natural resources is a mutually reinforcing process....Thus conservation and regeneration of natural resources through appropriate intervention, investment and management have to be ensured so that the poor and vulnerable communities can depend on the use of natural resources on a sustainable basis.”¹

The PRSP recognizes that biodiversity is an asset for the nation, and that the economic well-being of the country is being negatively impacted by the continued degradation and loss of biodiversity; furthermore, it notes that the improvement of biodiversity will benefit the poor, especially in terms of fisheries given the large numbers that depend on fishing for income generation and also as a source of protein. It also recognizes that dependence on land and other natural resources is increasing, not decreasing; and that the yields, productivity and economic contributions of these natural resources must increase, not decrease if poverty is to be reduced. More effective conservation of biodiversity and improved management of public commons or common property resources such as open water resources in wetlands, forests, khas and grazing lands, and the rivers and open seas is critically important to maintain a safety net for the poor. The PRSP recommends that specific measures should be taken to prevent the capture and exploitation of the highest quality public commons by the Government and/or local elites so as to exclude the poor.

In view of the foregoing, the PRSP recommends that

“the Government should improve and systematize access of the poor to the natural commons and introduce community-based participatory natural resource management; in this respect, enacting laws and regulatory frameworks and recognizing the rights of the ethnic minority and rural people to local common property resources are essential. The conservation of nature needs to include the goal of ensuring sustainable livelihood for the poor.”²

National Biodiversity Strategy and Action Plan

The Convention on Biodiversity Conservation includes 11 broad goals that are relevant to the goals and objectives of a national Protected Area system, including promotion of conservation, reduction of species loss, conservation of genetic diversity, promotion of sustainable resource use, reduction of habitat loss, control of alien species, addressing threats to biodiversity from pollution and climate change and ensuring equitable benefit sharing. In 2005, Bangladesh formulated its National Biodiversity Strategy and Action Plan (NBSAP), with 5 pillars, 16 strategies and 128 action programs to ensure better protection of biological resources in Bangladesh. The NBSAP takes account of the institutional complexity and notes the complicated legal regime related to biodiversity conservation, and cites relevant policies and strategies in the forest, environment, fisheries and other sectors, as well as a number of project interventions that have supported biodiversity conservation in one manner or another. By 2009, the fourth national report on NBSAP status and implementation had been prepared, and in 2010 a major assessment and program of action to the year 2020 was carried out as a

¹ Bangladesh Unlocking the Potential – National Strategy for Accelerated Poverty Reduction. General Economics Division, Planning Commission, Government of People’s Republic of Bangladesh, October 16, 2005. p. 177.

² Ibid, 2005. pp. 181.

milestone event for the International Year of Biodiversity. The assessment highlights the major threats or drivers of biodiversity loss, and reviews progress made so far in achieving its 2010 targets under seven focal areas related to the NBSAP and associated projects. The assessment also includes an analysis of the linkages between NBSAP and the programs outlined in the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), and complementarities and conflicts between NBSAP and Poverty Reduction Strategy Paper. By and large, there has been progress and some accomplishments on many fronts, although the 2010 report notes that many challenges exist to mainstream and successfully implement NBSAP, including:

- weak inter-sectoral coordination
- lack of momentum in policy level endorsement to back conservation of biodiversity; negligible efforts to enhance policy level understanding of the importance of biodiversity conservation
- legal and institutional framework not supportive of biodiversity conservation; inadequate implementation of existing legislation to halt conversion of forest lands
- negative impacts of climate change on conservation
- inadequate financial and technical capacity of concerned organizations to implement NBSAP strategies and action plans

Taking into account the latest assessment, a participatory process was organized to identify the short and long term programs to be undertaken for nine focal areas of biodiversity conservation in Bangladesh, including the conservation of coastal areas, wetlands and fisheries, landscapes, forests and wildlife. Some of the recommended activities from the recently adopted Biodiversity Programme of Action 2020 (BPA 2020) that are most pertinent to the strengthening and scaling up of the Nishorgo Network include:

- updated survey of wetlands to declare and conserve important areas
- development of guidelines and rules for wetland ecosystem management
- provision for community based wetland management
- community based conservation of riverine habitats to conserve cetaceans
- community based management of medicinal plants in CHT
- development of guidelines and monitoring indicators to apply ecosystem approach towards forest biodiversity conservation
- updated inventory and demarcation of forest areas
- development of REDD+ projects with communities in suitable areas
- development of conservation based forest management system
- conduct study to identify biodiversity rich forest ecosystems to be declared and managed as protected areas
- develop a handbook on best practices in management of ecosystems in relation to wildlife, cultural heritage and landscape conservation

Forest Department's 'Vision 2010'

In 2003, the Forest Department developed a "Vision 2010" to identify the major challenges to improved PA management in the medium term. Per that Vision, the major trends that could be expected to affect PA management in Bangladesh included:

- The number of tourists visiting protected areas and other nature sites will continue to increase

- NGOs, academics and the international community will put steadily increasing pressure on the FD to manage protected areas in a more sustainable way
- It will be increasingly difficult to adhere to the international Conventions that the country is bound to uphold
- At the local level, the demands on protected areas will increase
- Forest Department will manage protected areas in a more sustainable way
- Protected Areas will see increasing intractable social conflicts
- The economics of land prices and competing development plans, based on increasing demand for land, will put an extra pressure on the protected area system

As a response to these coming challenges and trends, the FD will need to master a new approach to PA conservation, as called for under the Nishorgo Program. Nishorgo must find ways to get “buy-in” or consensus from local stakeholders who can serve as a counterweight to special interests far away from PAs and adjacent lands. “Vision 2010” states that FD will need new approaches for PA management, including several issues:

- PA managers would need to continue to focus on and master forest and ecosystem management
- The Wildlife and Nature Conservation Circle, and its mandate and processes, would need to be modified to be in line with the overall goals of Nishorgo. In effect, the Circle would need to be strengthened and its processes reviewed
- A co-management approach should be adopted
- To extend the reach and effectiveness of the PA managers, an active local PA management committee, composed of an appropriate but small number of local stakeholders, will be essential
- The role of the DFO/Wildlife, in particular, needs to be examined and clarified
- PA Managers can no longer manage their areas as islands cut off from the rest of society
- The FD must continue to improve its ability to manage the legal dimensions of land and resource conflicts

“Vision 2010” recognizes that PAs represent important economic opportunities and each PA will need to take appropriate steps to move toward financial self-sufficiency. To reach its goals, the Forest Department will also build its institutional, human and material capacity to meet these challenges. Formal structural changes must be made to the PA capacity-building efforts for PAs to become functional and operational. The movement towards a separate PA management system should be made slowly, allowing the national PA management institutions to gain ability in the process. The five pilot PAs that are the focus of NSP will produce models for PA management that can be extended to other PAs as a networked PA system.

National Fisheries Strategy and Action Plan

The National Fisheries Strategy and Action Plan was formulated to present new ways in which policies, in particular the National Fisheries policy, can be implemented and support can be offered to guide the sector, recognizing that over the next ten years the requirements of the sector are likely to change as development continues apace. It recognizes the need for more support for the capture fisheries, both marine and inland, to reduce the current decline and to prevent further biodiversity and wetlands losses. It also recognizes the increased

support needed for both promoting aquaculture while also improving the regulatory framework to provide a structure for continued expansion. All of this must be done from severely constrained resources and so improved working relationships need to be fostered to encourage greater ownership and management by the fishers through community or co-management.

The Strategy and Action Plan represents the compilation of eight sub-strategies which have been formulated to provide specific direction in their areas. These were all prepared using a participatory approach with inputs from Department of Fisheries and other stakeholders from the private sector, research bodies, other government agencies, NGOs, and fish farmers and fishers. The work was facilitated by project staff but the ownership of the strategy lies with the Department of Fisheries which is responsible for coordinating the management of the sector. The building block sub-strategies include:

- Aquaculture Sub-strategy
- Aquaculture Extension Sub-strategy
- Inland Capture Fisheries Sub-strategy
- Marine Sector Sub-strategy
- Shrimp Sub-strategy
- Monitoring and Evaluation Sub-strategy
- Quality Control Sub-strategy
- Human Resource Development Sub-strategy

The Bangladesh Tiger Action Plan

The Bangladesh Tiger Action Plan (BTAP) marks the beginning of a structured approach to achieving long-term conservation of tigers in Bangladesh. The BTAP is a policy-level document that provides a vision, goals, and objectives to guide an integrated and focused tiger conservation programme. The vision is to ensure protected tiger landscapes in Bangladesh, where wild tigers thrive at optimum carrying capacities and which continue to provide essential ecological services to mankind. The main goal for the next eight years is to stabilise or increase the Sundarbans tiger population. The Bangladesh Forest Department, under the Ministry of Environment and Forests, is the custodian of the forest and its wildlife, but one of the most important aspects of the BTAP is the recognition that the immense task of tiger conservation necessitates support and expertise outside the normal remit of forest management. Therefore, the establishment of a Forest Department-led platform that facilitates collaboration for the implementation of conservation activities will be fundamental to its success.

Tigers are directly threatened by poaching to supply the increasing demand for tiger products. In addition, Bangladesh suffers high levels of tiger-human conflict, manifested in human-killing, livestock depredation, and ultimately the retribution killings of tigers by affected local communities. Poaching of prey further reduces the capacity of the forest to support tigers, and unsustainable forest use and climate change threaten to reduce the area in which tigers can live. In building a successful tiger conservation effort, there are also a range of challenges that need to be dealt with relating to: (1) institutional development and policy, (2) forest protection and law enforcement, (3) education and awareness, (4) research and monitoring, and (5) the need for collaboration.

Climate Change Strategy and Action Plan

In seeking to address the threat of Global Climate Change, Bangladesh has also developed strategies and programs that are relevant to the goals of the Nishorgo Network. In 2005, a National Adaptation Programme for Action (NAPA) with a view towards identifying projects to strengthen adaptive capacities and increase resiliency among the most vulnerable populations in coastal areas and elsewhere. Focal points were identified in relevant ministries to support the implementation of prioritized actions, including coastal afforestation with community participation, provision of drinking water supplies to coastal communities, capacity building to integrate climate change in development planning, awareness raising and assistance in coping with recurrent floods.

In 2008-2009, the overall Climate Change Strategy and Action Plan was developed with the leadership of the Dept of Environment and Ministry of Environment and Forests, and Climate Change cells and units have been established in DoE and MoEF to support the implementation of the BCCSAP. The strategy includes a number of pillars related to food security, disaster management, infrastructure development, research and knowledge management, low carbon development and capacity building. The potentially negative impacts of climate change on biodiversity as well as on livelihoods, food supplies and the incidence of disease are noted. The opportunity and potential benefits from programs aimed at mitigation and carbon sequestration, including CDM initiatives, Afforestation / Reforestation and REDD+ in association with Protected Area co-management are also cited. The protection of livelihoods in ECA, and contribution to food security and adaptation from improved fisheries management is also noted.

3. The Bangladesh PA System Today

Bangladesh was originally a country of rich wetlands and tropical forests, but those vast expanses of wetland and forest habitat have been largely converted to agricultural fields, human settlements and fish and shrimp farms, particularly during the last fifty years. We get some idea of the vegetation and geography of this area from the experiences of early visitors. A Chinese traveler named Xuanzang (also spelled as Hieun Tsang) who visited this area around 630 A.D. found it very marshy. The British surveyor Francis Buchanan, who surveyed the southeastern Bangladesh in 1798 to identify areas suitable for the cultivation of spices, saw most of the area covered by dense forests. Lord Guy Mounfort, who flew as a Royal Air Force pilot in the Second World War and then returned in 1969 to lead a World Wildlife Fund expedition, noted that the nearly continuous hill forests of Greater Sylhet from the 1940s had been decimated in the intervening years. The rich wetlands of the country are, in some areas, still quite in their original state, but forests have suffered severely from overexploitation.

Four main wildlife habitats in Bangladesh include forests; wetlands; bushy, grassy and bamboo-covered areas; and homestead vegetation. These are described below.

Forests

There are three types of forests in Bangladesh, i.e. mangrove, mixed evergreen, and deciduous forests (Figure 1). One-tenth (9.8 percent, or 1.45 million ha) of the country's surface area is under the forest belts, but the actual coverage of natural forests is lower than this, with most of this accounted for by the Sundarbans mangrove forest. Bangladesh has one of the world's lowest forest-to-population ratios (<0.02 ha per person). The natural forests are the most important wildlife habitats since most of the flagship and threatened species are found there.

The mangrove forests (including coastal plantations) cover an area of 0.71 million ha along the coast, with most of this (0.58 million ha) accounted for by the Sundarbans – the largest and least disturbed forest of Bangladesh. The Bangladesh and Indian Sundarbans together form the largest single mangrove forest in the world accounting for 6 percent of all mangroves on earth. The mangrove forests are characterized by unique plants that grow below the high tide level and can survive through the use of various types of aerial roots. The vegetation is mainly composed of mangrove trees such as Sundri (*Heritiera fomes*, Sundari), *Excoecaria agallocha* (Gewa), *Sonneratia apetal* (Keora), *Sonneratia caseolaris* (Chila/Ora) and *Avicennia* spp (Baen), and smaller plants such as *ceriops* spp. (Goran), *Phoenix paludosa* (Hental), *Nipa Palm* (*Nypa fruticans*, Golpata), *Acanthus ilicifolius* (Hargoza), Sungrass (*Imperata* spp., Chhan) and *Typha* spp. (Hogla).

The mixed evergreen forests have become heavily fragmented but together cover an area of 0.55 million ha in the southeast and northeast of Bangladesh. Some relatively large patches of mixed evergreen forests still exist in the Chittagong Hill Tracts in the southeast. The two best mixed evergreen forests in the northeast are found within Rema-Kalenga Wildlife Sanctuary and Lawachara National Park. The mixed evergreen forests are dominated by

evergreen trees, but also have some deciduous trees. The principal tree species include *Artocarpus chaplasha* (Chapalish), *Dipterocarpus* spp. (Garzan), *Swintonia floribunda* (Civit), *Bombax* spp. (Shimul), *Michelia champacea* (Champa) *Syzygium* spp. (Jaam), Wild Mangle (*Mangifera longipes*, Ury-aam), *Albizia* spp. (Koroi), *Dillenia pentagyna* (Hargaza/Azuli), *Lagerstroemia* spp. (Jarul) and *Ficus* spp. (Bot). Other common plants include different species of bamboo (*Bambusa* spp., *Melocann* spp., etc.), epiphytes (*Vanda* spp., *Dendrobium* spp., etc.), climbers and ferns, including the Tree-fern (*Alsophila* sp.).

The deciduous forest have also become largely fragmented and degraded throughout the country. The 0.12 million ha of deciduous forests are distributed in the central, northern and northwestern parts of the country. Only in the Madhupur Tract are relatively large areas of forests still existing, although they are not in a primary state. The most dominant tree species of the forest is Sal (*Shorea robusta*, Shal), which forms 80 percent of the trees, but mature Sal trees in the forest are now extremely rare. Other species that form the vegetation include trees such as *Dillenia pentagyna* (Hargaza/Azuli), *Adina cordifolia* (Kaikka), *Ficus* spp. (Bot) and *Syzygium* spp. (Jaam), and plants including *Zizyphus* spp. (Bon-boroi), *Spondias mangifera* (Bon-amra), *Phyllanthus embelica* (Amloki), *Gloriosa superba* (Ulotchondal), *Curcuma* spp. (Shoti), Bamboo (*Bambusa* spp.) and *Lantana camara*. The deciduous forests have many large grassland pockets, dominated by imperata grasses.

Wetlands

Bangladesh is a country of wetlands, with 7 percent (1.03 million ha) of the country permanently always under water, 21 percent (3.09 million ha) deeply flooded and 35 percent (5.16 million ha) experiencing shallow inundation. The five most important wetland areas are Haor Basin in the northeast, the Sundarbans in the southwest, the Meghna River estuary in the south, Kaptai Lake in the southeast, and the coastal areas adjacent to St. Martin's island and the Teknaf Peninsula in the far southeast. Two sites have been recognized as internationally important wetlands under the Convention on Wetlands of International Importance Especially as Waterfowl Habitats ("Ramsar" Convention). These two "Ramsar" sites include Tanguar Haor and the Sundarbans. The riverbeds of large rivers like Jamuna, Padma and Meghna, together with their tributaries, are good habitats for many wetland birds. The sandflats, mudflats, and grassy areas along the coast are also important for coastal and marine birds and other wildlife. Moreover, the Bay of Bengal provides habitats for marine wildlife. The common vegetation of the wetlands are reeds like *Saccharum* (Kansh) and *Phragmites* (Nol), and other plants such as *Barringtonia racemosa* (Hijal), Water Hyacinth (*Eichhornia crassipes*, Kochuri Pana), *Lemna* spp. (Khudi Pana), *Chara* spp., *Nitella* spp. *Sagittaria* spp., *Ipomoea* spp. (Kolmi), and Water Lily (*Nymphaea nouchali*, Shapla). One special wetland plant of the country is the Wild Rose (*Rosa involucrate*, Guzar Kanta) that grows only in the Haor Basin. Some species like *Myriostachya wightiana* (Dhanshi/Ury Ghash) and *Typha* spp. (Hogla) grow only in the coastal wetlands.

Bushy, Grassy and Bamboo-Covered Areas

The hilly areas in the southeast, particularly the Chittagong Hill Tracts, and in the northeast, have huge hilly areas covered by dwarf vegetation. The total of such areas is 5 percent (0.80 million ha) of the country's total area, most of which (0.73 million ha) are found in the Chittagong Hill Tracts and legally designated as "unclassed state forests". Common bushy plants such as *Lantana camara*, *Eupatorium* sp., *Clerodendrum* spp., *Melastoma* spp., many

species of bamboo (*Melocanna bambusoides*, *Bambusa* spp., *Oxytenanthera* spp., *Teinostachyum griffithi*, *Neohouzeaua dullooa*, etc.) and grass (*Imperata* spp., *Phragmites* spp., etc.) grow in these areas. Some of the areas previously had good forest cover, but once the trees were logged the areas were occupied by bushes, grasses and bamboo.

Homestead Vegetation

Most villages in Bangladesh are lush with vegetation. The backyards of village homes often have dense growth of planted and natural vegetation, and are particularly important in supporting a number of wildlife. These wildlife use the homestead vegetation and surrounding crop fields (Rice, Wheat, Jute, etc.) for their food and shelter. Homesteads account for 27 percent (4.0 million ha) of the country's total area. The common vegetation of the villages include the trees like Mango (*Magnifera indica*, Aam), Jackfruit (*Artocarpus heterophyllus*, Kanthal), *Syzygium* spp. (Jaam), Litchi (*Lichi chinensis*, Lichu), *Zizyphus mauritiana* (Boroi), *Dyospyros peregrine* (Gaab), Tamarind (*Tamarindus indica*, Tentul), Silk Cotton (*Bombax ceiba*, Shimul), *Anthocephalus cadamba* (Kadam), and *Albizia* spp. (Koroi), and other plants like bamboo (*Bambusa* spp., Bansh), Banana (*Musa* spp., Kola), Date Palm (*Phoenix sylvestris*, Khejur), Palmyra (*Borassus flabellifer*, Taal), Coconut (*Cocos nucifera*, Narikel), *Barringtonia racemosa* (Hijal), Fig (*Ficus* spp., Dumur), Lime (*Citrus aurantifolia*, Lebu), *Calotropis gigantean* (Akand), *Ricinus communis* (Bherenda), *Cassia* spp., *Clerodendrum inerme* (Bhant) and *Coccinia grandis* (Telakucha).

Protected Areas & Wildlife Conservation

Bangladesh has a network of designated Protected Areas, Primarily for the conservation of Wildlife. While some of these were declared in the 1960s, the history of forest management by the state goes back at least to the Mughal era. During the Mughal Empire and the rulings of the local kings there were areas preserved for sport-hunting for the elites. During the Colonial era, forests were brought under the Government's jurisdiction and parts of the forests were declared as Reserves where logging was not permitted. In 1793, the Government of British India officially took control of the forest, and in 1865 the Forest Department was created and the first Forest Act was promulgated.

A significant improvement in the legal status of the Protected Areas occurred after the independence of Bangladesh through the formulation and implementation of Bangladesh Wildlife Order in 1973, which was refined as Bangladesh Wildlife Preservation Act, 1974. According to this Act there are three defined types of Protected Areas: National Parks, Wildlife Sanctuaries and Game Reserves.

The National Park is defined as “comparatively large areas of outstanding scenic and natural beauty with the primary object of protection and preservation of scenery, flora and fauna in the Natural state to which access for public recreation and education and research may be allowed”.

The Wildlife Sanctuary is defined as “an area closed to hunting, shooting or trapping of wild animals and declared as under Article 23 by the Government as undisturbed breeding ground, primarily for the protection of wildlife, inclusive of all natural resources, such as vegetation, soil, and water”.

The Game Reserve is quite similar to that of Wildlife Sanctuary except for the provision of hunting permit., and is defined as “an area declared by the Government as such for the protection of wildlife and increase in the population of important species wherein capturing of wild animals shall be unlawful”.

In recent years, the Forest Department has declared a number of sites as “Eco-Parks” and “Safari Parks”. Although these declarations have no legal basis in the Act, they are distinguished by being smaller in size than the other Protected Areas and generally organized and managed to support recreational visitation rather than conservation. The one Safari Park (at Dulahazra north of Cox’s Bazar) includes a collection of different wild animals kept in relative large enclosures.

In light of continued loss of forest habitat throughout the country, the Forest Department has in recent years experimented with modified approaches to management of Protected Areas. The Department’s Nishorgo Program for Protected Area Management, created in 2003, has shifted the historical emphasis on exclusive Government control of Protected Areas towards an active engagement with local and national stakeholders. At five pilot sites, the Department has been testing “collaborative management” models and a wide range of complementary activities, including ecosystem restoration, nature interpretation, key species monitoring, support to conservation enterprises and more. The Program has received financing principally from the Government of Bangladesh and United States Agency for International Development, with additional support provided by the German Agency for Technical Cooperation and the Asian Development Bank.

Using birds as bio-indicators, systematic monitoring and evaluation indicate that the conditions of forest understories have improved. Although evidence indicates that illegal felling has slowed, it has yet to be stopped. Moreover, there is a positive change in the mindset of the local communities regarding conservation, primarily through their involvement in “Co-Management Councils” which are now legally recognized and formally engaged in management decision-making, as well as through their involvement in the form of patrolling, working as paid nature guides and other activities.

Today, there are 19 Protected Areas and 6 other conservation sites in Bangladesh with a total area of 252,835 ha or 2,528.35 km², covering only 1.7 percent of the total area of Bangladesh. All these Protected Areas are forests or bushy and bamboo-covered area under the jurisdiction of the Forest Department despite the fact that there are many rich wetlands in the country that require legal protection. Notably, the Government has declared Hakaluki Haor (in northeast), Teknaf Peninsula (in far southeast), St. Martin’s Island (in far southeast) and a few other areas as Ecologically Critical Areas. The legal protection, however, does not necessarily ensure actual protection, but one big step on the road to protection.

The existing Protected Areas are the remnants of luxuriant natural forests that once existed and serve as the last strongholds of most of the charismatic wildlife of the country. Sadly, however, most of the Protected Areas are very small and disturbed, with insufficient management. These areas must be protected from further degradation and initiatives should be taken to improve the health of the wilderness and biodiversity.

Bangladesh is also managing about 85,000 hectares of wetlands and more than 44,000 hectares of ecologically critical areas (ECAs) as Protected Areas. Wetlands and ECAs

represent an important expansion of Bangladesh's PA system, especially with regard to addressing food security and Global Climate Change Adaptation. Managing wetlands as protected areas ensures that vast wetland areas stabilize surface water flow, reducing incidence of flooding in the wet season and storing water deep into the dry season. Moreover, protected wetlands result in increased fish catch for communities dependent on wetlands for their livelihoods. ECAs help buffer against natural disasters, providing sizable PAs to absorb the shock and thus lessen the impact of cyclones and floods.

Table 3.1: Bangladesh's Protected Areas as of November 2010

No.	Protected Area	Habitat Type	Location	Area (Ha)	Established (Extended)
A. National Parks					
1	Modhupur NP	Sal forest	Tangail/Mymensingh	8,436.13	1962 (1982)
2	Bhawal NP	Sal forest	Gazipur	5,022.27	1974 (1982)
3	Himchari NP	Hill forest	Cox's Bazar	1,729	1980
4	Lawachara NP	Hill forest	Maulvibazar	1,250	1996
5	Kaptai NP	Hill forest	Chittagong Hill Tracts	5,464.78	1999
6	Ramsagar NP	Sal forest	Dinajpur	27.75	2001
7	Nijhum Dweep NP	Mangrove	Noakhali	16,352.23	2001
8	Medha Kachapia NP	Hill forest	Cox's Bazar	395.92	2004
9	Satchari NP	Hill forest	Habiganj	242.91	2005
10	Khadimnagar NP	Hill forest	Sylhet	678.80	2006
11	Baryadhala NP	Hill forest	Chittagong	2,933.61	2010
12	Kadigar NP	Sal forest	Mymensingh	344.13	2010
13	Sinra NP	Sal forest	Dinajpur	305.69	2010
14	Nabab Gonj NP	Sal forest	Dinajpur	517.61	2010
15	Kuakata NP	Mangrove	Patuakhali	1,613	2010
B. Wildlife Sanctuaries					
11	Char Kukri-Mukri WS	Marine, Intertidal	Bhola	40.00	1981
12	Rema-Kalenga WS	Hill Forest	Hobigonj	1,795.55	1981 (1996)
13	Pablakhali WS	Hill Forest	Chittagong Hill Tracts	42,087.00	1983
14	Chunati WS	Hill Forest	Chittagong	7,763.97	1996
15	Teknaf WS	Hill Forest	Cox's Bazar	11,614.57	1983 (2010)
16	Sundarbans East WS	Mangrove	Bagerhat	31,226.94	1996
17	Sundarbans West WS	Mangrove	Sathkhira	71,502.10	1996
18	Sundarbans South WS	Mangrove	Khulna	36,970.46	1996
19	Fasiakhali WS	Hill Forest	Cox's Bazar	1,302.43	2007
20	Hazarikhil WS	Hill Forest	Chittagong	1,177.53	2010
21	Dudpukuria Dhopachari WS	Hill Forest	Chittagong	4,716.57	2010
22	Sangu WS	Hill Forest	Bandarban	2,331.98	2010
23	Tangragiri WS	Mangrove	Barguna	4,048.58	2010
D. Wetland PA					
24	Hakaluki Haor	Wetland	Moulvibazar	18,383	1999

25	Tanguar Haor (Ramsar)	Wetland	Sunamgonj	9,727	1999
26	Marjat Baor, Jhenaidah	Oxbow Lake	Jessore	200	1999
27	Gulshan-Baridhara Lake	Urban Wetland	Dhaka		2001
28	Hail Haor		Moulvibazar	3,000-12,000	
29	Baikka Beel (sanctuary)	Wetland	Moulvibazar	100	2003
E. Ecologically Critical Areas (ECA)					
30	Teknaf Peninsula	Sandy Beach	Cox's Bazar	10,465	1999
31	Sundarbans (10 km periphery buffer around the forest)	Mangrove			1999
32	St. Martins Island	Coral Ecosystem	Cox's Bazar	590	1999
	Hakaluki Haor	Wetland	Moulvibazar	18,383	1999
33	Sonadia Island	Sand Dunes	Cox's Bazar	4,916	1999
	Tanguar Haor (Ramsar)	Wetland	Moulvibazar	9,727	1999
	Marjat Baor, Jhenaidah	Oxbow Lake	Jessore	200	1999
	Gulshan-Baridhara Lake	Urban Wetland	Dhaka		2001
34	Rivers (Buriganga, Turag, Sitalakhya and Balu) around Dhaka city	River			2009



Table 3.2 Types of Protected Areas in Bangladesh, and Area per Type

<i>Type of PA</i>	<i>Targeted ecosystem</i>	<i>Number declared</i>	<i>Estimated Area (ha)</i>
National Parks	Forests, wetlands, mangrove	15	45,313.83
Wildlife Sanctuaries	Mangrove, char, forest	13	216,577.68
Ecoparks, Safari Parks, Botanical Gardens	Mixed evergreen, high hill and deciduous forest	7	5,202
Fish Sanctuaries	Wetlands, open water bodies, rivers	Over 300	85,000
Ecologically Critical Areas	Mangrove, beach, corals, wetlands, rivers	12	44,281
Community Conserved Areas	Forested catchment areas, wetlands	Over 100	5,000-10,000
Total		400-500	300,000 – 350,000

4. Protected Area Management Challenges and Opportunities

Bangladesh's Protected Areas present a paradox. A well-managed Protected Area system can contribute to the long-term and sustainable development of Bangladesh while simultaneously providing safe-guards and buffers to negative impacts of food security and Global Climate Change. In many respects, Bangladesh's future rests on managing densely populated rural landscapes as mosaics integrating protection and rehabilitation of Protected Areas to safeguard ecosystem functions and environmental services with sustainable utilization of adjacent agricultural land and wetlands.

4.1 Bangladesh's PA Threats Assessment

The main drivers threatening Bangladesh's Protected Areas are *high population and poverty*. Resulting from this is lack of access to land or employment opportunities; as well as lack of access to affordable building materials and cooking fuel.

Additional drivers include lack of *government financial and human resources* to adequately manage the current and expanding Protected Area system. Government budgets are limited, often prioritizing more immediate challenges in disaster relief or health services delivery. Poorly resources staffing is inadequate to effectively manage large, often remote Protected Areas.

Increasingly, *Global Climate Change* is a main driver threatening Bangladesh's Protected Areas. Sea level rise and increased salination is likely changing the habitat structure of the Sundarbans mangrove forest, drawing more salt-tolerant tree species deeper inland. Increased incidence of cyclones and other natural disasters is leading to more significant tree loss and subsequent vegetative change. Change in temperatures and rainfall seasonality is likely impacting forest and wetland flora and fauna resources, exacerbating the negative impact of ongoing PA encroachment and weakening the resilience of PA ecosystems to adapt and bounce back.

There are a number of secondary drivers associated with the primary drivers threatening Bangladesh's PA system and thus Bangladesh's ability to ensure food security and adapt to Global Climate Change. This includes but is not limited to lack of awareness, lack of clear tenure for forest-dependent communities, and various limitations on government to effectively manage a sprawling and often isolated PA system. Yet addressing secondary drivers without addressing the underlying primary drivers is inefficient in the short-run and ineffective in the long-run. Only by addressing primary drivers as they relate to Bangladesh's overall development and Global Climate Change strategies can Bangladesh's PA system contribute resilience, sustainability and adaptation.

4.2 Co-Management: Turning Threats into Opportunity

Co-management provides Bangladesh the single greatest opportunity for effectively managing an expanding PA system in a manner that contributes significantly to resilience-based development, food security and Global Climate Change adaptation and mitigation. Co-management offers a management paradigm that harnesses the primary drivers currently threatening the conservation of Protected Areas and turns them into our greatest resources for success.

Most fundamentally, co-management shares management responsibilities and rights for the conservation of Protected Areas between key stakeholders that include government agencies at various levels, communities dependent on PA resources for their livelihoods, and other private sector, university and NGO institutions that have a stake in the management and/or resources of a specific Protected Area. Taking a landscape approach, co-management stakeholders work together to manage a broad landscape for integrated conservation and sustainable development objectives. Protected Areas are managed as core conservation zones, with management activities limited to ecosystem and environmental services conservation, rehabilitation, restoration, and sustainable natural resources management. Broader landscapes adjacent to and beyond Protected Areas are managed for low-emissions based sustainable development based on the intensification of agriculture, fisheries, agro-forestry and other sustainably-managed value chains.

Key to effective co-management in Bangladesh is the rapid and significant demonstration of livelihoods benefits for poor people living adjacent to and dependent on forest and/or wetland Protected Areas. Such benefits can be financial, including sustainable development initiatives based on the intensification of economic activities in the landscape beyond the Protected Area. Financial benefits can also be based on effective conservation and restoration of Protected Areas, through ecotourism development or social forestry critical land restoration. Benefits are also generated from improved and enhanced environmental services from conserved Protected Areas. This includes increased fish catch from around wetland PAs, improved access to stabilized water resources from well-managed forest protected areas, and sharing of payments for environmental services possibly from carbon sequestration and water resource management. Many economic benefits of PAs may not be accrued for many years to come. Importantly, given the extreme level of poverty in Bangladesh, effective co-management requires the demonstration of economic benefits today as we build the momentum for more and broader based benefits tomorrow. Without demonstrating meaningful benefits today, we will lose the opportunity to reap greater rewards tomorrow.

Co-management mobilizes a cadre of PA managers that far exceeds the capacity of government, and also necessitates government changing its approach to interacting with PA stakeholders. While enforcement must continue, government can draw on community patrol groups to strengthen numbers in the field and lessen the financial and human resource burden. Government must also re-orient human resources toward a more significant role as facilitator. Government leadership in co-management requires the ability to clearly communicate a vision for shared conservation and development, and then the skills to facilitate this. The co-management paradigm requires significantly less management of natural resources and significantly more management of people.

Co-management can clearly address the primary drivers threatening Bangladesh's PAs today, turning threats into opportunities. It mobilizes the rural poor to become partners, this reducing strain on government budgets. Implemented at a landscape level, incorporating PA conservation with low emissions development in the buffer areas, it contributes to Global Climate Change adaptation and mitigation.

Just as there are many secondary drivers threatening Bangladesh's PAs, there are many secondary drivers that will enhance conservation of these PAs. Awareness campaigns will raise interest in and commitment to effectively managed PAs. Addressing land tenure issues in forest and wetland PAs will strengthen the sense of ownership among stakeholders. Yet these secondary drivers cannot have sustainable impact without fully embracing co-management as a means to mobilize the poor, demonstrate immediate economic benefits of integrated conservation and development to the, offset human and financial resource demands from the government, and integrate global climate change adaptation and mitigation into a landscape-based approach to PA conservation.

5. Bangladesh Nishorgo Protected Area Network Action Plan

This national integrated PA network is based on five main *pillars*:

1. *National-level policy framework* that formally establishes a comprehensive network of forest, wetland, marine and other PAs as a centerpiece of the national sustainable development strategy; harmonizes policies amongst various government agencies to most effectively support integrated PA co-management; and communicates the significance of integrated PA co-management to long-term sustainable development;
2. *Landscape-based co-management of forest, wetland and other PAs* based on low-carbon development plans that integrate PA conservation with sustainable livelihoods development of poor people living adjacent to and dependent on PA resources;
3. *Institutional strengthening and human resource capacity building* to strengthen effective co-management of PAs. This includes but is not limited to the effective facilitation of co-management activities that lead to conservation of PAs, low carbon development for poor people living adjacent to and dependent on PA resources, and elucidation of the significant role of a PA network for national sustainable development. This also includes the facilitation of Public-Private Partnerships (PPPs) to leverage additional financial, in-kind and technical resources required for effective PA conservation co-management;
4. *Monitoring and evaluation* to support adequate selection of PAs in the national network, and then to ensure that environmental, economic and social objectives are being adequately met, especially in light of expected changes due to climate change;
5. *Sustainable financing* to establish, grow and manage a robust PA network. This includes financing for co-managed conservation of PAs, low-carbon development initiatives for the poor living adjacent to and dependent on PA resources, and public outreach to build national-level awareness of and commitment to Bangladesh's PA network. It requires an integrated financing approach to include GoB budget allocations, donor support, and alternative conservation financing generated from Payment for Environmental Services (PES), especially water and carbon, as well as various user fees, debt-for-nature swaps, etc.

Specific action plans for each of these pillars follows:

I. Enabling Policy and Legal Framework

1. PA policy assessment identifying gaps in policy and related legal framework, especially related to types of PAs, co-management principles and an overall, integrated PA system.

2. Policy harmonization review, ensuring the national PA strategy synergizes with related national strategies most notably dealing with food security and Global Climate Change
3. Development of national PA policy statement embracing the establishment of a national integrated PA system based on co-management and sustainable land-use including forest, wetland and ECAs, and focused on supporting food security as well as GCC A&M, and in line with the relevant international conventions to which the GOB is signatory.
4. Establishment of national-level PA co-management board/council/oversight committee under the leadership of the Prime Minister and with representation from relevant government agencies and civil society organizations in order to ensure inter-sectoral and inter-departmental coordination for policy implementation.
5. Roll-out national Nishorgo Network communications campaign to build awareness of and support for Bangladesh's integrated PA network.

2. Landscape-based Co-Management of forest, wetland and ECA Protected Areas

1. Integration of PA conservation management within broader sustainable development planning including their contribution in food, water and environmental security.
2. Facilitation of on-going landscape-based co-management planning and field implementation initiatives in existing PAs, focusing on achievement of significant economic benefits to poor community dependent on PAs based on conservation-linked value chain and livelihoods interventions.
3. As representatives of selected biogeographic regions, declaration of suitable forests and wetlands as PAs and identification of their multi-use interface landscape zones and buffer zones for co-management with neighboring community.
4. Identification of corridors that link the country's comparatively small PAs and declaration of such corridors as ECAs in order to provide adequate protection for ensuring their long-term conservation values.
5. Expansion of co-management of PAs through a strategic and systematic expansion of co-management into newly-declared PAs and under-represented PAs.
6. Mobilizing local community including women by following the approved co-management approach and providing for their sustainability through capacity building, capitalization and sustainable financing including revolving funds.
7. Naturally regenerating degraded forests and wetlands PAs in gainful partnerships with the local community by equitably sharing benefits that will accrue as a result of enhanced productivity of restored ecosystems.

3. Institutional Strengthening and Human Resource Capacity Development

1. Based on sectoral reviews, strengthen capacity for PA co-management possibly through establishment or redeployment of PA wings/divisions in the concerned directorates for ensuring strengthened staff recruitment, posting, performance review and promotion, and implementing in-service refreshers courses on PA co-management and conservation biology.
2. Prepare and implement Institutional Development Frameworks to guide and measure progress on profound institutional changes required at the national level in government agencies and at the PA site-based level for co-management organizations.

3. Prepare and implement human resource training programs for government officials to build skills in facilitation and people-management, and for NGOs and community partners on co-management, low emissions conservation and development, and global climate change adaptation and mitigation.
4. Biannually prepare a PA status and performance report that will be presented to the national parliament for national debate and consequent corrective measures.

4. Monitoring and Evaluation

1. Prepare and implement a comprehensive monitoring and evaluation protocol that measures and provides guidance toward resource allocation to achieve environmental, social and economic objectives of PA co-management.
2. Prepare and implement site-specific participatory monitoring protocols that measure and provide guidance for understanding and responding to impacts of Global Climate Change.

5. Sustainable Financing

- 1 Prepare and implement a PA co-management sustainable financing plan that integrates efficient use of on-line government budget with an integrated alternative conservation financing strategy that leverages donor resources, debt-for-nature swaps, forest-carbon financing, payment for environmental services, user fees, and public-private partnerships.
- 2 Develop a national strategy and pursue on-going forest-carbon financing opportunities for Sundarbans, Chunati and 'bundled' PA conservation and reforestation.
- 3 Conduct economic valuation studies for each of the co-managed PAs in order to assess their potential contribution to the society in general and the neighboring community in particular.
- 4 Bring maximum number of PAs under co-management and implement the approved entry fee guidelines for community benefits sharing in all the co-managed PAs
- 5 Develop suitable guidelines for generating revenue and ensuring community benefits sharing from carbon credits from the co-managed PAs.

6. Nishorgo Network Resource List

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Annex 1: Modalities of the Nishorgo Network

1. Name and Status of the Network

- Name
The name of the network is “Nishorgo Network”
- Status
This is a regional and national network of Co Management Organizations (CMO) which are representing the Protected Areas working in (forest, wetland and ECA) in Bangladesh to support bio-diversity conservation.

2. Objectives of the network

- To serve as an apex body of the CMOs for the enhancement of knowledge and awareness of the forest, wetland protected areas and ECAs.
- To encourage regional cooperation and collaboration among CMOs and other organizations working for conservation;
- To promote/develop cooperation with government agencies to receive support for bio-diversity conservation;
- To link and liaise with donors and international bodies to receive fund or donation for conservation and community benefit;
- To gather experiences from other countries through collaborating with the organization working for the same purpose;
- To develop and maintain wide relation with academics, researchers and students for research purpose;
- To organize lectures, meetings, seminars, workshops and conference on issues related to protection and conservation;
- To maintain a website for benefit of PAs;
- Publish booklets, brushier, and other promotional materials for enhancing bio-diversity conservation;

3. Principle of network

- Conservation focused
- Collaborative management or co management
- Pro-poor

4. Membership

- Co management organizations working for bio diversity conservation in forest, wetlands and ECAs are the member of the network.
- Membership is voluntary and must submit an application to the network.
- Members should have the commitment to the objectives of the network,

- Membership shall be terminated for breach of conduct or for acting against the principle and interest of the network.
- President of CMOs will represent their organizations.

5. Rights and responsibilities of members

- To take part in event organized by the network
- To vote in elections, be elected, to official bodies of the network
- To contribute through opinions and comments to the work carried out by the network
- To promote and maintain reputation of the network
- To help the network to accomplish the activities decided by the general council or executive committee
- To help the network to achieve the objectives decided earlier by the general council
- To share the best practices of individual member with other members

6. Structure and Governance

- The network will consist of –
 - a) An central apex body – to organize and manage all activities under the aegis of the network as well as monitor and coordinate the activities of all regions/clusters created under its jurisdiction
 - b) Regions/clusters body created and managed by local members of the network

6.1 At the central level, the organizational structure of the network shall comprise of the following:

- The general council
- The executive committee

6.2 The general council

- The general council is the highest official body of the network and is composed of all the members of the network – both at large and regional/ cluster members. A minimum of two-third of all members coming together at one particular time shall constitute a quorum. All duly registered members of the network have the right to vote at a general meeting.
- The General Council will meet once in a year, normally as part of Annual general meeting. Notice of the General meeting will be served at least one month in advance by the President and Secretary of the Network.
- A special/extra ordinary GM could be convened at the request of two-third members of the General Council. Notice of the special/extra ordinary meeting shall be serves at least two months in advance.
- The President of the Executive Committee or in his /her absence Vice- President shall preside all sessions of a GM.
- Any issue shall be decided by simple majority of the votes cast in GM with the president abstaining. In case of a tie the President has the casting vote.

- To audit the finance of network two auditors shall be selected by the general Meeting. At least once in a year the accounts of the network shall be audited. An auditor's report shall be presented at the General meeting. Members' of the Executive Committee are not eligible for selection as auditors.

6.3 The executive committee

- An Executive Committee will be formed to administer day to day activities and administrative affairs of the network.
- The Executive Committee shall consist of
 - President
 - Vice president
 - Member Secretary
 - Joint Secretary
 - Treasurer
 - 5 Members
 - One representative from each region/cluster

Two Third of the EC members shall constitute a quorum

- The members of the executive committee shall be elected by the votes of members in GM.
- Members of the EC shall be elected for three years term. Re-Election is possible but only for two terms. After two terms new members will be elected for EC.
- There shall be at least quarterly meeting of the EC or whenever needs arises. Place and date will be determined by Member Secretary in consultation with President and at least one month notice will be served to each members of the EC. EC members are entitled to participate in and vote at the meetings of the EC.
- The day to day activities will be dealt by the Member Secretary with help of other EC members.

6.4 Election of the office bearers

- The Members of the General Council shall elect the members of the Executive Committee. The five members of the EC must come from different regions/clusters. Regional/Cluster network will elect one person for regular position of EC. The EC members will elect office bearers of the EC.
- The President of the EC will serve as president of the General Council.
- All members of EC shall be elected for three-year-term. They shall be eligible only for second term re-election.
- If there is vacancy arises in EC before expiration of a member's term, EC has the power to fill the vacancy by co-option.
- The Member Secretary shall keep the records of proceedings and the treasurer shall keep the book of accounts.
- The main tasks of the EC are:
 - To determine the activities of the network;
 - To implement the daily activities of the network;
 - To prepare the report of the activities for General Council;

- To prepare a activity plan with budget;
- To maintain contacts with Regions/Clusters;
- To liaise with donors, Government Agencies and other stakeholders;

7. Region/Cluster network

- The CMOs situated in the same region/cluster shall form a Region/Cluster network.
- President and Member Secretary of each CMO will be the member of the Region/Cluster network.
- The region/cluster network shall keep the executive committee informed of all their activities and will work with close collaboration of the EC.
- Each region/cluster network shall be free to prepare their activity plan and budget, raise fund for implementing the activities.
- A minimum of two-third of all members coming together at one particular time shall constitute a quorum.

8. Financial management

- The Network is an independent legal entity that finances its activities through membership fees as well as donation/grant from Government and other donors.
- There shall be a bank account in national bank of the Network; President, member secretary and Treasurer shall be the signatory of the account. But any two of the signatory can draw an amount from the bank with the decision of Executive committee.

9. Dissolution of the network

- The termination of the existence of the Network shall result from a motion to that affect by the General Council being passed by a two-thirds majority of all members.

10. These rules may be amended by a two-third majority of members in a general meeting, due notice of the proposed amendment have been given to all members at least six weeks in advance.

At the same time, IPAC has organized the poor and ultra poor resource users through Village conservation and peoples Forum. Peoples Forum is the platform of the poor and ultra poor resource users living in and around the protected areas. These people have no voice in conservation and decision making forum for conservation. Hence, Peoples Forum will play the role of VOICE (Villagers Opinion for Integrating Conservation and Economic improvement) of poor in conservation. They also need to be united through apex body to raise the VOICE loudly and strongly. The modalities would be redesigned later on. (The diagram is attached as annex 1).

Diagram 2: Modalities of Nishorgo Network

