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FINAL REPORT

EVALUATION OF USAID/BANGLADESH
ENVIRONMENT PROGRAM

June 2006

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EVALUATION OF USAID/BANGLADESH ENVIRONMENT PROGRAM

FINAL REPORT

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Weidemann Associates, Inc.

In cooperation with:
Nathan Associates, Inc.

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TABLE OF CONTENTS

LIST OF ACRONYMS

ADB	Asian Development Bank
AIG	Alternative Income Generation
BCAS	Bangladesh Center for Advanced Studies
CODEC	Community Development Center, Chittagong
CNRS	Center for Natural Resource Studies
DFID	Department for International Development, of the United Kingdom
DoE	Department of Environment, of the MoEF
DoF	Department of Fisheries, of the MoFL
ECNEC	Executive Committee of the National Economic Council
FD	Forest Department, of the MoEF
FFP	Fourth Fisheries Project (of the World Bank)
FRUG	Federation of Resource Users' Groups
GEF	Global Environment Facility
ICFP	Inland Capture Fisheries Policy
IRG	International Resources Group
ISMP	Infrastructure Support to MACH Project
LGC	Local Government Committee
M&E	Monitoring and Evaluation
MACH	Management of Aquatic Ecosystems through Community Husbandry
MoEF	Ministry of Environment and Forests
MoFL	Ministry of Fisheries and Livestock
NACOM	Nature Conservation Management
NGO	Non-Government Organization
NSP	Nishorgo Support Project

PA	Protected Area
RDRS	Rangpur Dinajpur Rural Service
RMO	Resources Management Organization
RUG	Resource Users' Group
SO6	Strategic Objective 6
USAID	United States Agency for International Development
UFC	Upazila Fisheries Committee
UNDP	United Nations Development Programme
UNO	Upazila Nirbahi Officer (administrative head of an upazila)
UP	Union Parishad (elected local government, below the *upazila* level)
Upazila	Sub-District (formerly *thana*)
WB	World Bank

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Peter W. Whitford

Brent Tegler

Md. Khairul Alam

Md. Anwarul Islam

EXECUTIVE SUMMARY

USAID/ Bangladesh initiated the **Management of Aquatic Ecosystems through Community Husbandry (MACH)** activity in 1998 to help promote the conservation and sustainable management of critical floodplain and wetland habitats. In 2002, Strategic Objective for Environment (SO6) was set out as a means of building on ongoing interventions and expanding to terrestrial ecosystems, particularly the protected upland forest areas. SO6 has an overall goal of strengthening the efforts of the government of Bangladesh and the NGOs in environmental and natural resources management.

Adoption of SO6 led USAID to support a second phase of MACH and to initiate a new program, originally called Co-management of Tropical Forest Resources in Bangladesh but later changed to **Nishorgo Support Project (NSP)**[1], which began in June 2003. The overall objective of NSP is to take the pressure off targeted Protected Areas (PAs) so as to safeguard and restore their role as important habitat for tropical forest biodiversity and ensure that they continue to provide critical environmental services, in particular, watershed protection. NSP was designed to build on the experience of MACH, especially in the management area.

Objectives of the Evaluation. The Statement of Work under the Task Order authorizing the evaluation states that the *main objective* is "to conduct a thorough evaluation of the ongoing Environment Program in order to help USAID/ Bangladesh in setting the course of its program implementation under the Mission's new strategic options. *Specific objectives* are to: evaluate the overall technical performance of the ongoing programs; suggest potential variations on interventions to improve the ongoing programs; and, recommend realistic strategic as well as programmatic options to help realign the programs to meet the requirements of the new Mission strategy as well as new developments in the environment sector in Bangladesh."

Methodology. The evaluation had the following phases: document review and interviews with key USAID and contractor representatives in the Washington D.C. area; field work in Bangladesh, including interviews with USAID staff, other donor representatives, and contractor staff, visits to all project sites and report drafting; follow-up meetings with the USAID/ Regional Development Mission and others in Bangkok; and, finalization of the report and final de-briefing with USAID in Dhaka and Washington. During the field work, particular emphasis was placed on meetings with project beneficiaries at the village level – several hundred people - to verify reported project achievements, discuss unresolved problems, understand the capabilities of the co-management organizations, and assess the sustainability of project innovations.

The team used an evaluation framework developed by the World Bank, which measures project or program outcomes along three axes:

- **Relevance** – the extent to which the project addresses key sector priorities and is consistent with USAID and government sector strategies.
- **Efficacy** - the extent to which project objectives have been achieved (or show promise of being achieved), using quantitative or qualitative measures as appropriate.
- **Efficiency** – the extent to which benefits exceeded costs (where quantitative measures are available) or resources were used cost-effectively

[1] *Nishorgo* means "beautiful nature" in Bangla.

Project outcomes or impacts were evaluated according to the following measures:

- **Co-Management** – the value added by the co-management model pioneered in MACH and adapted for NSP over processes used in the past.
- **Environmental/ Biodiversity** – the project's impact on the conservation or restoration of targeted aquatic, riparian or forest ecosystems.
- **Economic** – the impact of project activities (including alternative income promotion) on the livelihood and income of local people
- **Social** – the impact of the project on community organizations and empowerment, the role of women and the status of ethnic minorities.
- **Infrastructure** – the relevance of project infrastructure to project objectives and the quality of work implemented.
- **Institutional** – the effectiveness of the project in strengthening institutions at the national, local government and community levels, including the role of NGOs.

Findings: MACH. Project MACH aims to maintain and recover selected natural flood plain ecosystems and associated fisheries, as well as increasing biodiversity, providing alternative sources of income for poor fishing families, testing the co-management model and extending project innovations more widely in the country.

As a pilot project, MACH has operated at three sites and has two core elements – co-management and supporting infrastructure - and three supporting components – alternative income generation (AIG), biodiversity enhancements and an outreach program. Under **co-management** (CM), MACH has established 42 Resource Management Organizations (RMOs), with 16 directly involved in wetland management, to manage specific water bodies. Each RMO consists of a number of fishermen/ beneficiaries, as well as local leaders and women members. After the RMO is well established and has developed a management plan, it is allowed to take over the lease for the water body, previously held by private parties. Management plans typically include no fishing zones or sanctuaries, restrictions on fishing in the spawning season, bans on non-sustainable fishing gear and practices, and reintroduction of locally lost species. RMO management plans often call for **supporting infrastructure**, such as the re-excavation of floodplain lakes or channels and placement of fish aggregation devices, which provide food and shelter for fish and deter poaching.

As the management plans typically restrict fishing during the "hungry season", the project has recognized the need for **AIG.** This is done by formation of Resource User Groups (RUGs), institution of group savings, training of RUG members in an activity of their choice, and provision of micro-credit, for economic activities. Micro-credit is channeled through Federations of Resource User Groups (FRUGs) to the RUGs. **Biodiversity enhancements** comprise two major elements: wetland and riparian reforestation; and, support for eco-tourism. In order to extend its impact to other areas of Bangladesh, MACH has developed an **outreach program** with the Fourth Fisheries Project (FFP), and has provided funding for infrastructure at nine sites where resource management was sufficiently strong. MACH has established Local Government Committees (LGCs) at the sub-district level, comprising local government officials, elected officials, and the chairs of the RMOs and FRUGs. Cooperation with FFP has allowed MACH experience to be reflected in the Inland Capture Fisheries Strategy, prepared by the Department of Fisheries (DoF) and now adopted by the government.

Relevance: MACH is highly consistent with both USAID and government policies and strategies for natural resources management. The CM model is working well and appears to have distinct advantages over previous approaches in the sector.

Efficacy: Nearly all targets have been achieved and some exceeded. Wetland productivity has been substantially enhanced – for example, fish production increased by 140% and consumption by 52% - and a good start has been made on extending project innovations to other areas, through the Inland Capture Fisheries Strategy.

Efficiency: The evaluation team made a crude but conservative estimate of economic efficiency, which gave a benefit-cost ration of 2.4. This shows clearly that the project interventions were well justified. Any follow-on project could probably be implemented at lower per ha costs and thus show even better returns.

Findings: NSP. NSP aims to collaboratively develop CM Agreements between the Forest Department (FD) and local stakeholders, leading to measurable improvements in forest and resource conservation in selected PAs and their buffer zones. Five PAs are presently covered and a sixth is to be selected. CM Councils and CM Committees have been formed (or are in process of formation) for each PA, with representation from the FD, community leaders, forest users and women. They will be expected to revise previous management plans for the PAs and later implement them, deter illegal use of PA resources (through community patrolling and cooperation with the FD), support AIG activities, and manage half of revenues collected from PA visitors for visitor facilities, interpretive materials, and habitat restoration. Government funding for NSP has recently been released and is supporting infrastructure, such as trails, signs and visitor centers.

Discussion is ongoing as to how to meet the challenge of mitigating the potential negative economic impact of NSP on the 270,000 people who depend to a greater or lesser extent on PA resources, for fuelwood, sticks, poles etc. Forest User Groups (FUGs) have been established and a Landscape Development Fund will soon be making small grants. It is proposed to link with established micro-credit NGOs to fund AIG activities. The project is also making efforts to encourage tourism to the PAs and to bring in the private sector.

Relevance: NSP is closely aligned with Government and USAID biodiversity conservation policies and strategies. With a population of 140 million in a territory of 144,000 km2, Bangladesh has one of the lowest ratios of protected area per capita in the world. Conversely, the remaining remnants of natural and other forest are especially precious, particularly as they still support valuable habitats and are beginning to be appreciated by a rising middle class. At the same time, the project has recognized the necessity of shielding a very vulnerable surrounding population from the impacts of denial of access to the PAs.

Efficacy: As the project is only at mid-point, it is too early to tell definitively whether it will achieve its objectives. While there is reasonable likelihood that the CM institutions will be functioning, FUGs and other AIG mechanisms will be in place, tourism expanded and generating revenue locally and that funds for infrastructure will be spent, it is not yet clear that this will be enough to ensure that there will be "measurable improvement in forest and resource conservation" in the PAs and buffer zones.

Efficiency: While quantitative measures of economic efficiency are not generally applicable to biodiversity conservation activities, the evaluation team is satisfied that project costs are comparable to similar Global Environmental Facility (GEF) projects and that funds are being used cost-effectively.

Implications of Program Outcomes. ***Co-Management.*** The principle of CM -management of resources by the users, reinforced with local elected officials, local leaders, and women – is

working well in MACH and a similar model shows promise of working well in NSP, though several more years of project support will be needed before the CM bodies become self-sustaining. The CM approach appears to have increased the ability of the user groups to withstand pressure from previous leaseholders and other powerful people to appropriate the benefits of the program. The evaluation team found no examples of elite benefit capture in the main MACH program[2].

The NSP PAs are larger than the MACH wetlands and their resource management issues tend to be more complex. The MACH resources users are also the beneficiaries of project interventions, whereas NSP faces a particular challenge in mitigating impacts on the surrounding population of denied access to PA resources.

Biodiversity Impacts. MACH has clearly demonstrated the value of sanctuaries and associated infrastructure in conserving fish stocks during the dry season and in maintaining a richer diversity of species. The riparian plantations have been locally important in providing bird and animal habitats but their impact on siltation of water bodies is likely to be quite limited. Biodiversity and economic benefits at the Kaliakoir site are threatened by uncontrolled effluent discharges from numerous dyeing works nearby, resulting in fish kills. It is still too early to see biodiversity benefits in NSP. The NSP project team has understandably put further development of the biodiversity management plans on hold until the CM Councils and Committees are more firmly established, various means of AIG have been tested and funding is in place for habitat restoration.

Economic Impacts. Fish production in the MACH pilot sites is already 140% above the 1999 baseline. AIG has also been effective in raising incomes of RUG members by about 46%. Credit recovery rates are a very satisfactory 96%. With hindsight, the evaluation team questions whether it was necessary to build a project micro-credit system rather than to contract with existing NGOs to extend their programs. For NSP, the first economic benefits are beginning to be seen, as AIG activities get started. While these can potentially be scaled up, especially through agreements with established NGOs, the team doubts whether micro-credit alone can compensate for the economic costs of denying access to the protected areas. The landscape development fund will be a useful supplement but a more strategic and quantified approach is needed. The team suggests that strategies be developed for replacing resources like fuelwood. NSP has appropriately placed considerable emphasis on stimulating eco-tourism by preparing publicity materials and, in the near future, providing visitor facilities. The recent decision to allow fees to be charged to visitors and for half of such fees to be retained by the CM Councils is a very positive development. NSP's efforts to engage the support of the private sector are beginning to pay off.

Social Impacts. There is clear evidence that the benefits of MACH are reaching the poorest and that CM has equipped the poor to resist pressure from the powerful. However, this is more problematical for riparian plantations where landowners typically get a large share of the timber production benefits. An outstanding achievement of the project has been the empowerment of women. The project has operated in conservative rural areas, where women have traditionally had few rights and little power over their lives or livelihoods. By insisting that a proportion of positions in RMOs and FRUGs be filled by women, and by setting up RUGs for women, the project has forced the pace of social change. Social structures in and around the NSP sites are more complex than in the floodplains. In these hilly, border areas, ethnic and religious minorities are significant. Some of the forest villages are now inside the PAs. Other villages have illegally encroached on forest land. At one site, refugees from Myanmar are a further complication.

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[2] However, riparian plantations could be criticized on this score.

Although NSP has done good preliminary work on surveying and mapping the various groups, much more needs to be done, to understand fully the present situation and to develop strategies for each site.

Institutional Impacts. The success of both projects in building CM institutions has been described. MACH staff played a key role in the development of the Inland Capture Fisheries Strategy – a keystone document for the future development of the sub-sector. The overall impact of MACH on the DoF, however, has been less than would have been desirable, as a result of a decision at the outset to manage all project funds through the contractor team. NSP could have similar success in CM, provided project support can be continued for a sufficient number of years and can overcome the hurdles of size and social complexity. NSP has a greater focus than MACH on effecting change in a government agency, by supporting the initiatives in the FD to place PA management in the hands of a specialized subdivision. A particular challenge is that FD staff do not have specialized training in PA and biodiversity management nor is there any obvious source within Bangladesh where they can get it.

Effectiveness of Monitoring and Evaluation. MACH has developed a powerful system of monitoring and evaluation (M&E), based on key performance indicators related to the project objectives. However, more work will be needed to boil down the database into simpler formats for other users, at the local level. The evaluation team's major concern is the sustainability of the M&E system after the project closes. It will be essential to develop a simplified system that can be continued at the local level. The NSP M&E system is much less well advanced and data on use of PA resources by local people is particularly scant. Project and FD staff need more training in M&E.

Sustainability of Program Outcomes. ***MACH.*** Assuming completion of planned project activities before the project closing date of October 2006, the view of the evaluation team is that MACH's considerable achievements will be **largely sustainable**, provided the Government remains committed to CM and to other elements of the Inland Capture Fisheries Strategy. Having said that, it is important to note that, without further support, some RMOs, RUGs and FRUGs might not survive but most of these could probably be brought to self-sufficiency with continued week-to-week project support. Secondly, the team notes that considerable works remain to be completed with the 416b funds (approximately $1.3 million equivalent). While the project will continue to show substantial benefits even if these works are deferred, it would clearly be in the interest of all parties to find a mechanism to allow them to be completed. Thirdly, the design of MACH was such that capacity building of the DoF was limited and it would be highly desirable to find a way to sensitize and orient the local fisheries officers to the co-management model and to their role in supporting the fishers.

For these reasons, the evaluation team proposes that USAID consider a short extension of MACH II by 8 to 12 months – to ensure greater sustainability of MACH achievements and to allow remaining 416b works to be completed. During the proposed extension, the focus would be on: new initiatives to strengthen the DoF; continued support to the Local Government Committees; intensive support to the lagging RMOs and FRUGs, with the objective of bringing these groups to a self-sufficient stage at project's end; completion of all outstanding civil works; continued outreach to FFP and other sites; carrying out an action plan for pollution reduction at Kaliakoir; initiation of a simplified monitoring and evaluation system; and, identification of priority areas for a possible expansion phase. It appears that the remaining project funds would be sufficient to carry out this program.

NSP. NSP has resulted in many significant positive changes in its first three years but there are concerns regarding the ability of the project to ensure these changes become sustainable within the remaining two years of the project. Sustainability may be assessed in terms of achieving long-term protection of biodiversity within PAs and a long-term improvement in the livelihoods of the population within the landscape zone. Four factors have been considered: the time required to establish a positive and effective working relationship between the FD and the local population in the CM of PAs; resource use within the PAs must change to enhance biodiversity conservation but without negatively impacting the local population; Forest Reserves have a complex pattern of encroachment and clear boundaries must be set; and, the newly formed CM Committees require a significant amount of capacity building to become effective managers of the PAs.

There is also the question of the sustainability of AIG activities. NSP has found that there is a strong dependency of a large poor and ultra poor population on resources from PAs. Under the NSP, a very small proportion of the population within the landscape zone of PAs will be reached by AIG, there will remain many people that require AIG training and support for this project to be considered sustainable.

The evaluation team considers the co-management approach to PA management sound and, given sufficient time and resources, the issues noted above can be addressed. **It is the opinion of the evaluation team that a second project will be needed to complete the work that the NSP has started and to establish PAs that are self-sustaining.**

Possible Follow-up Actions. ***MACH.*** Given the very positive experience of MACH and the continuing importance of wetlands conservation from biodiversity and poverty alleviation points of view, the case for a follow-up project or program seems quite clear. The team suggests that any expansion phase follow the model of MACH, with the following adaptations: emphasis on replication rather than demonstration; a strong element of capacity building for DoF; close integration of the CM and civil works elements of the project; biodiversity enhancements split off as a separate project; and, AIG activities still a necessary part of the package but achieved through agreements with suitable major NGOs. Because of its demonstration nature, MACH has been relatively cost and staff intensive and consideration should be given to streamlining the model to see if costs can be reduced without significant loss of project quality. The evaluation team recommends strongly against an immediate replication of MACH to the whole of Bangladesh, given the high rate of failure in the past for similar rapid expansions. Many options are available for geographic expansion but the team suggests the following: in-filling of gaps in the three pilot areas; stepping out to areas adjacent to the pilot sites; and, adopting one or more new regions. An alternative would be to focus on a complete watershed, through a watershed management approach.

NSP. The chance of achieving full sustainability after the present project is completed in 2008 appears slim. A clear lesson from MACH is that building CM institutions takes considerable time – 4 to 6 years in the opinion of the evaluation team. NSP co-management must establish a working relationship between the FD and local stakeholders and address the varied issues of PA management such as illegal felling, encroachment, current resource use, restoration, wildlife management, and tourism.

An additional challenge for NSP is the necessity for finding viable compensatory mechanisms (AIG) for the many people whose livelihoods will be adversely affected by restricting access to resources from PAs. Although that process has started, a lot of learning by doing is still needed, including mechanisms like providing alternative sources of fuelwood and other forest products for the local poor; initiatives that are not yet in the project. Both these challenges argue for a

second project to complete the work that has started and to establish PAs that are self-sustaining. Such a project could also be the vehicle for extending the CM model to other protected areas, including non-forest areas.

Recommendations for Future Environmental Strategy. Pressure on natural resources in Bangladesh remains intense. Almost every square meter of the country's territory is used for one human purpose or another and areas of undisturbed nature are very few. In its 2002 "Strategic Plan for Improved Management of Open Water and Tropical Forest Resources, FY2002 –2008", USAID/ Bangladesh argued for a reinforced USAID role in natural resources management, with special emphasis on floodplain wetlands and protected forest areas. It noted that other donors were addressing other natural resource and environmental issues. The team's review of available documents, observations of conditions in the field and interviews with knowledgeable informants suggest that the two priorities selected in 2002 – *floodplain wetlands and forest protected areas* - should remain USAID's top environmental priorities for the immediate future. Suggestions for follow-up actions to the two ongoing projects are given above.

The CM model has been shown convincingly to work in the floodplain fisheries sector and shows promise of achieving the same result in forest PAs, provided in the latter case that well-targeted support can be continued beyond 2008. The time may now be ripe for Bangladesh to generalize this experience into a *Protected Areas System Strategy.* Given USAID's lead role in this subject over the past several years, it would be logical for the agency to support the government in developing such a strategy, some elements of which are already in place. Additional work, however, is needed to articulate the roles of the FD, DoF and Department of the Environment in future biodiversity protection and to lay out the steps needed to ensure consistent approaches for forest and wetland protected areas, and possible future additions such as coastal and marine sanctuaries. A possible outcome would be a single government agency to manage protected areas; the framework most commonly seen in other countries is a national parks agency.

By supporting the development of a protected areas system strategy, USAID would be able to identify the critical challenges that call for its support at the project level over the medium term. While it would be premature to forecast the scope of future projects resulting from adoption of a Protected Areas System Strategy, one might envisage further support of the NSP type for some or all of the remaining 14 forest protected areas, plus possibly new protected areas for wetlands, coasts and/or marine sanctuaries. However, this approach would entail a massive capacity building effort. This is all the more reason to stay the course on NSP, to provide a firm basis for future expansion.

Another project type that may fit USAID strategic objectives could be a program for carbon sequestration through plantations of various kinds, including riparian. Such a project would present excellent prospects for a public-private partnership, in which US corporations may see advantages in leasing land for tree planting from the FD or private owners in return for carbon credits or offsetting carbon footprints.

SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

Findings	USAID/Bangladesh Environment Project	
	MACH	NSP
Principle Findings:		
Relevance	Highly satisfactory	Highly satisfactory
Efficacy	Very satisfactory	Some good early indications, but some changes needed to ensure full success
Efficiency	Very satisfactory – B/C ratio of 2.4	No quantitative measure available; cost-effectiveness satisfactory
Detailed Findings:		
Co-Management	Very satisfactory	Promising but continued efforts needed beyond end of project
Biodiversity	Very satisfactory	Too early to tell but expected benefits remain feasible
Economic	Very satisfactory	Promising start in alternative income generation, eco-tourism and private sector support but a lot remains to be done
Social	Highly satisfactory	Strategic approach needed to avoid negative impacts
Institutional	Satisfactory at the local level but impact on Department of Fisheries less than desirable	Satisfactory initial work to build capacity of Forest Department but much remains to be done, especially training in protected area management
Monitoring and Evaluation	Highly satisfactory but system now needs to be simplified	Attention needed to system design and staff training
Sustainability	Largely sustainable as it stands but additional support to weaker co-management bodies and to Department of Fisheries strengthening could improve sustainability even further	Time is needed to build effective co-management bodies and to resolve other issues like alternatives for resource users, sustainability at project end in 2008 appears unlikely
Recommended Follow-up Actions	1. Extension of MACH II by 8 to 12 months 2. Design of a replication phase, in cooperation with other donors 3. USAID funding of priority areas within replication phase	1. In remaining project period, continued attention to co-management and strengthening the Forest Department and greater attention to alternative income generation, alternatives for resource users, and park boundaries 2. Design a follow-up project to ensure sustainability of NSP innovations and possibly extend them to other areas
Recommendations for USAID's Future Environmental Strategy	1. Continue to give priority to floodplain wetlands and forest protected areas 2. Support development by the Bangladesh Government of a Protected Areas System Strategy 3. Based on the results of 2., select priority activities for future USAID support 4. Consider the potential of a carbon sequestration project through public- private partnerships	

EVALUATION OVERVIEW

1. Background

Given its geographic setting at the confluence of three major rivers – the Ganges, Brahmaputra and Meghna – Bangladesh is rich in natural resources, especially soils and water. Historically, this has led to "agricultural involution" – more and more intensive use of the very productive delta land to support a steadily growing population, now 140 million people in a country of only 144,000 km^2. This process has put extreme pressure on other resources, such as wetlands and fisheries, forests and wildlife. The 50% of the population classified as poor rely heavily on the use of natural resources and are the first to be affected when those resources are diminished or degraded.

Wetlands cover about half the country and are a major source of fish protein. However, their productivity has declined markedly and consequently, per capita fish consumption is declining and prices are rising. Reasons include: the leaseholder system, which encourages short-term over-exploitation; siltation of nursery and breeding areas; obstructions to fish migration from roads and other development; expansion of cropland into wetlands and more intensive use of dry season water for irrigation; water pollution; and, overfishing and use of destructive fishing practices.

Forest cover has declined by more than 50% since 1970 and, outside the Sundarbans, "natural" forests (mostly altered to some degree) cover less than 300 km^2. Bangladesh has less than 0.02 ha of forest land per person, the lowest ratio in the world. The remaining forest remnants are under intense pressure for timber production, gathering of fuelwood, land clearing for agriculture, and encroachment by settlements. Nevertheless, some valuable habitats remain (supporting tigers, elephants, gibbons and many other species) and the government has established 19 forest protected areas (PAs)[3] to date. However, relatively little has been done yet to safeguard these areas, to educate the public on their biological richness, or to provide alternative livelihoods to approximately one million people who presently use resources within the PAs.

2. USAID Strategy and Program History[4]

Building on earlier experience in disaster relief and the Flood Action Plan, USAID/ Bangladesh initiated the **Management of Aquatic Ecosystems through Community Husbandry (MACH)** activity in 1998 to help promote the conservation and sustainable management of critical floodplain and wetland habitats aimed at improving the food security of the natural resources dependent population. This was followed in 2000 by the use of debt for nature funds under the U.S. Tropical Forest Conservation Act (1998) to establish the Arannayk Foundation (Bangladesh Tropical Forest Conservation Foundation), which awards grants on a competitive basis for smaller-scale forest conservation activities.

These initiatives were given a policy framework as a Strategic Objective for Environment (SO6), as a means of building on ongoing interventions and expanding to terrestrial ecosystems,

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[3] Known variously as National Parks, Wildlife Sanctuaries, Game Reserves etc.

[4] See USAID/ Bangladesh, "Strategic Plan for Improved Management of Open Water and Tropical Forest Resources – FY 2002-2008", 2002, for full details.

particularly the protected upland forest areas. SO6 has an overall goal of strengthening the efforts of the Government of Bangladesh and the NGOs in environmental and natural resources management. The five themes of SO6 include:

- Implementation of effective community based resources management mechanisms
- Restoration of selected habitats and ecosystems
- Implementation of selected policies
- Increased public awareness of key issues
- Improved institutional capacity

Adoption of SO6 led USAID to support a second phase of MACH and to initiate a new program, originally called Co-management of Tropical Forest Resources in Bangladesh but later changed to **Nishorgo Support Project (NSP)**[5], which began in June 2003. The overall objective of NSP is to take the pressure off targeted PAs so as to safeguard and restore their role as important habitat for tropical forest biodiversity and ensure that they continue to provide critical environmental services, in particular, watershed protection. NSP was designed to build on the experience of MACH, especially in the management area.

3. Objectives of the Evaluation

The Statement of Work under the Task Order authorizing the evaluation is shown in Attachment D. It states that the *main objective* is "to conduct a thorough evaluation of the ongoing Environment Program in order to help USAID/ Bangladesh in setting the course of its program implementation under the Mission's new strategic options. *Specific objectives* are to:

1. Evaluate the overall technical performance of the ongoing programs.
2. Suggest potential variations on interventions to improve the ongoing programs.
3. Recommend realistic strategic as well as programmatic options to help realign the programs to meet the requirements of the new Mission strategy as well as new developments in the environment sector in Bangladesh."

4. Methodology

In accordance with its *Statement of Work* and the *Final Work Plan* approved by USAID, the evaluation had the following phases:

1. Document review and interviews with key USAID and contractor representatives in the Washington, D.C. area.
2. Field work in Bangladesh, including interviews with USAID staff, other donor representatives, and contractor staff, visits to all project sites and report drafting.
3. Follow-up meetings with the USAID/ Regional Development Mission and with relevant Non-Government Organizations (NGOs) in Bangkok potentially able to offer training in biodiversity management.
4. Finalization of the report and final de-briefing with USAID/Bangladesh and USAID in Washington.

During the field work, particular emphasis was placed on meetings with project beneficiaries at the village level, to verify reported project achievements, discuss unresolved problems, understand the capabilities of the co-management organizations, and assess the sustainability of

[5] *Nishorgo* means "beautiful nature" in Bangla.

project innovations. In all, several hundred project beneficiaries and other rural people were met, including members of co-management organizations and resource user groups, as well as local elected and government officials and NGO field staff.

Meetings with donor representatives aimed to elucidate their overall interest in natural resources management, their views on MACH and NSP, and their plans for future assistance.

Key documents consulted are listed in Appendix E, key persons met in Appendix F, a full list of places visited in Appendix G and key maps in Appendix I. The Powerpoint presentation used in phases 3 and 4 is reproduced in Appendix I.

4.1 Evaluation Framework

The team used an evaluation framework developed by the Independent Evaluation Group of the World Bank and increasingly adopted by the European Union and others, which measures project or program outcomes along three axes:

- **Relevance** – the extent to which the project as designed, and as implemented, addresses key sector priorities and is consistent with USAID and government sector strategies.
- **Efficacy** – the extent to which project objectives have been achieved (or show promise of being achieved), using quantitative or qualitative measures as appropriate.
- **Efficiency** – the extent to which benefits exceeded costs (where quantitative measures are available) or resources were used cost-effectively

4.2 Evaluation of Project Outcomes

Project outcomes or impacts were evaluated according to the following measures:

- **Co-Management** – the value added by the co-management model pioneered in MACH and adapted for NSP over processes used in the past
- **Environmental/ Biodiversity** – the project's impact on the conservation or restoration of targeted aquatic, riparian or forest ecosystems, including any negative or unintended impacts.
- **Economic** – the impact of project activities (including alternative income promotion) on the livelihood and income of local people and other economic actors, including any negative or unintended impacts.
- **Social** – the impact of the project on community organizations and empowerment, the role of women and the status of ethnic minorities, including any negative or unintended impacts.
- **Infrastructure** – the relevance of project infrastructure to project objectives and the quality of work implemented
- **Institutional** – the effectiveness of the project in strengthening institutions at the national, local government and community levels, including the roles of NGOs.

Sections 5 and 6 below summarize the principal findings of the evaluation with respect to MACH and NSP respectively. Detailed findings can be found in Appendices A and B. Section 7 then presents the expected outcomes of the projects according to the measures just listed, in a way that facilitates comparison of the two project experiences. The likely sustainability of the achievements of the two projects after external support is completed is assessed in Section 8, followed by some recommendations on ways to expand the impact of project innovations to a

wider area – replication. Recommendations on appropriate follow-on activities in wetlands and protected areas are made in Section 9, while the final section responds to the third objective of the evaluation and explores possible options for future USAID strategy in the environment sector in Bangladesh.

5. Findings: MACH

5.1 Project Objectives

Project MACH aims to maintain and recover selected natural flood plain ecosystems and associated fisheries, as well as increasing biodiversity, providing alternative sources of income for poor fishing families, testing the co-management model and extending project innovations more widely in the country.

5.2 Project Description

As a pilot project, MACH has operated at three sites representing differing physical and social conditions (see map in Appendix I). The MACH model has two core elements – co-management and supporting infrastructure - and three supporting components – alternative income generation (AIG), biodiversity enhancements and an outreach program. Under **co-management,** MACH has established 42 Resource Management Organizations (RMOs), including 16 directly involved in wetland management, to manage specific water bodies in the pilot project areas. Each RMO consists of a number of fishermen/beneficiaries, as well as local leaders and women members. After the RMO is well established and has developed a management plan, it is allowed to take over the lease for the water body, previously held by private parties. Management plans typically include no harvesting zones or sanctuaries, restrictions on fishing in the spawning season and bans on non-sustainable fishing gear and practices, and, in some cases, reintroduction of locally lost species.

RMO management plans often call for **supporting infrastructure**, such as the re-excavation of floodplain lakes or channels, usually by manual labor, as well as meeting sheds. The project has found that the effectiveness of sanctuaries can be increased at low cost with fish aggregation devices, such as concrete pipes and hexapods, which provide food and shelter for fish and deter poaching.

As the management plans typically restrict fishing during the "hungry season", the project has recognized the need for **AIG.** This is done with techniques pioneered in Bangladesh – formation of Resource User Groups (RUGs), institution of group savings, training of RUG members in an activity of their choice, and provision of micro-credit, for activities ranging from livestock raising, and tree nurseries to purchase of land and irrigation equipment. Micro-credit is now channeled through recently formed Federations of Resource User Groups (FRUGs) to the RUGs.

Biodiversity enhancements comprise two major elements: wetland and riparian reforestation and, a recently added activity, support for eco-tourism. At one site (Hail Haor), a major sanctuary has been established and equipped with an observation tower, as well as nesting boxes and platforms, to attract bird life. The project has also attempted to reduce the siltation problem by riparian reforestation along some of the streams, which feed the wetland areas. The mixture of species used also provides habitat for birds and mammals.

In order to extend its impact to other areas of Bangladesh, MACH has developed an **outreach program** with the Fourth Fisheries Project (FFP) (funded by the World Bank, DFID and GEF), to identify sites where resource management was sufficiently strong[6] but where funding for infrastructure was lacking. In nine such cases, MACH has provided funding for re-excavation, fish aggregation devices, and meeting sheds.

Cooperation with FFP has allowed MACH experience to be reflected in the Inland Capture Fisheries Strategy, prepared under FFP and now adopted by the government. An action plan is being developed to disseminate the Strategy into all Department of Fisheries (DoF) programs.

At the national level, the project is guided by a National Steering Committee, which meets annually, and a Results Package Team/ Project Management Unit, which meets monthly. MACH has established Local Government Committees at the sub-district (*upazila*) level, comprising representatives of the DoF and other government agencies, elected officials, and the chairs of the RMOs and FRUGs.

5.3 Project Phasing and Costs

The project has had two phases: MACH I, from October 1998 to December 2001, and MACH II, from November 2003 to October 2006. The total cost of MACH I was $ 6.5 million, which was fully expended, while the budget for MACH II is $3.1 million, to which should be added the ISMP[7] total of Tk. 346 million (currently equivalent to $4.9 million) for both phases I and II, totaling the project budget of about $15.0 million over 8 years. Unspent funds at the closing date are expected to total about $0.4 million plus Tk. 90 million (about $1.3 million), for a total $1.7 million.

5.4 Relevance

In its objectives, MACH was highly consistent with both USAID and government policies and strategies for natural resources management. The project, in turn, has greatly influenced the government's Inland Capture Fisheries Strategy. The co-management model is working well and appears to have distinct advantages over previous approaches in the sector. With hindsight, however, it appears that MACH may have gone too far in limiting DoF's role in project execution, for example, in managing the local currency activities, and has thus limited capacity building for DoF replication of MACH achievements.

The solution of reinforcing fishing family beneficiary groups (RMOs, FRUGs) with local elected officials and local opinion leaders appears to have increased the ability of the groups to withstand pressure from previous leaseholders and other powerful people to appropriate the benefits of the program. The evaluation team found no examples of elite benefit capture in the main MACH program[8].

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[6] The FFP uses a management model of Fisheries Sub-Committees at the village level, combined to form Fishery Management Committees at the wetland level. These groups lack the reinforcement with local leaders, which characterizes the MACH co-management model.

[7] *Investment Support to the MACH Project*, government local currency funds, derived from the US PL 416(b) program.

[8] However, riparian plantations could be criticized on this score.

The implementation approach adopted was appropriate for the pilot project nature of MACH but the intensity of financial and staff resource use does raise some questions for replicability. Nevertheless, the project correctly recognized that creation and sustaining of beneficiary organizations would require frequent face-to-face contact from project staff with considerable training in rural development and social awareness. Thus the combination of a major consulting firm, with considerable experience in the technical aspects of the project, with three prominent NGOs, with excellent organizational skills, has proved very effective.

5.5 Efficacy

Table A.1 in Appendix A compares project targets with actual achievements and shows that MACH has essentially achieved its objectives. Nearly all targets have been achieved and some exceeded. Wetland productivity has been substantially increased with biodiversity enhanced and a good start has been made on extending project innovations to other areas, most notably through the Inland Capture Fisheries Strategy. Elite capture of benefits has been avoided and women have been empowered. More details on impacts are provided in the following Section.

In the 25,000 ha (wet season area) covered by the project, fish production has increased by 140% as a result of the project. Fish consumption in the project areas (the major source of protein) has increased by 52%, compared to a national average that has been declining. That also translates to a significant impact on rural poverty. Since project inception, 28 fish species and 47 plant species have become re-established in the pilot project areas. However, it should be kept in mind that the project covers less than 1% of the total floodplains of the country and the total number of direct project beneficiaries is only 5,500. A major challenge remains to expand the MACH model to a much larger area (see Section 9.2).

5.6 Efficiency

As MACH has been a demonstration project, with testing of innovations and learning by doing as integral elements, it was not subjected to any tests of economic efficiency (benefit-cost analysis) at the outset, though some analysis is planned by the project team prior to project closure. In the limited time available, the evaluation team has made a very crude estimate which simply takes the total project cost of $14.5 million over the total wetland area of 25,000 ha ($580/ha) and compares it with a stream of benefits – incremental fish production - which rises to an average between the three sites of 232 kg/ha in year 8 and is evaluated at an average price of $1/kg. Because AIG costs are included and no account is taken of AIG benefits, nor of the substantial biodiversity enhancement benefits, this should be quite conservative. Nevertheless, it leads to a Benefit-Cost ratio of 2.4 or a Net Present Value of $592/ha at an opportunity cost of capital of 12%. This shows clearly that the project interventions were well justified from an economic efficiency point of view. Any follow-on project could probably be implemented at lower per ha costs and thus show even better returns.

6. Findings: NSP

6.1 Project Objectives

The NSP aims to collaboratively develop Co-Management (CM) Agreements between the Forest

Department (FD) and local stakeholders leading to measurable improvements in forest and resource conservation in selected Protected Areas (PAs) and within the surrounding "landscape" (watersheds, parks, forested buffer zones, wetlands, agricultural areas and plantations).

Project duration for the NSP is June 2003 to May 2008. A complete description of project activities organized under the following five components, with cross-reference to USAID Strategic Objective 6.0 Intermediate Results is provided in Appendix B.

Component No. 1:	Development of a Co-Management Planning and Implementation Model
Component No. 2:	Interventions and Investments for Improved Ecosystem Management
Component No. 3:	The Enabling Policy Environment for Co-Management Enhanced
Component No. 4:	Laying the Foundation for a Conservation Constituency in Bangladesh
Component No. 5:	Ensuring Institutionalization of Co-Management

6.2 Project Description

Recognizing the perilous situation of natural forests in the country, the Forest Department (FD) has established a series of protected forest areas (distinct from gazetted forest reserves). As of 2004, the total area of Bangladesh's Protected Area (PA) system (including relatively small proposed areas) is approximately 243,723 ha. Approximately 84,000 hectares of the total PA system are relatively intact upland forests in the northeast and along the ridges of the eastern hills (the Chittagong Hill Tracts, or CHT). The remainder of the PA system is found in the lowland coastal areas, primarily within the internationally-recognized Sundarbans.

Bangladesh now has among the smallest areas of protected and intact forest in the world and Bangladesh's forests continue to come under relentless human pressure as its population grows. And yet, the citizens of Bangladesh clamor more than ever for places of natural beauty to which they can escape. The result is an ever increasing number of species threatened with local extinctions; in 2002 Earth Trends Country Profiles listed 68 threatened species. The PA system, if well designed and managed, is intended to provide long-term protection of the majority of the country's biodiversity.

The NSP has been introduced to develop a co-management model for improved management of forest resources at six pilot PAs. According to the contract, the selection of the fifth and sixth PAs was scheduled for the beginning of the fourth year. However, the NSP selected a fifth site at the beginning of contract implementation and intends to select a sixth site in the fourth year. The five pilot PA sites (see map in Appendix I) currently being implemented are:

1. Lawachara National Park;
2. Rema-Kalenga Wildlife Sanctuary;
3. Satchari National Park;
4. Teknaf Game Reserve; and
5. Chunati Wildlife Sanctuary.

For each PA or major portion thereof, a CM Council is to be established. This is a large body of 50 to 60 persons broadly representing the local community – local officials, local elites, resource owners, FD representatives, law enforcement agencies, ethnic communities, NGOs, and civil society. Chaired by the District Forest Officer, the Council is expected to meet six-monthly, to review overall progress, support awareness building, coordinate the actions of stakeholders and resolve disputes (if needed). A smaller body of 15 to 20 members, the CM Committee, is elected from the membership of the Council in a structured way that ensures representation of all the major stakeholder groups, including women. The Council is chaired by an Assistant Conservator of Forests, to be attached to the new FD Nature Conservation and Wildlife Circle (though this is still in transition), who is effectively the manager of the PA. The Committee meets bi-monthly and approves action plans, undertakes public awareness and tourism promotion, takes action on encroachments and illegal felling and promotes alternative income generation.

A Steering Committee was formed with the Secretary, Ministry of Environment and Forests in the chair, to oversee all activities of the NSP. A Project Concept Paper was prepared following a decision of the Steering Committee and approved by the Executive Committee of the National Economic Council (ECNEC), the competent authority of the Government of Bangladesh, on 28th April 2005. A Development Project Proposal (DPP) was then prepared, which led to the preparation of a Project Pro-forma (PP) and that was finalized only on 18th October 2005. According to the PP, the government's support to NSP through the FD runs from July 2004 to June 2009.

The following six objectives are identified in the PP:

1. Develop a functional model for formalized collaboration in the management of PAs.
2. Create alternative income generation opportunities for key local stakeholders associated with pilot co-managed PAs.
3. Develop policies conducive to improved PA management and build constituencies to further these policy goals.
4. Strengthen the institutional systems and capacity of the FD and key stakeholders so that improvements in co-management under the Project can be made permanent.
5. Build or reinforce the infrastructure within PAs that will enable better management and provision of visitor services at co-managed sites.
6. Design and implement a program of habitat management and restoration for pilot PAs.

As the USAID Contractor, since June 2003, the International Resources Group (IRG) has been providing technical support in designing a co-management model acceptable to FD and other stakeholders, and testing its reliability in field situations in partnership with the FD. Two sub-contractors, namely Community Development Center (CODEC) and Rangpur Dinajpur Rural Services (RDRS), assist IRG in the field. Nature Conservation Management (NACOM), a third sub-contractor to IRG, collects data, conducts surveys and performs evaluation and monitoring.

It should be noted that the release of government budget funds for use by the FD under NSP occurred only in April 2006 and that the PP runs until June 2009, whereas IRG's contract ends more than one year earlier in May 2008. The delayed release of budget funds will make it difficult to complete all project components as outlined in the PP.

During the first three years of the project, considerable progress has been made, and the evaluation team would like to recognize IRG's success in instituting the co-management model within the FD and within the communities of the five PAs. Notable is the early success of having

the FD declare its own protected area program "Nishorgo", the name under which the USAID project now operates. To date, much of the project work has focused on sensitizing stakeholders, including the FD, to the concepts of biodiversity conservation, co-management, and eco-tourism through a variety of training exercises, workshops, study tours and meetings. The results of these efforts is evidenced in the FD "Vision 2010" paper, the formation of multi-stakeholder CM Councils and Committees, working hand-in-hand with FD staff and the formation of forest user groups. The evaluation team also recognizes the NSP work completed "on the ground", including the erection of PA signage, the identification of trails, NSP site office construction, public information materials, baseline monitoring, AIG demonstration activities and forest patrols that have reduced the occurrence of illegal felling.

With the recent formation of CM Committees[9] (March/April 2006) the NSP's co-management of PAs appears to be making a transition from what may be characterized as an "establishment phase" to an "implementation phase". The concepts of co-management have been conveyed, the institutional structures are in place and the actual work of managing PAs under a co-management model is beginning.

6.3 Project Costs

The total contract amount is US$ 6.525 million from USAID, US$1.0 million GoB (Government of Bangladesh contribution in cash and kind) and local currency funds of US$ 2.5M RPA (Reimbursable Project Aid, from USAID through the PL-416(b) generated local currency) is available as project funds. The contractor IRG oversees the USAID funds, and the FD is responsible for the GoB and RPA funds[10]. For the US$ funds, a satisfactory 53% had been obligated and 44% spent by March 31, 2006. However, owing to late approval of the PP, only 6% of the taka funds had been spent by January 31, 2006, and it is unlikely that all of these funds will be disbursed before the end of contract for NSP, leaving the work for which these funds were intended incomplete.

6.4 Relevance

The present management of tropical forests in Bangladesh has led to their *de facto* treatment as "open access" resources with a consequent degradation of the resource base, a loss of biodiversity and declining productivity of needed forest resources. Currently Bangladesh has one of the lowest ratios of PA (ha) versus population. The NSP is resulting in a renewed recognition of the value of protecting tropical forests. At a national level the NSP is protecting areas valued by the general population of Bangladesh (and globally) for their inherent biological heritage. At the local level, the development of CM Councils and Committees is creating greater trust between the government and local stakeholders in their ability to achieve sustainable management of important natural resources in ways that benefit everyone.

A large poor and ultra poor population is present in areas around the NSP pilot sites. The goal of improving the livelihoods of this population through AIG activities, wise management of forest resources within buffer zones and the potential direct and indirect benefits that may be derived from increased tourism if realized will be an achievement on a par with the protection of biodiversity within PAs.

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[9] Most of the CM Councils were established some months earlier but the Committees are the real working arm of the system.

[10] This is a major departure from MACH, where the contractor handles all funds.

6.5 Efficacy

During the three years since its inception, the NSP has been able to initiate remarkable social change by involving the FD and a variety of stakeholders in co-management of PAs, in distinct contrast to the adversarial (even violent) confrontations of the past. The formation of CM Councils and Committees has empowered the local people and established important social-environmental linkages. This has developed a sense of ownership of the resources by community members and created social awareness among a wider cross-section of people in Bangladesh through a variety of promotion mechanisms utilized by the NSP (e.g. competition to select the "Nishorgo" name, architectural competition for Lawachara visitor center, and private sector contributions for publishing brochures).

Empowerment and sense of ownership have encouraged community members to organize community patrolling which, in turn, has resulted in a dramatic reduction of illegal logging in some areas. Visits of stakeholders and FD staff to PAs in West Bengal have created greater understanding of the potential success of co-management and fostered the greater communication, respect and friendship between the FD and local stakeholders necessary for the co-management model to work.

The NSP has formed Forest User Groups (FUGs) among the local poor/ultra poor population living within the landscape zone to convey an understanding of the co-management model. AIG training and grants are also provided to key local stakeholders of low-income households in FUGs. To date, 90 FUGs have been formed around five sites, each group with 15-20 members, and more than half of the members are women. Inputs such as nursery seedlings and livestock have been provided to some of the groups[11]. The inclusion of women in FUGs and a variety of AIG activities may be viewed as providing a degree of empowerment, leading to greater gender equalization in the project area. The involvement of women within areas that are predominantly Muslim is a breakthrough, given the traditional conservative nature of these communities.

CM Councils and Committees with a cross-section of people, including landless poor, local elites, former illegal loggers, timber traders, FD staff, Union Parishad members, and Upazila staff, etc. in a common forum have been formed and are now beginning to focus their attention both on the protection of biodiversity within PAs and on the needs of the poor/ultra poor populations living within the landscape zone. The NSP has also made a special effort to engage young members of the local population (youth groups, scouts) in NRM activities such as the monitoring of birds as indicator species. The NSP has also formed links to ethnic minorities living inside the PAs to ensure these traditional forest villagers have a voice in co-management.

The government has agreed that half of the revenue generated from visitors to PAs will be retained locally, shared among the community members and re-invested in PA management, according to priorities determined through co-management.

All of these accomplishments suggest the NSP is effective in its efforts to protect biodiversity and improve the livelihoods of the people of Bangladesh within the co-management framework for PAs and associated landscapes. There remain, however, questions in regard to sustainability as discussed in Section 8.

[11] However, in contrast to MACH, NSP has not to date provided micro-credit to the FUGs.

6.6 Efficiency

To date, no assessment of cost-effectiveness has been made by NSP. While it is too early in the project to measure economic benefits, an effort should be made to obtain the necessary baseline information that will permit an assessment of cost-effectiveness when information on positive benefits is available. This will require an assessment of past and future benefits derived from PAs, income levels of the population within the landscape zone, AIG activities, tourism, PA revenue sharing, etc.

7. Implications of Program Outcomes

In this section, the expected positive and negative impacts of both projects at their respective times of closing are assessed, using the following dimensions:

- Impact of Co-Management
- Biodiversity Impacts
- Economic Impacts
- Social Impacts
- Infrastructure Impacts
- Institutional Impacts
- Effectiveness of Monitoring and Evaluation

This section is also used to draw out similarities and important differences between the projects.

7.1 Impact of Co-Management

The principle of co-management – management of resources by the users, reinforced with local elected officials, local leaders, and women – is working well in MACH and a similar model shows promise of working well in NSP, though several more years of project support will be needed for the latter before the CM Councils and Committees become self-sustaining (the same can be said for the MACH RMOs created in the last two years). However, there are important differences between the projects that will affect how the co-management strategy is implemented. In the first place, NSP protected areas are much larger than the individual MACH wetlands and their resource management issues tend to be more complex. For this reason, some NSP sites have more than one CM Council. Second, the MACH resource users – the fishers – are also the beneficiaries of project interventions, through the management plans, and those benefits may be substantial and received rather quickly, within a year or two, though some negative impacts need to be compensated through AIG. In NSP, the present resource users will lose their access to the resources of the PAs and may not benefit directly from biodiversity conservation, though the project planners expect them to benefit indirectly from eco-tourism development, AIG activities already started, and additional efforts recommended below. Such benefits will grow more slowly than in MACH, for example, five to ten years for fuelwood plantations in the buffer or sustainable use zones of the landscape using social forestry models. Third, the MACH co-management model excludes, to a large extent, the DoF at the RMO level (though it does play an important role at the LGC level), while the NSP CM Councils include FD representatives, as chairs. This was nearly inevitable, given the FD role as "owner" of the PA but, in the view of the evaluation team, also represents a step forward in trying to include all the key stakeholders in the co-management bodies, thus facilitating the institutionalization of co-management within FD.

The well established RUGs under MACH appear able to withstand pressures from powerful interest groups and thus capture of benefits by the elite, though some rearguard battles with

former leaseholders are still going on. The MACH outreach program has focused on infrastructure, rather than extending the full co-management model to additional sites.

7.2 Biodiversity Impacts

MACH has clearly demonstrated the value of sanctuaries and associated infrastructure in conserving fish stocks during the dry season and in maintaining a richer diversity of species. The 83 ha sanctuary at Hail Haor has been notably successful in attracting waterfowl, eagles and other wildlife and now has considerable potential from an eco-tourism point of view. The riparian plantations have been locally important in providing bird and animal habitats but their impact on siltation of water bodies is likely to be quite limited. A more comprehensive approach to watershed management was understandably beyond the scope of MACH and would have required the cooperation of the FD and the tea estates, which control much of the upland areas.

Biodiversity and economic benefits at the Kaliakoir site in Turag-Bangshi (see Box) are threatened by uncontrolled effluent discharges from 166 dyeing works in that vicinity, resulting in low values of dissolved oxygen and high values of alkalinity and consequently fish kills. Few factories have any type of treatment plant and these are only partly functional. Although MACH has been working with the plants to demonstrate and document no cost/low cost methods of improving effluent quality, this has not been accompanied by vigorous enforcement action by the Department of Environment.

It is still too early to expect to see significant biodiversity benefits in NSP; in some sites there is data to suggest illegal logging has decreased, contributing to biodiversity protection, while in at least one other site there has been ecological damage, as illegal loggers rushed to remove valuable timber before the co-management system became effective. The NSP project team has understandably put further development of the PA management plans on hold until the CM Councils and Committees are more firmly established, various means of AIG have been tested and funding is in place for things like habitat restoration. Clearly, a large task remains, given the highly degraded state of most of the sites, and full biodiversity benefits will only be seen in 50 years or more. However, it does appear that, for most areas, strict protection will be sufficient to allow the natural forest to regenerate[12].

7.3 Economic Benefits

As a result of the resource management plans described above, fish production in the MACH pilot sites is already 140% above the 1999 baseline. AIG has also been effective in raising incomes of RUG members by about 46%. Credit recovery rates are very satisfactory (96%). With hindsight, the evaluation team questions whether it was necessary to build a micro-credit system within the project, rather than to contract with existing NGOs to extend their programs in the pilot areas.

For NSP, the first economic benefits are beginning to be seen, as AIG activities get started. While these can potentially be scaled up, especially through agreements with established NGOs, some doubt remains as to whether micro-credit alone can compensate for the economic costs of denying access to the protected areas. The landscape development fund will be a useful supplement but a more strategic and quantified approach is needed. The evaluation team suggests that explicit strategies be developed for replacing resources like fuelwood and sticks for betel leaf

[12] The exception may be areas where woody plants have been replaced by sun grass (*Imperata cylindrica*).

plantations that are of particular importance to the poor. Social forestry of the type well understood in Bangladesh may also have an important role.

The NSP team has appropriately placed considerable emphasis on stimulating eco-tourism by preparing publicity materials and, in the near future, providing visitor facilities. The government's recent move towards the decision to allow fees to be charged to visitors and for half of such fees to be retained by the CM Councils is a very positive development. The team's efforts to engage the support of the private sector are beginning to pay off; such partnerships could eventually be very powerful. The current architectural competition for the design of a Visitor Center at Lawachara National Park is important, not only to achieve a state-of-the-art design but also to inform several hundred members of the urban elite about the park and its conservation. These are the kind of people whose support and activism will be vital if Bangladesh's PAs are to have any chance of survival.

7.4 Social Impacts

There is clear evidence that the benefits of MACH are reaching the poorest and that co-management has equipped the poor to resist pressure from the powerful[13]. However, this is more problematical for riparian plantations where landowners typically get a large share (in one case, almost all) of the timber production benefits. The AIG activities have understandably gone beyond fishers to include other poor villagers, although the extent of this is not clear.

The empowerment of women has been an outstanding achievement of the project. The project has operated in conservative rural areas, where women have traditionally had few rights and little power over their lives or livelihoods. By insisting that a proportion of positions in RMOs and FRUGs be filled by women, and by setting up RUGs for women, the project has forced the pace of social change. At several sites, the team encountered women members who were willing to speak forthrightly about their concerns and their role in the project – even interrupting the men.

MACH appears to have provided equal access to Hindus and Muslims in areas where both live.

Social structures in and around the NSP sites are more complex than in the floodplains. In these hilly, border areas, ethnic and religious minorities are significant. Some of these people live in "forest villages", established decades ago by the FD; villagers were given land in exchange for their labor on FD activities. Some of the forest villages are now inside the PAs. Other villages have illegally encroached on FD land or are practicing slash and burn agriculture within PAs. At the Teknaf site, refugees from Myanmar are a further complication. Although NSP has done good preliminary work on surveying and mapping the various groups, much more needs to be done, to understand fully the present situation and to develop strategies for each set of circumstances, in order that the project does not have a detrimental impact on any ethnic group.

While the CM model should provide sufficient safeguards against elite capture of benefits, as it has in MACH, there may be a greater challenge in NSP because of the larger populations and more complex social structures involved.

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[13] As one proud beneficiary told the evaluation team: "Before, we were nothing but now our dignity has increased so that we can shake hands with all kinds of people. This could not have happened without MACH".

7.5 Infrastructure Impacts

The supporting infrastructure in MACH has proven to be essential in achieving full project benefits. It is therefore of great concern that government approval of the modest ISMP took two years and, consequently, about 40% of the re-excavation works will not be completed by the closing date.

As the infrastructure parts of NSP are only just beginning, it is too early to comment on their impact. NSP is also suffering from the glacial speed of government approval processes.

7.6 Institutional Impacts

The success of the project in building co-management institutions has been described earlier. Project staff played a key role in the development of the Inland Capture Fisheries Strategy under the FFP – a keystone document for the future development of the sub-sector, which is now being followed up by an action plan.

The overall impact of MACH on the DoF, however, has been less than would have been desirable, as a result of a decision at the outset to manage all project funds, including those for infrastructure, outreach etc. through the MACH contractor team. While the project has certainly influenced DoF officers at the sub-district level to move beyond the traditional role of enforcing government regulations to a more pro-active stance concerned with assisting fishermen's groups to increase production, this process needs to be carried much further, through training programs, exchange of experience between sites and the like, which MACH has done to a certain extent.

NSP appears likely to have similar success in co-management, provided project support can be continued for a sufficient number of years and can overcome the hurdles of size and social complexity just discussed. NSP has a greater focus than MACH on effecting change in a government agency - the FD. NSP is supporting the initiatives in the FD to place PA management in the hands of a specialized subdivision – the Nature Conservation and Wildlife Circle – and has carried out a detailed assessment to that end. However, institutional changes of this magnitude will take considerable time to become effective. A particular challenge is that FD staff do not have specialized training in PA and biodiversity management nor is there any obvious source within Bangladesh where they can get it.

7.7 Effectiveness of Monitoring and Evaluation

MACH I and II have developed a powerful system of monitoring and evaluation (M&E), based on key performance indicators related to the project objectives (Table A.1 in Appendix A). Good time series data on these indicators are available in electronic and printed forms and these should be of considerable value to project planners and researchers. However, more work will be needed to boil down the project results into simpler formats for other users, at the local level. The evaluation has noted a few problem areas with the M&E system, such as incompatible data from income surveys and the lack of evaluation of training programs.

The evaluation team's major concern is the sustainability of the M&E system after the project closes. It will be essential to develop a simplified system that can be continued at the local level.

The NSP M&E program provides a limited amount of information on social, economic and ecological measures related to co-management of PAs. The most meaningful data collected to date is on structural diversity of forests using indicator bird species. It appears that little or no

information is available on forest users living within NSP's "landscape zone" and their changing patterns of resource use (*e.g.* fuelwood, poles, wildlife, timber, bamboo, rattan, and other products coming out of PAs) or their socio-economic well-being.

In addition, the success of the NSP relies on an understanding, acceptance and support of PA management, biodiversity conservation, and co-management concepts. Given the complexity and, in some cases, the novelty of these concepts, a good deal of training is required for NSP staff, FD and other government staff and for the public at large, particularly local forest users. Currently, the M&E program for the NSP does not endeavor to test the effectiveness of NSP in achieving an understanding and acceptance of co-management of PAs.

8. Sustainability of Program Outcomes

8.1 MACH

Assuming completion of the project activities now planned before the project closing date of October 2006, the view of the evaluation team is that MACH's considerable achievements will be **largely sustainable** for the immediate future. Those RMOs and FRUGs which have been established for a reasonably long period appear capable of managing the fishery resources and AIG activities respectively and able to resist pressure from powerful interest groups. With continued vigilance on loan repayment, the FRUGs (and their constituent RUGs) should be able to sustain themselves financially for the indefinite future. With the LGCs (in future, UFCs) becoming increasingly active and able to administer the endowment funds[14], there will be continuing support to the RMOs and FRUGs, thus enhancing their sustainability. All of this presupposes that the Government remains committed to the principle of co-management and to other elements of the Inland Capture Fisheries Strategy.

Having said that, it is important to note that, without further support, *some* elements of the MACH program might not survive more than a year or so beyond the closing date. Approximately 25% of the RMOs, RUGs and FRUGs, especially those more recently established, are institutionally and financially more fragile than the majority but most of these could probably be brought to self-sufficiency with intensive week-to-week support that the project has been providing.

Secondly, the team also notes that considerable re-excavation and other works remain to be completed with the 416b funds (approximately $1.3 million equivalent). While the project will continue to show substantial benefits even if these works are deferred, it would clearly be in the interest of all parties, especially the poor fishing communities, to find a mechanism to allow these works to be completed.

Thirdly, the evaluation has already discussed how the design of MACH was such that capacity building of the DoF, particularly at the sub-district level, was limited. DoF clearly has a major role to play in ensuring that RMOs and FRUGs are supported and sustained and it would be highly desirable to find a way to sensitize and orient the UFOs to the co-management model and to their role in supporting the fishers. Moreover, it is essential that the DoF develop internal co-management capacities to ensure effective implementation of the Inland Capture Fisheries Strategy (ICFS).

[14] By limiting UFC access to the interest on such endowment funds, the project is creating a valuable tool to assure sustainability.

For these reasons, the evaluation team proposes that USAID consider a short extension of MACH II by 8 to 12 months – to ensure greater sustainability of MACH achievements and to allow remaining ISMP/ 416b works to be completed. For the latter to be effective, the extended closing date should be at least June 2007, the end of the construction season. During the proposed extension, the focus would be on:

- New initiatives to strengthen the DoF, through policy development, manpower planning, training, study tours, and technical support to the ICFS action plan process
- Continued support to the LGCs/UFCs, including completion of the network and guidance on the use of endowment funds
- Intensive support to the lagging RMOs and FRUGs in the following way: the RMOs and FRUGs would be divided into two roughly equal groups according to an assessment of their present capacity; for the stronger group, the project would withdraw all week-to-week support but would monitor performance twice during the extension period[15] (project staff would also be able to respond to any emergency needs from the stronger group); for the weaker group, the project would continue to provide intensive hands-on support, as well as monitoring, with the objective of bringing these groups to a self-sufficient stage at project's end
- Completion of all outstanding civil works
- Continued outreach to FFP and other sites, as funding permits
- Carrying out an action plan for pollution reduction at Kaliakoir
- Completing the *jatka* fisher livelihood support program
- Initiation of a simplified monitoring and evaluation system and training of UFOs and others in its use
- Identification of priority areas for a possible expansion phase

It appears that the remaining funds in the MACH budget and the ISMP would be sufficient for the above program, once appropriate reallocations are made.

8.2 NSP

Sustainable development projects are those that result in positive change that continues to provide benefits long after the development project is completed; for NSP, this means beyond May 2008.

The NSP has resulted in many significant positive changes within its first three years, however there are concerns regarding the ability of the project to ensure these and other ongoing changes become sustainable within the remaining two years of the project. In the context of the NSP, sustainability may be assessed in terms of achieving long-term protection of biodiversity within PAs and a sustained increase in the livelihoods of the population within the landscape zone.

Four factors have been considered in assessing the sustainability of the NSP's co-management model for PAs (these are described in more detail in Appendix B):

1. Based on the time required to establish sustainable co-management organizations in MACH (more than 5 years) and given the history of an adversarial relationship between the FD and local populations, it is anticipated the NSP will require several more years beyond the end of contract (May 2008) to establish positive and effective working

[15] This would provide a powerful test of the statement above that these RMOs and FRUGs have reached self-sufficiency.

relationships between the FD and the local population that may be considered sustainable in the co-management of PAs.

2. There is long and complicated history of the use of resources from Forest Reserves, including the NSP PAs and buffer zones. In order for the NSP to be considered sustainable, traditional forest resource use must change to protect biodiversity and it must change in ways that does not negatively impact the local population. It is clear that solving the complex issues associated with traditional resource use within PAs will extend many years beyond the NSP. Nonetheless the NSP has not yet planned or demonstrated a sustainable mechanism to ensure alternative sources for forest resources (outside PAs) will be made available to traditional users.

3. Forest Reserves have a complex problem of encroachment and unclear boundaries" that must be addressed to clearly delineate the Forest Reserve, the PA and the Buffer Zone boundaries from forest villages, surrounding villages, commercial development, and agricultural lands that have developed within Forest Reserves over time. Sustainable protection of biodiversity within PAs will require the issues of encroachment be resolved, albeit over a number of years. The NSP has not yet addressed encroachment in any substantial manner (wisely so, as it is a sensitive issue requiring good communication between all stakeholders and innovative solutions that do not create hardship for the poor). It is not likely that many issues of encroachment will be resolved within the remaining two years of the project. Sustainability cannot therefore be determined until there is good evidence that an effective mechanism is in place dealing with issues of encroachment.

4. The newly formed CM Councils and Committees require a significant amount of capacity building based on the many challenging tasks before them and the variety of skills required to effectively manage PAs in a manner that will both protect biodiversity while also providing benefits for the local population. What is at issue in regard to sustainability is a concern that the CM Councils and Committees will not have received sufficient training and support over the life of the NSP to deal effectively (*i.e.* sustainably) with the complex issues of PA management.

There is also the question of the sustainability of AIG activities. The NSP has reported that there is a strong dependency of a large poor and ultra poor population on resources from PAs. Under the NSP, a very small proportion of the population within the landscape zone of PAs will be reached by AIG, there will remain many people that require AIG training and support for this project to be considered sustainable. Of note is the fact that there is the potential for ongoing AIG activities provided by the CM Committees utilizing funds available from tourism revenues, however the capacity of the CM Committees to deliver AIG activities and the level of finances available from PA revenues remains unknown and requires therefore ongoing project support before some level of sustainability will exist.

The evaluation team considers the co-management approach to PA management sound and, given sufficient time and resources, the issues noted above can be addressed to support sustainability. **It is the opinion of the evaluation team that a second project will be needed to complete the work that the NSP has started and to establish protected areas that are self-sustaining.**

9. Possible Follow-up Actions

9.1 MACH

The evaluation team notes that, with the completion of the FFP in June 2006 and MACH in October 2006, there is presently no committed donor funding for floodplain fisheries beyond this year. Given the very positive experience of MACH and the continuing importance of wetlands from biodiversity and poverty alleviation points of view, the case for a follow-up project or program seems quite clear.

The team suggests that any expansion phase follow the model of MACH, with the following adaptations:

- Emphasis on replication rather than demonstration
- Assuming that a larger project would be managed primarily by the DoF, a strong element of capacity building for DoF
- Close integration of the co-management and civil works elements of the project in a single Project Proforma
- According to donor preferences, biodiversity enhancements might be split off as a separate, but closely coordinated, parallel project
- AIG activities should be considered as a necessary part of the package but might be achieved through agreements with suitable major NGOs, rather than a project-run activity, provided such services were closely oriented to the target groups

Because of its demonstration nature, MACH has been relatively cost and staff intensive per beneficiary or per hectare and consideration should be given to streamlining the model to see if costs can be reduced without significant loss of project quality. However, experience in Bangladesh (for example, FFP) and elsewhere shows that lower cost approaches are not as successful. Given the likely robust economic returns of even the high cost MACH model, the evaluation suggests that streamlining be approached cautiously. Specifically, it is suggested that field services through NGOs remain at the MACH level and that economies of scale be sought mainly at the project management level.

The evaluation team recommends strongly against an immediate replication of MACH to the whole of Bangladesh, given the high rate of failure in the past for similar rapid expansions. The emphasis should be on maintaining the quality and benefit level of the program. Many options are available for geographic expansion but the team suggests the following priorities:

- In-filling of gaps in the three pilot areas, for example, two or three more RMOs could be formed in Hail Haor
- Stepping out to areas adjacent to the pilot sites, for example, other *haors* in Sylhet Division
- Adopting one or more new regions, for example, building on the outreach experience in Northwest Bangladesh

An alternative approach would be to focus on a complete watershed – for example, the Upper Meghna, which could be combined with a watershed management approach, including sediment control.

The size and duration of the expansion phase will depend heavily on donor preferences and constraints. For example, there could be value in dividing the work into two steps: a transition phase of one to two years followed by a full-scale project. In the transition phase, the capacity of

the DoF could be developed, project areas selected, initial surveys and baseline data collection accomplished, some RMOs established and the detailed design of the full-scale project completed.

9.2 NSP

For NSP, as set out in Appendix B, the chance of achieving full sustainability after the present project is completed in 2008 appears slim. A clear lesson from MACH is that building co-management institutions takes considerable time – 4 to 6 years in the opinion of the evaluation team. NSP co-management must establish a working relationship between the FD and local stakeholders and, as the knowledge and experience of the CM Committee increases, address the varied issues of PA management such as illegal felling, encroachment, current resource use, restoration, wildlife management, and tourism.

An additional challenge for NSP is the necessity for finding viable compensatory mechanisms (AIG) for the many people whose livelihoods will be adversely affected by restricting access to resources from PAs on which they have come to depend. Although that process has started, a lot of learning by doing is still needed, including mechanisms like providing alternative sources of fuelwood and other forest products for the local poor; initiatives that are not yet in the project.

Both these challenges argue for a second project to complete the work that has started and to establish protected areas that are self-sustaining. Such a project could also be the vehicle for extending the co-management model to other protected areas, including those not in forest areas. While it is too early to be very definite about the size, scope or duration of a NSP II, it would likely be comparable to the current project. Every effort should be made to secure local currency funding from the outset.

10. Recommendations for Future Environmental Strategy[16]

Pressure on natural resources in Bangladesh remains intense. Almost every square meter of the country's territory is used for one human purpose or another and areas of undisturbed nature are very few. The 50% of the population classified as poor depend heavily on natural resources for their daily survival and are the first to be affected by the diminution or degradation of those resources.

In its 2002 "Strategic Plan for Improved Management of Open Water and Tropical Forest Resources, FY2002 – 2008", USAID/ Bangladesh argued for a reinforced USAID role in natural resources management, with special emphasis on floodplain wetlands and protected forest areas. It noted that other donors were addressing other natural resource and environmental issues.

With the short time available to the evaluation team, its review of options for future USAID involvement was necessarily limited in scope and far from exhaustive. Nevertheless, a review of available documents, observations of conditions in the field and interviews with knowledgeable informants, suggest that the two priorities selected in 2002 – *floodplain wetlands and forest protected areas* - should remain USAID's top environmental priorities for the immediate future. Suggestions for follow-up actions to the two ongoing projects are given in the previous Section. This would be consistent with USAID/Bangladesh's Strategic Statement for FY 2006 – 2010, which includes under SO 11 (More Effective and Responsive Democratic Institutions and Practices) a Program Component 7: *Improve Sustainable Management of Natural Resources and*

[16] A more detailed treatment is given in Appendix C.

Biodiversity Conservation. This program component emphasizes transparency and accountability, through community-based management, with broad based local participation.

The co-management model has been shown convincingly to work in the floodplain fisheries sector and shows promise of achieving the same result in forest protected areas, provided in the latter case that well-targeted support can be continued beyond 2008. The time may now be ripe for Bangladesh to generalize this experience into a *Protected Areas System Strategy.* Given USAID's lead role in this subject over the past several years, it would be logical for the agency to support the government in developing such a strategy. The Biodiversity Strategy and Action Plan of 2005 would provide one foundation for the proposed work. Another key ingredient would be the 2004 assessment of the FD's capacity to manage protected areas prepared under NSP[17]. This analysis includes a detailed action plan for institutional changes and capacity building activities. Additional work, however, is needed to articulate the roles of the Forest Department, Department of Fisheries and Department of Environment in future biodiversity protection and to lay out the steps needed to ensure consistent approaches for forest and wetland protected areas, and possible future additions such as coastal and marine sanctuaries. A possible outcome would be a single government agency to manage protected areas; the framework most commonly seen in other countries is a national parks agency.

By supporting the development of a protected areas system strategy, USAID would be able to identify the critical challenges that call for its support at the project level over the medium term. While it would be premature to forecast the scope of future projects resulting from adoption of a Protected Areas System Strategy, one might envisage further support of the NSP type – combining co-management with alternative income generation – for some or all of the remaining 14 forest protected areas, plus possibly new protected areas for wetlands, coasts and/or marine sanctuaries. However, this approach would entail a massive capacity building effort, given the problems noted in Appendix B in developing a management cadre for the NSP sites alone. This is all the more reason to stay the course on NSP, to provide a firm basis for future expansion.

Another project type which may fit USAID strategic objectives could be a program for carbon sequestration through plantations of various kinds (excluding fuelwood, obviously) – long-rotation timber, wetlands, mangroves, or riparian. The last may represent a more fruitful opportunity (compared to, say, roadside plantations, which have been the target of many other projects), as relatively little appears to have been done up to now, apart from MACH. While such a project would probably involve the "mainstream" of the FD, which might be seen as a barrier, it would also present excellent prospects for a public-private partnership, in which US corporations may see advantages in leasing land for tree planting within the many degraded areas of existing Forest Reserves from the FD or from private owners in return for carbon credits or offsetting carbon footprints.

17 "Assessment of the Forest Department's Institutional Organization and Capacity to Manage the Protected Areas System of Bangladesh", NSP, August 2004.

INDUSTRIAL POLLUTION IN KALIAKOR

In the year 2000, during MACH I, the presence of dye factories in the vicinity of the Mokesh Beel in Gazipur District was recognized as a potential threat to aquatic ecosystem health. At that time, there were thought to be 20 to 25 factories operating in the region, three of which were known to be operating partially functional effluent treatment plants. After six years of study, much more is known about the problem but the number of dye industries has dramatically increased to at least 166, with the majority continuing to operate without functioning treatment plants, despite legal requirements for pollution control.

The Bangladesh Centre for Advanced Studies (BCAS) (part of the MACH project team), together with additional funding and technical support from the Stockholm Environment Institute, the University of Leeds in England, the United Kingdom's Department for International Development (DFID) and Europe Aid, have undertaken research and monitoring to better define the problem and to develop solutions for reducing pollution. Bangladesh needs industrial development, but it needs responsible industries that do not create negative environmental impacts that may outweigh the positive economic and social benefits.

Community based environmental monitoring organized by MACH shows extremely low dissolved oxygen (DO) levels (0 ppm measured during the visit by the evaluation team) and extremely high pH levels (pH 10.0 measured during the visit by the evaluation team) in drainage ditches used by dye factories for effluent discharge. These conditions worsen downstream where the effluent from multiple dye factory outlets concentrates in natural drainage *khals* and *beels*. At a point approximately 4 km downstream from the source of the effluent, water entering the Turag River from the Mokesh Beel wetland continues to show low DO levels (2.3 ppm) and high pH levels (p 9.2).

The heavily polluted waterways are biologically dead, they no longer support fish and they are affecting human health as evidenced by increased skin disease and reduced agricultural production in surrounding areas. Fish kills have been reported within the Turag River, including within a MACH sanctuary located **upstream** from the point where pollution enters the river, during periods of reversed flow. As this situation worsens, the incentive to create and protect fish sanctuaries will lessen. In addition, the Turag River is one of the last refuges of the Gangetic Dolphin, an endangered species in Bangladesh.

Over the past six years, the MACH team has worked with the dyeing industry to better define the problem and to begin to develop solutions. Cloth dyeing and effluent treatment are complex chemical engineering process. MACH has determined that much of the problem has to do with a lack of technical know-how, for example:

- there is variability in the quality of the dyes used that is not recognized, leading to the use of inappropriate quantities, improper dye mixing and process temperatures;
- the dye process is not carefully controlled in terms of timing, temperature, and chemical conditions unique to each batch; and
- the chemical composition of effluent entering the treatment plant process is not monitored to determine the appropriate level of treatment needed.

MACH research has shown that more careful control of the dyeing and wastewater treatment processes can significantly reduce pollution, while at the same time improving the quality of the dyed cloth and reducing the cost of production.

Working with the Department of the Environment (DoE) and the dyeing industry, MACH and its partners have produced a number of documents to assist the dyeing industry in meeting its obligations under current Bangladesh legislation:

- Environmental Clearance Certificate Process;
- Management of Textile Dyeing Sludge;
- Alternative Production and Cost Savings in Winch-Dyeing; and
- Choosing an Effluent Treatment Plant.

Much work remains to be done to extend and disseminate the knowledge gained by MACH. It has been suggested that one of the preferre solutions would be the construction of a single treatment plant that could serve a cluster of dye industries. This approach would reduce th cost burden for individual businesses, while ensuring effluent is treated in the most appropriate manner. Catalytic support from outside donors, effective law enforcement by the DoE and greater accountability from the polluting industry could create the synergy needed to change the current situation of increasing destruction of productive fisheries and agricultural lands and the appearance of human health problems which may be directly related to water pollution. Technology transfer of cost effective, high quality dye processing must also b seen as an important part of resolving the pollution problem. The DoE, as the regulating agency, requires capacity building and needs to negotiate a time-bound compliance plan, through signed agreements with the dyeing industries, to lower their discharges in steps to meet legal limits over a defined period of time of perhaps five years.

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RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

APPENDIX A - MANAGEMENT OF AQUATIC ECOSYSTEMS THROUGH COMMUNITY HUSBANDRY (MACH)

June 2006

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APPENDIX A: TABLE OF CONTENTS

APPENDIX A: MANAGEMENT OF AQUATIC ECOSYSTEMS THROUGH COMMUNITY HUSBANDRY (MACH)

1. Project Objectives and Performance Indicators

1.1 Project Objectives

The floodplains of Bangladesh are home to hundreds of species of fish, plants and other wildlife. These floodplains serve as a source of income and a critical supply of nutrition for millions of Bangladesh's poorest rural households. Nowadays, anthropogenic activities such as over-fishing, dewatering, leasing of water bodies for limited periods *(jalmahals)*, inappropriate fishing gear, etc. are degrading the natural resources of these wetlands. Recognizing these facts, the Government of Bangladesh and the United States Agency for International Development (USAID) have jointly developed a co-management program with the resource users called **Management of Aquatic Ecosystems through Community Husbandry** (MACH)[1].

The project has had two phases: MACH I, from October 1998 to July 2003 (extended at a no additional cost basis up to October 2003), and MACH II, from November 2003 to end-October 2006. The MACH objectives have been restated in various ways over the long life of the project following an *adaptive management* principle. However, the evaluation team found the following to be the most useful:

MACH I Objectives[2]:

- To raise awareness (of communities and local government) about the importance of natural flood plain and food as well as income security for the people of Bangladesh.
- To maintain and recover selected natural flood plain ecosystems and associated fisheries
- To identify activities to generate alternative income that result in a reduction of pressure from fishing and agriculture in the floodplain fisheries.

MACH II Objectives[3]:

- To develop fully the community based Resource Management Organizations (RMOs), related institutions and beneficiary groups and ensure their sustainability
- To consolidate and intensify wetland rehabilitation activities so that their impact can be fully assessed
- To develop further the constituency for co-management of natural resources through an expanded outreach/public education effort
- To 'roll out' the MACH co-management approach to the wider government and donor communities

1 Winrock International and its three partners, the Bangladesh Center for Advanced Studies (BCAS), the Centre for Natural Resource Studies (CNRS) and CARITAS Bangladesh, are implementing the project.

2 MACH Project Profile, August 2001

3 MACH II Briefing Packet for USAID Evaluation Team- Part 1: Achievement, Influence and Future

1.2 Performance Indicators

The performance indicators for MACH I are set out in the document referenced in footnote 3. MACH II is covered by USAID's **Strategic Objective 6: Improved Management of Open Water and Tropical Forest Resources**, which has the following performance indicators:

- Indicator 6a: Extent to which best practices from USAID-funded projects are used elsewhere
- Indicator 6b: Increased production of natural resources in targeted areas
- Indicator 6c: Increased biodiversity in targeted areas

These indicators are further elaborated into a set of Intermediate Results and associated indicators (see Table A.1). The evaluation team considers that the main indicators are very appropriate for this kind of project. Indicator 6a reflects the demonstration nature of the project, while Indicators 6b and 6c represent the economic and biodiversity objectives for intervening in floodplain fisheries. However, some of the sub-indicators focus more on outputs rather than outcomes (see Section 5) and those on institutional capacity have proven hard to quantify.

1.3 Monitoring and Evaluation System

A basic monitoring system was established under MACH I, and expanded and elaborated under MACH II. The result is a quite comprehensive and robust system. For example, fish catches are measured (not just reported from recall) every 10 days throughout the year from 23 sites. Annual surveys are made of the incomes of floodplain users dependent on fishing/ aquatic resources, using a sample of nearly 900. The effectiveness of the public awareness campaigns has been measured. Monitoring results are reported semi-annually and an end-of-project evaluation report is under preparation.

Table A.1 Intermediate Results and Associated Indicators

SO 6: Improved Management of Open Water and Tropical Forest Resources

- **Indicator 6a: Extent to which best practices from USAID-funded projects are used elsewhere**
- **Indicator 6b: Increased production of natural resources in targeted areas**
- **Indicator 6c: Increased biodiversity in targeted areas.**

Intermediate Results	Indicators	Unit	Target	Output	Outcome[4]
IR 6.1: Effective Community Based Resource Management Mechanisms Implemented	Indicator 6.1a: Area of floodplain where sustainable management is implemented.	ha	16,500		20,921
IR 6.2: Select Habitats and Ecosystems Improved	Indicator 6.2a: Aquatic habitats converted from seasonal to perennial in targeted areas	ha	500		448
	Indicator 6.2c: Riparian habitat improved in targeted areas	km	80	116 + 32 ha	
IR 6.2.1: Innovations and Best Practices Adopted	Indicator 6.2.1a: Number of sanctuaries established	#	9	14	
	Indicator 6.2.1b: Number if wetland/riparian trees successfully established	#	200,000	272,328	
IR 6.2.2: Alternative Incomes Realized for Target Groups	Indicator 6.2.2a: Average annual increase of RUG member supplemental income	%	50		46
	Indicator 6.2.2b: Number of RUG fishers having reduced effort	hrs	2,500		3,398
	Indicator 6.2.2c: Total number of new AIG loans	#	3,000	2,670	
IR 6.3: Select Policies Implemented that Support IRs 1 & 2	Indicator 6.3a: Leases of water bodies to community resource management groups granted in target areas.	#	8	12	
	Indicator 6.3b: Number of communities adopting the following key regulations in target areas: • Restrictions on the use of inappropriate fishing methods and gear • Restrictions on the fishing season and harvesting of fish fry • Restrictions on the areas of fishing	#	88	117	
IR 6.4: Public Awareness of Key Issues Increased	Indicator 6.4a: Number of individuals reached by the	#	70,000	184,389	

[4] Cumulative for MACH I and II, unless indicated otherwise.

Intermediate Results	Indicators	Unit	Target	Output	Outcome[4]
	public awareness activities				
	Indicator 6.4b: Percentage increase in awareness of wetland resource issues from baseline (% households aware of issues)	%	30		74
IR 6.5: Improved Institutional Capacity	Indicator 6.5a: Number of local government meetings where resource management issues discussed	#	100	206	
	Indicator 6.5b: Official circulars for UDCC agenda item and permission for RMO members to attend UP meetings as needed	#	1	1	
	Indicator 6.5c: UWRMC formed with charters/GOB circulars in place linking local government to resource management organizations	#	3	0	
	Indicator 6.5d: Trust Fund established for Institution	#	4	Partly	

Source: MACH II Briefing Packet for USAID Evaluation Team – Part 2: Performance Monitoring. This document should be referred to for important caveats, qualifications and explanations.

2. Project Design

2.1 Project Description

Project Sites

In order to test the applicability of the co-management model under differing physical and social conditions, MACH has focused on three pilot areas representing three major floodplain wetland ecosystem types, two from its inception: Hail Haor in Moulavi Bazaar District in the Northeast; and, Turag-Bangshi in Gazipur District. In 2000, a third area was added: Kangsha-Mailiji in Sherpur District.

Co-Management

MACH has supported local communities in forming their own organizations for overall management of the physical and biological components of selected wetland ecosystems. Project staff have facilitated the formation of 42 Resource Management Organizations (RMOs), including 16 involved in wetland management, to manage a wetland system or a major part thereof. Typically, the RMO manages a lease or *jalmahal* from the Ministry of Land. A majority of RMO members are local fishers (see also Section 7.4). When an RMO has developed a management plan for its area, it is able to assume the leasehold for a period of ten years, with the potential for five-year extensions, if management is satisfactory. Management plans incorporate the indigenous knowledge of the local people on fish behavior and sustainable management practices, such as designating sanctuaries, where no harvesting is allowed and which provide a refuge for fish over the winter, stopping fishing during the spawning season, reintroduction of locally lost or threatened fish species, and prohibiting destructive fishing gear and practices, such as dewatering, which excessively or completely deplete the stock.

Supporting Infrastructure

The project has found that the effectiveness of sanctuaries can be increased at low cost with fish aggregation devices, such as concrete pipes and hexapods, which provide food and shelter for fish and deter poaching. Floodplain fisheries typically occupy a large contiguous area of water in the wet season, which shrinks to a number of floodplain lakes (*beels*) and channels (*khals*) in the dry season. A combination of natural causes and mismanagement of land upstream of the floodplains has led to rapid sedimentation of the lakes and channels, restricting the habitat for overwintering of the fish. The project has therefore provided funds for the re-excavation of some water bodies, usually by manual labor, with a simple dredge used in some problem areas. Meeting sheds for RMOs are also provided.

Funding for supporting infrastructure is mainly provided under a parallel program called Investment Support to MACH Project (ISMP), with local currency funds provided by the government and derived from monetized food commodity aid under the US PL 416(b) program.

Alternative Income Generation (AIG)

As RMO management plans typically restrict fishing during the "hungry season", the project has recognized the need to develop alternative sources of income for the fishers and their equally poor neighbors. This is done with techniques pioneered in Bangladesh – formation of Resource User Groups (RUGs), institution of group savings, training of RUG members in an activity of their choice, and provision of micro-credit [(initially limited to Tk 5,000 ($71)] per member but increasing for subsequent loans). Activities supported vary widely but include: chicken and other livestock raising, tree nurseries, vegetable growing, irrigation pumps, land purchase and petty trading. Micro-credit is now being channeled through Federations of Resource User Groups (FRUGs) to the RUGs.

Biodiversity Enhancements

The RMO management plans are of course the main vehicle for sustaining and enhancing biodiversity in the floodplains but the project has sought to enhance this with some targeted programs. At the Hail Haor site, a major sanctuary has been established which is now used by migratory birds and other wildlife. The project has provided an observation tower, nesting platforms and boxes, restoration of wetland forests and interpretive materials for visitors.

The project has also attempted to reduce the siltation problem by demonstrating riparian reforestation along a few of the streams that feed the wetland areas. The mixture of species used also provides corridor habitat for birds and mammals. At several sites in Hail Haor, the project has demonstrated contour cultivation of pineapples on steep slopes, instead of the up and down pattern traditionally used.

Outreach Program

In order to extend the impact of MACH to other areas of Bangladesh, the project has worked with the Fourth Fisheries Project (funded by the World Bank, DFID and GEF) to identify sites where resource management was sufficiently strong[5] but where funding for infrastructure was lacking. In nine such cases, MACH has provided funding for re-excavation, fish aggregation devices, seedlings for reforestation and meeting sheds.

The project has used a variety of other means to disseminate the co-management model and other project innovations, including tours for groups ranging from senior government officials to field staff, cross-fertilization of other donor programs and dissemination through the strong NGO network in Bangladesh.

2.3 Institutional Structure/ Community Participation

National Level

A **National Steering Committee** provides guidance and advice to MACH. It is chaired by the Secretary, Ministry of Fisheries and Livestock, with the Joint Secretary (Administration), Ministry of Land, as vice-chair. Other concerned departments, USAID and the Grantee are also represented. Key agency representatives, USAID and the Grantee also form a **Results Package Team/ Project Management Unit**, which meets monthly to monitor and facilitate project execution.

Upazila (Sub-District) Level - Local Government Committee (LGC)

The LGCs act as a partner to MACH, reviewing program activities and offering recommendations and assistance when required. Based on a Memorandum of Understanding between the Bangladesh and US Governments, the Committees were developed by Union and Upazila officials in participatory meetings. At these meetings, the committees agreed to terms of references and membership. LGCs are chaired by the respective Upazila Nirbahi Officers (UNOs). Members include concerned Union Parishad (UP) Chairpersons, upazila officials (engineering, agriculture, livestock, social welfare, etc.), RMO and FRUG chairpersons, and other stakeholders as necessary, with the Upazila Fisheries Officer as Member Secretary. Four LGCs have been formed and a fifth is planned.

Following the adoption of the Inland Capture Fisheries Strategy (ICFS), the LGCs are in the process of being converted to Upazila Fisheries Committees (UFCs), with minor changes in powers and membership.

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[5] The FFP uses a management model of Fisheries Sub-Committees at the village level, combined to form Fishery Management Committees at the wetland level. These groups lack the reinforcement with local leaders which characterizes the MACH co-management model.

Resource Management Organization (RMO)

The central theme of MACH is local management of resources. The key to project success is seen as the formation and successful operation of RMOs with local community stakeholders (fishermen, marginal farmers, women and other resource collectors – often illiterate), reinforced with local leaders, such as Union Parishad members, teachers, doctors, or small businessmen. This collaboration is seen as essential if the RMO is to be able to articulate a credible management plan and stand up to powerful interest groups, such as former leaseholders or elected local government representatives or government officials. Sixteen wetland RMOs are in operation.

Resource User Group (RUG)

MACH introduces savings, micro-credit and skill development training for poor fishers and other wetland resource users through a small group approach. A typical Resource User Group (RUG) has 20 to 30 members and meets weekly to collect savings from each member, plan activities and exert pressure on any members in arrears on their loans. Separate groups for men and women are organized by facilitators of the same gender. To date 167 men's and 81 women's RUGs have been formed, with a total of 5,104 members.

Federation of Resource User Groups (FRUG)

To provide legal standing to the RUGs and to act as a point of entry for a revolving fund, a Federation of Resource User Groups (FRUG) has been established as a legal entity registered as a membership-based social welfare organization. Each FRUG is Union based, with some having RUGs from adjacent Unions, and 13 have been established. Following the co-management model, a FRUG consists of three representatives (including one woman) from each RUG plus local leaders. There is generally some overlap with RMO membership. A revolving loan fund of about Tk 2 million is being provided to each FRUG as it shows its capacity to manage such funds. The individual RUG member loans are approved by the RUG and then by the FRUG and then disbursed to RUG members for AIG activities. Office bearers in the FRUGs, as in the RUGs and RMOs, are elected by the members.

2.4 Project Cost and Financing Plan

Winrock International, the Grantee, has the sole responsibility for funds to operate MACH II programs. The funds are administered according to the terms and conditions set forth in the 22 CFR 226, entitled 'Administration of Assistance Awards to US Non-governmental Organizations'. Winrock and its Partners are subject to standard USAID financial controls that include annual USAID financial audits.

The total cost of MACH I was $ 6.5 million, which was fully expended, while the budget for MACH II is $3.1 million, to which should be added the ISMP total of Tk 346 million (currently equivalent to $4.9 million) for a phase II total of $8.0 million. Unspent funds at the closing date are expected to total about $0.4 million plus Tk 90 million (about $1.3 million), for a total $1.7 million, or 21% of the phase II funding[6]. Reasons for this substantial underrun include devaluation of the Taka (resulting in about a 12.5% gain in taka equivalent), the late approval of the Project Proforma for ISMP and unusually wet seasons in 2004 and 2005, which limited ISMP construction.

The costs of MACH II and ISMP are summarized in Tables A.2 and A.3 below.

[6] As 2006 construction is still going on, estimates for October 2006 expenditures remain somewhat uncertain.

Table A.2: MACH-II Project Cost (US$)

Item	Budget Oct 2003 – Oct 2006	Expected Expenditures to October 2006	Expected Balance	% of Budget Spent
Salaries and Fringe Benefits	$647,853	$647,143	$710	100
Short-Term Specialist	$ 19,281	0	$ 19281	0
Travel Per Diem	$ 46,708	$46,708	0	100
Allowances	$226,958	$166,152	$ 60,806	73
Procurement	$ 78,258	$37,258	$41,010	48
Program Activities	$ 23,000	$22,239	$ 761	97
Other Direct Cost	$374,488	$372,091	$ 2,397	99
SUB-TOTAL	**$1,416,556**	**$1,291,591**	**$124,965**	**91**
Sub- Contracts	$1,105,589	$926,487	$179,102	84
Indirect Costs	$577,218	$490,316	$86,902	85
TOTAL DIRECT COSTS	**$3,099,363**	**$2,708,394**	**$390,967**	**87**

Table A.3: ISMP Project Cost (Taka '000[7])

Item	Budget June 2002 – October 2006	Expected Expenditures to October 2006	Expected Balance	% of budget spent
Staff salaries and allowance	20,000	16,259	3,741	81
Procurement	6,218	5,479	739	88
Project activities				
Re-excavation - *khal*	28,000	21,670	6,330	77
Re-excavation – *beel*	30,000	15,710	14,290	52
Reforestation	22,000	17,435	4,565	79
Infrastructure	10,100	6,782	3,317	67
Sanctuary establishment	22,200	18,887	3,312	85
Credit program	10,000	10,000	0	100
Endowment	40,000	36,000	4,000	90
Jatka fishing	20,000	20,000	0	100
Water pollution control	12,000	10,034	1,966	84
Training	20,000	14,809	5,791	74

[7] The current exchange rate is approximately US$1.00 = Tk. 70 but the rate at the time ISMP was approved is not known.

Item	Budget June 2002 – October 2006	Expected Expenditures to October 2006	Expected Balance	% of budget spent
Communication	8,000	4,269	3,731	53
Follow-up	7,500	7,500	0	100
Outreach	25,982	5,105	20.876	20
Other direct cost	14,500	13,872	628	96
SUB-TOTAL	**297,100**	**223,811**	**73,288**	**75**
Consultants	27,500	16,058	11,442	58
Indirect costs	21,000	15,525	5,475	74
TOTAL DIRECT COSTS	**345,000**	**255,395**	**90,205**	**74**

3. Implementation history

An agreement to implement MACH was signed in May 1998, with a completion date of July 2003. Winrock and its partners were selected in July 1998 and work began in late-September of that year. The Project Steering Committee selected the program sites in March 1999. Field activities at the Hail Haor and Turag-Bangshi sites began in April 1999. In July 2000, the MACH program was amended adding an additional work site, Kangsha-Malijhee.

A mid-term review in November-December 2001 recommended that MACH be extended for three additional years and an agreement to this effect was signed on October 16, 2003. The two phases were bridged with a no-cost extension from July to October 2003

From its inception, MACH planned to access additional funds to execute supporting infrastructure and discussions began in 1999 with a number of potential funding sources and it was determined that the US PL 416(b) program would be the most appropriate source. USAID agreed, in principle, in July 2000. Originally, it was understood that these local currency funds could be released through a simple agreement between the government and USAID, allowing works to start in the 2001 construction season. However, the government decided that this funding, now called Investment Support to the MACH Project (ISMP) would need to go through the complete government approval process. After several false starts, these funds were finally released in April 2003.

4. Relevance of Objectives and Design

As a key element of USAID/ Bangladesh's 1998-2007 Mission Strategic Plan (Poverty Reduced through Sustainable Economic Growth), MACH was designed to support the environmental strategic objective of that Plan (SO6). That Strategic Objective is further spelled out in the USAID/ Bangladesh Strategic Plan for Improved Management of Open Water and Tropical Forest Resources, FY 2002 – 2008. MACH is also strongly supportive of other USAID objectives in Bangladesh, especially in governance, democratization, poverty alleviation and the empowerment of women (SOs 11, 12, 14 in the new USAID/ Bangladesh Strategic Statement FY 2006 - 2010). MACH also implements key elements of the Government of Bangladesh's 2005 National Biodiversity Strategy and Action Plan, especially Strategy 10 – *Ensure wise use of wetland resources*. MACH is consistent with the Government's 1998 National

Fisheries Policy. MACH results have greatly influenced the Inland Capture Fisheries Strategy of the Department of Fisheries (DoF), which was recently approved by the Government.

The internal design of MACH was well thought out and took account of previous experience in Bangladesh and elsewhere. In particular, the concept of **co-management** built on past experience, by avoiding a top down, DoF led approach, on the one hand, or relying on user groups composed only of poor fishermen on the other. With hindsight, it appears that MACH may have gone too far in limiting the role of DoF in project execution, for example, in managing the local currency activities, and may have thus limited capacity building for DoF's replication of MACH achievements (see the fourth of the MACH II objectives and Indicator 6a).

The solution of reinforcing fishing family beneficiary groups (RMOs, FRUGs) with Union Parishad members, local opinion leaders etc appears to have increased the ability of the groups to withstand pressure from previous leaseholders and other powerful people to appropriate the benefits of the program. MACH was considerably enhanced when local funding became available (albeit after two years' delay) for physical infrastructure in support of the RMOs' management plans. These core elements are supported by Alternative Income Generation (AIG) activities and by biodiversity enhancements. These four elements constitute a coherent, comprehensive and mutually supportive package.

The implementation approach adopted was appropriate for the pilot project nature of MACH but the intensity of resource use does raise some questions for replicability (see Section 8). Nevertheless, the project correctly recognized that creation and sustaining of beneficiary organizations would require frequent face-to-face contact from project staff with considerable training in rural development and social awareness. Thus the combination of a major US consulting firm, with considerable experience in the technical aspects of the project, with three prominent NGOs, with excellent organizational skills, has proved very effective. In order to ensure transparency and to expedite project execution, MACH (including its local currency affiliate – ISMP) was designed for execution by the contractor consortium, with a limited role for the government (mainly in the Steering Committee, the monthly Project Management Unit meetings, and in the Local Government Committees). This may have created some problems for replicability.

5. Achievement of Objectives/Efficacy

As MACH II is only six months from completion, it is possible to forecast its final outputs and outcomes – available information from project reports is summarized in Table A.1. A distinction is made between **Outputs** (achievement of physical and institutional targets) and **Outcomes** (achievement of project objectives, in terms of changes to biodiversity parameters, fisheries management or beneficiary incomes).

Results show that the project has essentially achieved its objectives. Most targets have been achieved and some exceeded. Wetland productivity and biodiversity have been substantially enhanced (see Section 7) and a good start has been made on extending project innovations to other areas, most notably through the Inland Capture Fisheries Strategy of the DoF.

6. Project Efficiency

As MACH has been a demonstration project, with testing of innovations and learning by doing as integral elements, it was not subjected to any tests of economic efficiency (benefit-cost analysis) at the outset, though some analysis is planned by the project team prior to project closure. To do such an analysis accurately would require disaggregating project costs, to set aside those related to testing of innovations or those, such as riparian plantations, where benefits are not quantifiable, and also to differentiate costs

associated with fish management from those due to AIG. In the limited time available, the evaluation team has made a very crude estimate which simply takes the total project cost of $14.5 million over the total wetland area of 25,000 ha ($580/ha) and compares it with a stream of benefits – incremental fish production - which rises to an average between the three sites of 232 kg/ha in year 8 and is evaluated at an average price of $1/ kg. Because AIG costs are included and no account is taken of AIG benefits, nor of the substantial biodiversity enhancement benefits, this should be quite conservative. Nevertheless, it leads to a Benefit-Cost ratio of 2.4 or a Net Present Value of $592/ha at an opportunity cost of capital of 12%. This shows clearly that the project interventions were well justified from an economic efficiency point of view. Any follow-on project could probably be implemented at lower per ha costs and thus show even better returns.

The evaluation team recommends that the project team prepare a more refined and detailed benefit-cost analysis of MACH before the closing date.

7. Expected Project Impacts

In this section, the expected positive and negative impacts of the MACH Project at the time of closing – October 2006 – are assessed, using the following dimensions:

- Impact of Co-Management
- Biodiversity Impacts
- Economic Impacts
- Social Impacts
- Infrastructure Impacts
- Institutional Impacts
- Effectiveness of Monitoring and Evaluation

7.1 Impact of Co-Management

The MACH experience has confirmed the value added by co-management (Section 2.1) over either the top-down approach used in the past or reliance on user groups composed only of the poor, as used with partial success in the Fourth Fisheries Project (FFP). The inclusion in the RMOs and FRUGs of Union Parishad members, better educated people, such as teachers and paramedics, and even small businessmen, appears to have improved the clout of the organizations without leading to elite capture of benefits. The formation of Local Government Committees (LGCs) has extended the access of the RMOs and FRUGs to government services at the upazila level. The project organizations now control valuable resources – RMOs: leases, project infrastructure, members savings; FRUGs: revolving funds, and savings; LGCs (soon): endowment funds – which has enhanced their standing in the community. Nevertheless, some RMOs are still fighting rearguard battles with powerful former leaseholders – through the courts in one case.

Despite the evident progress made, the evaluation team could see that RMOs established for less than two years will find it difficult to sustain themselves after the project ends. Some RMOs still have difficulty in enforcing their adopted practices, such as bans on certain types of fishing gear, on all fishers in the community. The Outreach Program, which extends MACH support to nine FFP sites, has focused on additional infrastructure rather than extending the co-management concept to the FFP user organizations. An LGC is needed for Moulavi Bazaar Sadar Upazila and work remains for the project to replace LGCs

with Upazila Fisheries Committees (UFCs), with access to endowment funds[8]. Opportunities could be explored for RMOs to manage common resources other than fish.

7.2 Biodiversity Impacts

Through the project, RMOs have become convinced of the value of sanctuaries to conserve fish stocks in the dry season and to maintain a richer diversity of species. Accordingly, 14 sanctuaries have been established in the pilot areas, including a major one of 83 ha at Hail Haor, during MACH II. Although only in operation for a year, the Hail Haor sanctuary has attracted at least 7,000 waterfowl and other bird species and its value is being enhanced by wetland reforestation, nesting boxes, eagle nesting platforms and an observation tower. Further action is needed to gain possession of about 40 ha of alienated land in the middle of the sanctuary and also to publicize its existence to potential eco-tourists, through, for example, a recently produced video. For sanctuaries in general, some monitoring of dissolved oxygen in winter may be needed to guard against oxygen depletion from overstocking.

The MACH team has recognized that the sustainability of floodplain fisheries is threatened by siltation of water bodies, caused by erosion of adjoining upland soils. It has therefore added elements of watershed management, especially riparian reforestation along some tributary streams. However, in the absence of a comprehensive watershed management strategy and a monitoring system for erosion and sedimentation, it is questionable whether these plantings have had much impact on siltation, though they have been valuable as a contribution to tree species diversity, wildlife habitats and production of forest products (see also Section 7.4 on their social impacts). A full watershed management approach would have required the cooperation of the Forest Department (FD) and the tea estates, which control most of the uplands, and was understandably beyond the scope of MACH.

The project has also demonstrated convincingly that pineapple cultivation along the contours not only conserves the soil but also increases production. However, this knowledge might better be conveyed by the Agricultural Extension Service, which should discourage any kind of row crop on these steep and erodible soils.

However, at the Kaliakoir site, project benefits are threatened by water pollution from the proliferating dyeing works in the vicinity. See box at the end of the main report.

Finally, the MACH areas now have a rich body of experience and an excellent database, which should be made available to researchers in the natural sciences (see Section 7.7).

7.3 Economic Impacts

Careful monitoring of fish production has shown a steady increase in catches and diversity of species. In 2005, fish production was 140% above the 1999 baseline. This clearly showed that the combination of co-management, with re-excavation and improved fish management practices was productive for three contrasting flood plain situations.

Alternative Income Generation (AIG), through project-administered micro-credit, initiated with an injection of capital (revolving fund) from MACH, is also showing promising results, in terms of increased income for RUG members. Despite some measurement problems, this increase appears to be of the order of 46% (without accounting for project derived income from re-excavation etc.), showing the validity of the targeted micro-credit approach for this situation where the target group can be clearly identified. Credit recovery rates for the project as a whole are said to average 96%, which is consistent with

[8] By limiting UFC access to the interest on such endowment funds, the project is creating a valuable tool to assure sustainability.

evaluation team observations from a sampling of FRUGs (90 to 98%), which compares well with best practice in Bangladesh. However, the arms-length relationship adopted towards other micro-credit NGOs – RUG members may not belong to other micro-credit groups - may not always be in the best interest of the target group. Given that the project model is relatively expensive per beneficiary, an alternative of formal linkages with established micro-credit NGOs (which did not exist in the MACH sites at the time MACH started) might be preferable in any replication phase. It would also be useful to broaden the monitoring approach to cover income changes for project *villages*, that is, including fishing families, RUG members (an overlapping but distinct group) and non-beneficiaries.

7.4 Social Impacts

Despite considerable probing and discussions with approximately half of the RMOs and FRUGs, the evaluation team was not able to identify any instances of benefit capture by elite groups, in respect of the fish management innovations and the micro-credit system. This is in contrast to the Fourth Fisheries Project, where a significant leakage of project benefits to the non-poor was reported[9].

However, the same was not true of those riparian reforestations not managed by RMOs but by *ad hoc* Plantation Committees. In these cases, all plantation establishment costs and first year maintenance are paid by the project and landowners generally receive 70% of timber benefits. In one case (Maroshi Charlands), the committee was dominated by non-poor landowners, who thus captured essentially all benefits. The evaluation team suggests that, in any replication phase for such plantations, the project supply inputs only, with poor committee members supplying the labor in return for a majority of the benefits.

The project has been notably successful in improving the social standing of the poor fishermen, traditionally near the bottom of the social ladder. As one proud beneficiary told the evaluation team, "Before, we were nothing but now our dignity has increased so that we can shake hands with all kinds of people. This could not have happened without MACH".

The AIG activities have understandably gone beyond fishers to include other poor villagers, although the extent of this is not clear. The criterion of owning less than "50 decimals" (0.5 acre) of land in order to qualify for RUG micro-credit or training appear to have been generally observed.

One aspect of the project that has not been rigorously monitored or evaluated is the efficacy of the numerous training programs provided – whether the content of training programs was relevant to the participants and suitable for their educational level, and the extent to which knowledge imparted was retained. This could have been achieved through a small set of tracer studies. Such evaluation would have been particularly important for the long-term training, which includes sewing for women and industrial trades for men, where costs are relatively high and places few.

An outstanding achievement of the project has been the empowerment of women. The project has operated in conservative rural areas, where women have traditionally had few rights and little power over their lives or livelihoods. By insisting that a proportion of positions in RMOs and FRUGs be filled by women, and by setting up RUGs for women, the project has forced the pace of social change. At several sites, the team encountered women members who were willing to speak forthrightly about their concerns and their role in the project – even interrupting the men.

MACH appears to have provided equal access to Hindus and Muslims in areas where both live.

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[9] "Key Lessons and Learning from Inland Open-Water Fisheries", FFP Report No. 4, Department of Fisheries, Bangladesh (undated).

7.5 Infrastructure Impacts

Field observations confirm that infrastructural improvements, such as re-excavation of channels and floodplain lakes (*beels*), dykes and culverts, and meeting sheds, are essential to achieving the economic benefits just cited. It is therefore extremely disappointing to note that the Byzantine procedures of the Government of Bangladesh (approval of the Project Proforma) delayed this activity by two years, contributing to the result that about 40% of the allocated funds for re-excavation will not be spent by the closing date. (see also Section 2.4). This problem will need to be speedily resolved if the full benefits of the project are to be realized.

Now that considerable experience has been gained in the re-excavation and other works and their effects on fish management, it should be possible to introduce a simple form of benefit-cost analysis for future works of this kind, which could also be used in setting priorities.

7.6 Institutional Impacts

The success of the project in building co-management institutions has been described earlier. Project staff played a key role in the development of the Inland Capture Fisheries Strategy by the DoF– a keystone document for the future development of the sub-sector, which is now being followed up by an action plan.

The impact of MACH on the DoF, however, has been less than would have been desirable, as a result of a decision at the outset to manage all project funds, including those for infrastructure, outreach etc. through the MACH contractor team. While the project has certainly influenced DOF officers at the upazila level to move beyond the traditional role of enforcing government regulations to a more pro-active stance concerned with assisting fishermen's groups to increase production, this process needs to be carried much further, through training programs, exchange of experience between sites and the like. The DoF also needs to post officers to all upazilas, to allow MACH successes to be replicated.

7.7 Effectiveness of Monitoring and Evaluation

MACH I and II have developed a powerful system of monitoring and evaluation (M&E), based on key performance indicators related to the project objectives (see Table A.1). Good time series data on these indicators are available in electronic and printed forms and these should be of considerable value to project planners and researchers. However, more work will be needed to boil down the project results into simpler formats for other users, such as UNOs, UFOs and RMOs.

Earlier discussion has noted a few problem areas with the M&E system, such as incompatible data from income surveys and the lack of evaluation of training programs. The evaluation team's major concern is the sustainability of the M&E system after the project closes. It will be essential to develop a simplified system that can be continued at the local level – RMOs guided by UFOs – for variables such as total catch, species diversity, use of sanctuaries and improved fishing practices, and the benefits of infrastructural improvements. Other variables, such as household incomes, may be too complex for such a system.

8. Sustainability and Replicability of Project Results

8.1 Sustainability

With completion of the project activities now planned before the project closing date of October 2006, the view of the evaluation team is that MACH's considerable achievements will be **largely sustainable** for

the immediate future. Those RMOs and FRUGs which have been established for a reasonably long period appear capable of managing the fishery resources and AIG activities respectively and able to resist pressure from powerful interest groups. With continued vigilance on loan repayment, the FRUGs (and their constituent RUGs) should be able to sustain themselves financially for the indefinite future. With the LGCs (in future, UFCs) becoming increasingly active and able to administer the endowment funds, there will be continuing support to the RMOs and FRUGs, thus enhancing their sustainability. All of this presupposes that the Government remains committed to the principle of co-management and to other elements of its Inland Capture Fisheries Strategy.

Having said that, it is important to note that, without further support, some elements of the MACH program might not survive more than a year or so beyond the closing date. Perhaps 25% of the RMOs, RUGs and FRUGs, especially those more recently established, are institutionally and financially more fragile than the majority but most of these could probably be brought to self-sufficiency with intensive week-to-week support that the project has been providing.

Secondly, the team also notes that considerable re-excavation and other works remain to be completed with the 416b funds (approximately $1.3 million equivalent). While the project will continue to show substantial benefits even if these works are deferred, it would clearly be in the interest of all parties, especially the poor fishing communities, to find a mechanism to allow these works to be completed.

Thirdly, the evaluation has already discussed how the design of MACH was such that capacity building of the DoF, particularly at the upazila level, was limited. DoF clearly has a major role to play in ensuring that RMOs and FRUGs are supported and sustained and it would be highly desirable to find a way to sensitize and orient the UFOs to the co-management model and their role in supporting the fishers.

For these reasons, the evaluation team proposes that USAID consider a short extension of MACH II by 8 to 12 months – to ensure greater sustainability of MACH achievements and to allow remaining ISMP/ 416b works to be completed. For the latter to be effective, the extended closing date should be at least June 2007, the end of the construction season. During the proposed extension, the focus would be on:

- New initiatives to strengthen the DoF, through policy development, manpower planning, training, study tours, and technical support to the ICFS action plan process
- Continued support to the LGCs/UFCs, including completion of the network and guidance on the use of endowment funds
- Intensive support to the lagging RMOs and FRUGs in the following way: the RMOs and FRUGs would be divided into two roughly equal groups according to an assessment of their present capacity; for the stronger group, the project would withdraw all week-to-week support but would monitor performance twice during the extension period[10] (project staff would also be able to respond to any emergency needs from the stronger group); for the weaker group, the project would continue to provide intensive hands on support, as well as monitoring, with the objective of bringing these groups to a self-sufficient stage at project's end
- Completion of all outstanding civil works
- Continued outreach to FFP and other sites, as funding permits
- Carrying out an action plan for pollution reduction at Kaliakoir
- Completing the *jatka* fisher livelihood support program

[10] This would provide a powerful test of the statement above that these RMOs and FRUGs have reached self-sufficiency.

- Initiation of a simplified monitoring and evaluation system and training of UFOs and others in its use
- Identification of priority areas for a possible expansion phase

It appears that the remaining funds in the MACH budget and the ISMP would be sufficient for the above program, once appropriate reallocations are made.

8.2 Replicability

The evaluation team notes that, with the completion of the FFP in June 2006 and MACH in October 2006, there is presently no committed donor funding for floodplain fisheries beyond this year. Given the very positive experience of MACH and the continuing importance of wetlands from biodiversity and poverty alleviation points of view, the case for a follow-up project or program seems quite clear.

The team suggests that any expansion phase follow the model of MACH, with the following adaptations:

- Emphasis on replication rather than demonstration
- Assuming that a larger project would be managed by the DoF, a strong element of capacity building for DoF
- Close integration of the co-management and civil works elements of the project in a single Project Proforma
- According to donor preferences, biodiversity enhancements might be split off as a separate, but closely coordinated, parallel project
- AIG activities should be considered as a necessary part of the package but might be achieved through agreements with suitable major NGOs, rather than a project-run activity, provided such services were clearly oriented to the target groups and promoted the conservation objectives of MACH

Because of its demonstration nature, MACH has been relatively high cost and staff intensive per beneficiary or per hectare and consideration should be given to streamlining the model to see if costs can be reduced without significant loss of project quality. However, experience in Bangladesh (for example, FFP) and elsewhere shows that lower cost approaches have a high failure rate. Given the likely robust economic returns of even the high cost MACH model, the evaluation suggests that streamlining be approached cautiously. Specifically, it is suggested that field services through NGOs remain at the MACH level and that economies of scale be sought mainly at the project management level. For example, MACH has increased the availability and capability of local specialists and thus the need for expatriate consulting services (per unit of area) may be less than even the modest MACH level.

The evaluation team recommends strongly against an immediate replication of MACH to the whole of Bangladesh, given the high rate of failure in the past for similar rapid expansions. The emphasis should be on maintaining the quality and benefit level of the program. Many options are available for geographic expansion but the team suggests the following priorities:

- In-filling of gaps in the three pilot areas, for example, two or three more RMOs could be formed in Hail Haor
- Stepping out to areas adjacent to the pilot sites, for example, other *haors* in Sylhet Division
- Adopting one or more new regions, for example, building on the outreach experience in Northwest Bangladesh

An alternative approach would be to focus on a complete watershed – for example, the upper Meghna, which could be combined with a watershed management approach, including sediment management.

The size and duration of the expansion phase will depend heavily on donor preferences and constraints. For example, there could be value in dividing the work into two steps: a transition phase of one to two years followed by a full-scale project. In the transition phase, the capacity of the DOF could be developed, project areas selected, initial surveys and baseline data collection accomplished, some RMOs established and the detailed design of the full-scale project completed.

Given that the basic science and sociology of the MACH model is now well understood, the expansion phase might lend itself to an instrument like the World Bank's adaptable program lending, where a medium-term program of say 10 years' duration is divided into a number of phases, each with a set of milestones to be achieved before the next tranche of funding is released.

9. Recommendations for Follow-up Actions

The evaluation team finds that MACH has shown clear benefits in its three areas of operation, that these benefits will be largely sustainable even without an extension of MACH II, but that the assurance of sustainability could be further enhanced through a short extension of 8 to 12 months. It also concludes that there is a strong case for a follow-up project or program, finds that Government of Bangladesh support for such a program is solid, and recommends to USAID that the agency play a catalytic role in mobilizing support for such a program.

The recent Co-Management Week will have provided an opportunity to showcase the achievements of MACH and to determine the interest and preferences of the Government and the principal donors for subsequent involvement.

10. Lessons Learned

1. Restoration of wetlands in Bangladesh, both to restore biodiversity and to improve the livelihoods of the many poor people who depend on them, is very feasible. Moreover, it can lead to attractive economic rates of return.
2. Co-management has been found to be highly effective in balancing the interests of the various stakeholders in wetland natural resources. However, it is a slow and staff intensive process and no "quick fixes" are available if sustainability is to be ensured.
3. A pilot project implemented outside the normal government structure can assure transparency and expedite implementation. However, the consequent limited impact on government capacity can impede replication

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RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

APPENDIX B - NISHORGO SUPPORT PROJECT (NSP)

June 2006

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APPENDIX B: TABLE OF CONTENTS

Introduction

Excerpts from the following two documents provide insight into the current status of tropical forest resources and biodiversity protection in Bangladesh.

- **Co-Management of Forest Resources in Bangladesh, Strategic Objective 6** (USAID/Bangladesh Environment Team, 2002); and
- **USAID/Bangladesh and Assessment of the Forest Department's Institutional Organization and Capacity to Manage the Protected Area System of Bangladesh** (Nishorgo Support Project, 2004)

Reliable, up-to-date statistics on the quantity and quality of tropical forest cover in Bangladesh are hard to come by and contradictory figures are the norm rather than the exception. Recent order of magnitude data suggests that there are about 2.6 million hectares (covering 18 % of the total land surface) in the country. They include: state forest land of 2.2 million hectares composed of 1.3 million hectares of natural forests and plantations (there are extensive plantation areas on reserved forest land, particularly in the hilly regions of the country) under the jurisdiction of the Forest Department and about 0.9 million hectares of unclassified state forest administered by the Ministry of Lands. The remainder of the forest cover is in private hands, notably including the very successful homestead plantations common across the flood plain areas of the country and small tracts of natural forest and plantations on estate lands. With the exception of some of the most inaccessible areas whose actual status is not well known (e.g. in the Chittagong Hill Tracts, CHT), all of the remaining natural forests are reportedly under constant pressure, have been significantly degraded and fragmented, thereby threatening their value as habitat for biodiversity conservation and in the provision of vital environmental services.

Recognizing the perilous situation of natural forests in the country, the Forest Department has established a series of protected forest areas (distinct from gazetted forest reserves). As of 2004, the total area of Bangladesh's Protected Area (PA) system (including relatively small, proposed areas) is approximately 243,723 ha (Table 1). Approximately 84,000 ha of the total PA system are relatively intact upland forests in the northeast and along the ridges of the eastern hills (CHT). The remainder of the PA system is found in the lowland coastal areas, primarily within the internationally-recognized Sundarbans.

Bangladesh's forests come under relentless human pressure as its population grows. As a result, Bangladesh now has among the smallest areas of protected and intact forest in the world. And yet, citizens clamor more than ever for places of natural beauty to which they can escape. A glance at the visitor statistics makes it clear: the Botanical Garden in Dhaka receives nearly a million visitors per year while Bhawal National Park averages about 400,000 visitors. Even small Sitakunda Eco-Park near Chittagong received 50,000 in a single day recently.

Bangladesh now has among the smallest areas of protected and intact forest in the world and Bangladesh's forests continue to come under relentless human pressure as its population grows. And yet, the citizens of Bangladesh clamor more than ever for places of natural beauty to which they can escape. The result is an every increasing number of species threatened with local extinctions; in 2002 Earth Trends Country Profiles listed 68 threatened species. The PA system, if well designed and managed, is intended to provide long-term protection of the majority of the country's biodiversity.

Higher Plants	
Total known species (number), 1992-2002	5,000
Number of threatened species, 2002	12
Mammals	
Total known species (number), 1992-2002	125
Number of threatened species, 2002	23
Breeding Birds	
Total known species (number), 1992-2002	166
Number of threatened species, 2002	23
Reptiles	
Number of Total Known Species, 1992-2003	112
Number of threatened species, 2002	20
Amphibians	
Number of Total Known Species, 1992-2003	23
Number of threatened species, 2002	?
Fish	
Number of Total Known Species, 1992-2003	81
Number of threatened species, 1992-2002	?

Table 1. Summary Information on Protected Areas in Bangladesh, July 2004

No.	Name of the Protected Area	Declared Status	Area (ha)	Year of Notification (Year of establishment in parenthesis)
1.	Sundarbans East	Wildlife Sanctuary	31227	1996
2.	Sundarbans South	Wildlife Sanctuary	36970	1996
3.	Sundarbans West	Wildlife Sanctuary	71502	1996
* 4.	Chunati	Wildlife Sanctuary	7761	1986
5.	Pablakhali	Wildlife Sanctuary	42087	1983
* 6.	Rema-Kalenga	Wildlife Sanctuary	1795	1981/ 1996
7.	Char Kukri Mukri	Wildlife Sanctuary	40	1981
8.	Bhawal	National Park	5022	1982
9.	Madhupur	National Park	8436	1982
10.	Himchari	National Park	1729	1980
11.	Ramsagar	National Park	28	2001
12.	Nijhum Dweep	National Park	16352	2001
13.	Kaptai	National Park	5464	1999
* 14.	Lawachara	National Park	1250	1996
15.	Medhakachchapia	National Park	396	2004
* 16.	Satchari	National Park	243	2005
* 17.	Teknaf	Game Reserve	11615	1983
18.	Dulahazara	Safari Park	900	(1999)
19.	Bashkhali	Eco-Park	1200	(2003)
20.	Madhabkunda	Eco-Park	253	(2000)
21.	Sitakunda	Botanical Garden & Eco-Park	403	(2000)
22.	Mirpur	Bot. Garden	84	(1961)
23.	Modhu Tila	Eco Park	100	1999
24	Khadim Nagar	National Park	679	2006
	TOTAL AREA (incl. proposed)		245,536	
*	= Five NSP-supported pilot PAs			

1. Nishorgo Support Project Objectives and Performance Indicators

1.1 Project Objectives

The Nishorgo Support Project (NSP) aims to collaboratively develop Co-Management (CM) Agreements between the Forest Department (FD) and local stakeholders leading to measurable improvements in forest and resource conservation in selected Protected Areas (PA) and their buffer zones.

A complete description of project activities organized under the following five components with cross-reference to USAID Strategic Objective 6.0 Intermediate Results is provided in Annex 1.

Component No. 1: Development of a Co-Management Planning and Implementation Model
Component No. 2: Interventions and Investments for Improved Ecosystem Management
Component No. 3: The Enabling Policy Environment for Co-Management Enhanced
Component No. 4: Laying the Foundation for a Conservation Constituency in Bangladesh
Component No. 5: Ensuring Institutionalization of Co-Management

The NSP was initiated in June 2003 when a contract was signed with the project implementing contractor IRG Inc. and the project is to be completed in May 2008. The project has therefore two years remaining before completion

IRG provides technical support in designing a CM model acceptable to FD and other stakeholders, and tests its reliability in field situations in partnership with the FD. The FD Project Proforma (PP) has identified the following six objectives that will be implemented by the FD:

1. Develop a functional model for formalized collaboration in the management of PAs.
2. Create alternative income generation opportunities for key local stakeholders associated with pilot co-managed PAs.
3. Develop policies conducive to improved PA management and build constituencies to further these policy goals.
4. Strengthen the institutional systems and capacity of the FD and key stakeholders so that improvements in co-management under the Project can be made permanent.
5. Build or reinforce the infrastructure within PAs that will enable better management and provision of visitor services at co-managed sites.
6. Design and implement a program of habitat management and restoration for pilot Protected Areas.

Three sub-contractors assist IRG; Community Development Center (CODEC) and Rangpur Dinajpur Rural Services (RDRS) are involved in field implementation and Nature Conservation Management (NACOM) works with IRG in the collection of data, conducting surveys and in performance monitoring.

1.2 Performance Indicators and Monitoring and Evaluation System

The NSP employs three dedicated staff for monitoring and evaluation (M&E); one at the Dhaka office and one at each of the two regional offices (Srimangal and Cox's Bazar). A 3-level M&E program has been developed by the NSP as follows:

Level 1: Social and Biological Monitoring undertaken with the assistance of community members where possible to collect information on a small number of easily recognizable indicators of change in the quality of the natural resource base and the livelihoods of the local population.

Level 2: Programmatic M&E is conducted by the NSP to provide insight into the project's progress in relation to the USAID Mission's Strategic Objective 6 Performance Monitoring Plan (PMP).

Level 3: Work Plan monitoring is conducted by the NSP Dhaka office to assess progress against annual work plans based on status reports received from the regional offices. The completion of work plan milestones is scored according to five stages from "work started" to "completion".

A discussion of the effectiveness of the NSP 3-level monitoring program is provided in Section 8.

2. Project Design

2.1 Project Description

Under the Strategic Objective Grant Agreement (SOAG), the Governments of Bangladesh and the United States of America jointly committed to improved management of tropical forests and open water resources in Bangladesh. This SOAG, signed on January 15, 2003, provides a framework agreement for financial and technical resources for improving Protected Areas management in Bangladesh. Some of the resources under this SOAG have funded the NSP, a project introduced to develop a CM model for improved management of forest resources of the country.

Under the NSP, the FD and local stakeholders will assess the existing benefits of the PAs and manage the PAs through local institutions. A portion of the revenue generated from PAs, including entry fees, will be retained locally, shared among the community members and re-invested in PA management according to priorities determined by CM Committees.

The Project is working at five initial pilot sites to begin adapting a PA co-management approach for Bangladesh. The five initial pilot PA sites are as follows (sites 1-3 are located in the northeast, sites 4-5 are located in the southeast):

1. Lawachara National Park (1,250 ha, established 1996);
2. Rema-Kalenga Wildlife Sanctuary (1,796 ha, established 1996);
3. Satchari National Park (240 ha, established 2005);
4. Teknaf Game Reserve (11,615 ha, established 1983); and
5. Chunati Wildlife Sanctuary (7,761 ha, established 1986).

The NSP was designed progressively rather than being laid out in full at the outset. A good deal of time has thus been spent during the first three years in refining a detailed design of the appropriate co-management institutional framework, developing a M&E program, facilitating the establishment and effective functioning of the Steering Committee, CM Councils and Committees and Forest User Groups (FUGs). Some areas of the NSP are still being designed *e.g.* AIG program and the landscape development fund. The selection of a fifth and sixth PA was scheduled for the beginning of the fourth year as per the contract and proposal.

2.2 Revisions to Project Design

Since project inception NSP has continued to refer to the five components outlined above as an organizing framework for annual work plans, annual reports and project evaluation. Two recent strategic documents were provided by the NSP to the evaluation team in Bangladesh, these are:

- Guidelines for Landscape Development Fund (LDF) Grant Program (NSP, March 23rd, 2006); and

- The Role of Alternative Income Generation (AIG) Activities in Nishorgo's Strategy for Conservation of Protected Areas (NSP, May 1st, 2006).

These documents reflect an evolution in IRG's strategy in relation to providing support to AIG. The original strategy for the support of AIG was based on micro-finance provided by CM Committee's and/or NSP's implementing NGOs. The above documents articulate an AIG support program based on small grants awarded competitively, in lieu of implementing a micro-finance operation by the project itself. While the documents do refer to the provision of micro-credit by major NGOs through agreements with NSP, the NSP team has not yet established formal agreements with the major NGOs, but such dialogue is an explicit written objective of the Srimongal Co-Management week scheduled for end-May 2006, to which BRAC, ASA, Grameen and other major microfinance NGOs have been personally invited by the Mission Director.

The majority of people living in close proximity to the NSP PAs have been classified by the NSP as poor and ultra-poor. In addition, rural appraisals conducted by NSP have shown that the local population is highly dependent on the resources present within PAs, such as fuelwood, poles, thatch for housing, timber, garden plots, *etc.* and these resources may be for home use or used for sale to generate income (quantitative data on these resource uses has not yet been collected by the NSP). The continued use of these PA resources by the local population is inconsistent with the intent of the NSP to protect biodiversity in PAs. The continued, essentially unregulated and illegal use of resources in the PA by the local population is likely to pose conflicts, but the NSP is working to determine what uses are consistent with biodiversity protection and how to regulate and control access in the interest of effective PA management, as well as providing a range of alternatives for increasing natural resource productivity and for developing AIG opportunities outside of the targeted PAs. As per the management plan maps and land use plans for the five PAs, some "multiple use zones" may be delegated as appropriate for controlled extraction of resources, such as fuel wood by local populations.

The NSP has a stated aim of improving both biodiversity conservation **and** livelihoods in Bangladesh. Consequently, the inherent conflict in cutting off the supply of natural resources to a dependent, local poor population is intended to be resolved, in part, through NSP's AIG activities. During the first three years of the project, "demonstration activities" involving training and the purchase of materials required for AIG (*e.g.* nursery supplies, cow for cow fattening, *etc.*) have been completed reaching a very small proportion of the total resources users present. At the mid-way point of the project (Year 3, Quarter 2 Progress Report November 30th, 2005) 132 households, or 0.2%, of all households within the landscape zone (the landscape zone is the area surrounding PAs with a population dependent on the PA's forest resources) of NSP's five PAs were implementing AIG activities (average 5 persons per household; total population in landscape zone 271,557). The actual budget expended to date on AIG could not be determined as funds used for AIG are included under the demonstration fund spent by subcontractors when providing training, local level capacity building and grants to the members of resource user groups for AIG enterprises.

It should also be noted that the NSP expects local populations to benefit from the development of ecotourism and PA management activities that are being supported by the co management model. Revenue sharing from increased gate receipts from the PAs, provision of ecosystem services from more effectively protected parks and reserves, and employment and income opportunities developed in conjunction with increased visitation to the parks will also benefit local communities

The two documents noted above provide the basis for moving forward on AIG activities during the remaining two years of the project. NSP support to AIG activities is proposed through the following three mechanisms:

1. Grants to CM Committees - a total of $300,000 is proposed for disbursement through the LDF, with this budget being disbursed to CM Committees for a variety of activities, some of which may be related to AIG, through a grant application process overseen by NSP;
2. Demonstration and training - NSP project funds (total value not provided) may also continue to be used for "demonstration activities" as described above; and
3. Enterprise development support - whereby NSP staff assist in the development and enhancement of the linkage of producers of goods at the PA level, to regional and national markets. This also involves engaging the private sector in ecotourism through the development of eco-lodges located in close proximity to PAs and/or through promoting tour group visits to PAs.

2.3 Project Costs and Financing Plan

Total contract amount is US$ 6.525 million from USAID, US$ 1.0 million GoB (Government of Bangladesh contribution in cash and kind) local currency funds, US$ 2.5 million RPA [Reimbursable Project Aid from USAID through the PL-416(b) generated local currency] is available as project funds. The contractor IRG handles the USAID project fund of US$ 6.525, and the Forest Department is responsible for the GoB and RPA funds. NSP budget analysis provided by NSP Finance Director (May 08, 2006) is shown in the tables below.

A. As per agreement between USAID and IRG status as of March 31st,2006	
Line item	**In US$**
Total contract amount	**6,525,963**
Total obligated and available till September 30, 2006	3,450,000
Expensed from inception to March 31,2006	2,850,975
Balance obligation available	599,025
Balance contract budget available (56% remaining)	**3,674,988**

B. As per PP provision status as of January 31st, 2006				
	Allocation in lakh taka			**Totals in**
Item	**GoB**	**RPA**	**DPA**	**lakh taka**
Total PP Provision	589.86	1,475.00	4,144.61	**6,209.47**
Expenditure (reported till January2006)	-	-	1,071.00	343.00
Balance PP budget available (83% remaining)	589.86	1,475.00	3,073.61	**5,138.47**

The PP provision is to be used for a variety of training programs both local and overseas for FD staff, for workshops and NSP promotions such as popular theatre, discussion meetings and rallies, for equipment including vehicles and officer equipment, for habitat restoration and for construction and works associated with PAs. With the late approval of the PP provision (April 2006), it is unlikely all of these funds will be disbursed before the end of contract for the NSP, leaving the work for which these funds were intended incomplete.

2.4 Institutional Structure /Community Participation

The NSP has the following institutional framework:

- National Steering Committee (NSC)
- NSP IRG Head Office (Dhaka)

- NSP FD Head Office (Dhaka)
- NSP NGO Regional Offices (RDRS - Srimangal and CODEC - Cox's Bazar)
- NSP FD Site Offices (One at each PA, headed by an Assistant Conservator of Forest -ACF)
- NSP NGO Site Offices (RDRS/CODEC staffed, one or more for each of five PAs)

The NSC's first meeting was in February 2004, and to date there has been a total of four meetings. The NSC has been effective in promoting and facilitating NSP activities, such as the empowerment of CM Councils and CM Committees through Government Orders. In addition, the evaluation team attended a NSC meeting that agreed to proceed with a Government Order approving the retention of 50% of PA revenues by CM Committees for use in PA management.

Head Offices of IRG and the FD are staffed and operating, as are NSP NGO Regional Offices. NSP FD and NGO Site Offices are more recently established, some are under establishment and others are planned for establishment. NSP FD Site Offices are in some cases awaiting the availability of appropriate office space and/or the appointment of FD staff. NSP NGO Site Offices are for the most part established and staffed, however a degree of staff turnover has been reported and new staff is being sought. In one case an NGO Site Office is being relocated and in at least two other cases new offices are being established to add new resources to the field program.

The foregoing provides insight into the amount of work the NSP has undertaken, and continues to undertake, as it mobilizes the resources needed to implement a PA co-management program

The institutional framework for the co-management of PAs is as follows:

- FD National/Regional Offices
- Co-Management Council (one or more for each of five PAs)
- Co-Management Committee (one committee derived from each council)
- Forest User Groups (multiple FUGs consisting of male, female, or mixed membership are formed by NSP NGO staff among the population of the landscape zone of PAs)

A description of the formation, membership and functions of the CM Council and Committee is provided in Annex 3. The first CM Council meetings for each of the five PAs were held in September 2005 and four or more meetings have been held by each council in the eight month period from September 2005 to April 2006. CM Committees have been more recently formed (March/April 2006) and in most cases have had an inaugural first meeting. In at least one PA (Teknaf Game Reserve) the formation of an additional third CM Council and Committee is underway.

The CM Committee is the agency that is proposed to be most directly involved in the management of PAs. The CM Committee is formed by a way of election organized by the CM Council. The ACF serves as the Chairperson to the CM Committee with elected members providing representation from the following stakeholder groups:

- Forest User Groups (FUGs);
- Village Headman/Minister;
- Local Government;
- NGOs;
- Other Community Based Organizations (CBOs);
- Local Elite;
- Law-Enforcing Authorities; and
- Representatives from the Government Department

The representation of women on the CM Council or Committee is not specified.

The CM Committee has many responsibilities in managing PAs, a brief list is shown below, with a more complete description provided in Annex 3.

- Preparation of Action Plans;
- Awareness building for PA biodiversity conservation among local population;
- Prevention of illegal logging and encroachment;
- Monitoring of PA resources and protection;
- Undertaking actions to allow natural regeneration of the forest;
- Undertaking plantation and afforestation activities with FD assistance;
- Initiating restoration of degraded lands within PAs;
- Engaging in AIG activities for the local poor/ultra poor population;
- Promoting tourism within PAs;
- Assisting the local poor/ultra poor in access to micro-finance;
- Ensuring good management of CM Committee financial accounts;
- Developing proposals and manage LDF grants, with particular emphasis on social development for the poor/ultra poor;
- Resolving local issues and conflicts that may arise in association with PAs;
- Maintaining close linkages with other government departments

The above list, while not exhaustive, does provide some understanding of the range and complexity of management tasks and in turn experience, education and qualifications required by CM Committee members to manage PAs effectively.

Evaluation Team Comments on Infrastructure/Community Participation

Achieving representation and active participation of the FUGs is necessary to ensure the local poor/ultra poor have a voice in PA management, particularly in regard to improving the livelihoods of the local population. Representatives of FUGs from local villages will, by their nature, be inexperienced and reticent in their participation within the CM Council and Committee, given the fact that these groups consist largely of members of higher education, greater economic stature and/or social status. CM Councils have been established for about one year and CM Committees have only recently been formed, the expectation is that it will take time and effort on the part of the NSP to develop full FUG representation. The MACH project has shown that good representation and active participation of local village resource user groups in resource co-management organizations can be achieved with ongoing project support over a four to six year period.

Currently in Bangladesh there is limited knowledge, experience and capacity within all sectors of government and among the general pubic to manage PAs. This is reflected in NSP FD staff, CM Council and Committee members and indeed within the majority of NSP project staff, particularly NGO staff. In August 2004, NSP prepared a report "Assessment of the Forest Department's Institutional Organization and Capacity to Manage the Protected Area System of Bangladesh". This report recognizes the limited capacity of the FD Wildlife and Nature Conservation Circle formed in 2001 and the challenges posed by implementing the new concepts of "co-management" of PAs.

Training and capacity building in PA management must therefore be important components of the overall strategy that will contribute to sustainability of the NSP. Some training has been conducted by NSP, such as:

- Visits from co-management experts from India, Sri Lanka and Indonesia to share experiences with FD staff;
- One to two week training sessions of NSP NGO field staff;

- Site level orientation on co-management concepts given to key stakeholder groups at five project sites;
- Concepts of PA co-management given to local FD staff and CM Council members at five project sites; and
- West Bengal study tour attended by some members of local FD Staff and CM Council members.

Further training is required at all levels to reinforce the concepts of co-management, biodiversity conservation and to provide support to CM Committees as they become more directly involved in addressing the many issues of PA management. As the NSP does not have much scope to conduct training, capacity building will need to be supported by some other mechanism or by the FD.

3. Implementation History

Project implementation has proceeded in a manner consistent with GoB protocols. IRG has been fully engaged from the time of project inception in June 2003 and has meaningfully engaged the FD in embracing the NSP as evidenced by the completion of the PCP, DPP and PP. Notable is the early success of having the FD declare its own protected area program "Nishorgo", the name under which the project operates. It should be noted that the release of GoB funds for use by the FD in the NSP occurred in April 2006 and that the GoB PP runs until June 2009 whereas IRG's contract ends approximately one year earlier in May 2008. As noted in the project finances section, the timing of the release of GoB funds and the staggered completion date for the PP versus IRG's contract completion date will make it difficult to complete all project components as outlined in the PP without an extension of the NSP contract.

During the first three years of the project, considerable progress has been made, and the evaluation team would like to recognize IRG's success in instituting the co-management model within the FD and within the communities of the five PAs. To date, much of the project work has focused on sensitizing people to the concepts of biodiversity conservation, co-management, and ecotourism through a variety of training exercises, workshops, study tours and meetings. The results of these efforts is evidenced in the FD Vision 2010 paper, the formation of multi-stakeholder CM Councils and Committees working hand-in-hand with FD staff and the formation of FUGs. The evaluation team also recognizes the NSP work completed "on the ground", including the erection of PA signage, the identification of trails, NSP site office construction, high quality public information materials, baseline monitoring, AIG demonstration activities and forest patrols that have reduced the occurrence of illegal felling

With the recent formation of CM Committees (March/April 2006) the NSP's co-management of PAs appears to be making a transition from what may be characterized as an "establishment phase" to an "implementation phase". The concepts of co-management have been conveyed, the institutional structures are in place and the actual work of managing PAs under a co-management model is beginning. The completion of this next phase of the NSP is discussed in more detail in Section 8.

4. Relevance of Objectives and Design

USAID/Bangladesh's current plans and investments in the environment sector are a direct result of decades of assistance to rural development, family planning, poverty alleviation and food security. These programs were themselves keys to addressing the crux of Bangladesh's primary environmental dilemma of catering for the needs of its large population with the limited resources of this small country. Achievements in these areas, in particular increased agricultural productivity and a reduction in the population growth rate, have given rise to an opportunity to re-focus the overall program characterized by the USAID Mission's overall goal of *Poverty Reduced through Sustainable Economic Growth.*

As part of its programmatic response for realizing this goal, and in light of the three areas of greatest importance to the sustainability of economic growth in the country, population, food and water, USAID/Bangladesh has created an explicit environmental Strategic Objective, SO6 *Improved Management of Open Water and Tropical Forest Resources*

The concept of SO 6 is to develop community-based approaches and institutional capabilities for the wise management, sustainable productivity and conservation of these critical elements (open water and tropical forests) of the natural resource base of Bangladesh. The present arrangements and institutional framework for the use of open water and tropical forests have led to their *de facto* treatment as "open access" resources; the property of all but the responsibility of none, with a consequent degradation of the resource base and declining productivity. The Intermediate Results (IR) of SO 6 and the corresponding NSP components are shown below.

Intermediate Results of SO 6	**NSP Components**
1. Effective Community-based Resource Management Mechanisms Implemented	1. Development of a Co-management Planning and Implementation Model
2. Select Habitats and Ecosystems Restored	2. Interventions and Investments for Improved Ecosystem Management
3. Selected Policies Implemented that Support the above	3. The Enabling Policy Environment for Co-management Enhanced
4. Public Awareness of Key Issues Increased	4. Laying the Foundation for a Conservation Constituency in Bangladesh
5. Improved Institutional Capacity	5. Ensuring Institutionalization of Co-management

The NSP *Components* identified by IRG and the NSP *Objectives* as identified in the FD PP directly support the IRs. The NSP also supports the USAID Mission's overall goal of *Poverty Reduced through Sustainable Economic Growth*, through AIG activities that are an integral part of the project and the longer term goal of achieving sustainable economic growth through tourism development.

5. Achievement of Objectives

A summary of achievements for each project component and corresponding FD PP objective is provided in Annex 4; these results suggest good progress is being made by the NSP. As discussed above in Section 3.1, the project is in a period of transition from *establishment and sensitization of stakeholders* of the PA co-management framework, to *implementation of co-management* at each of the five pilot sites.

This next phase will bring new challenges to the NSP in the remaining two years of the project. There is however good evidence that achievements will continue to be made under the NSP, as a solid foundation has been made in terms of the support of co-management of PAs by the FD. The CM Councils and CM Committees appear willing to take on the task of implementing PA management and should receive support from the NSP to assist them. The NSP has also initiated a number of infrastructure projects such as trail, office and visitor centre construction that have begun or will begin soon and should therefore be completed over the next two years. The NSP has already created many FUGs and has conducted demonstration training activities and has therefore demonstrated its capacity to undertake further AIG training and support activities.

Many of the tasks described above are however open-ended and could conceivably be carried on for many more years as activities associated with PA management. The evaluation team has concerns regarding the likelihood of sustainability of ongoing, long-term achievements by the newly formed CM Committees

without further support beyond the end of the NSP in May 2008. CM Committees have the difficult task of creating a balance between meeting needs of biodiversity protection, which means enforcing rules that keep people out of the forest, with the creation of improved livelihoods through AIG activities and buffer zone development that provides positive incentives for a population that must reduce its dependence on resources traditionally derived from PAs. To date the NSP has not clearly articulated a strategy that outlines how this balance will be achieved, nor how the NSP will assist CM Committees in dealing with these delicate issues that involve providing "carrots" (*i.e.* incentives – AIG, tourism, *etc.*) and "sticks" (*i.e.* disincentives – patrolling, law enforcement, *etc.*). This topic is discussed in greater detail in Section 8.

6. Cost-Effectiveness

Assessing the cost-effectiveness of biodiversity conservation projects is difficult due to an inability to put a value on intangibles such as protecting hoolock gibbons. Nonetheless, if the NSP succeeds in establishing a co-management model that leads to the long-term protection of biodiversity in selected PAs within Bangladesh, there is little doubt the 6.5 million US dollars spent on the NSP would be considered cost-effective. Another means to assess the cost-effectiveness of the NSP would be to compare other similar projects, to determine if similar results could be achieved at lower cost. If for example a similar GEF project had been initiated it is likely the costs would be significantly more.

The cost-effectiveness of the NSP should also be considered in relation to the positive and negative economic impacts on the population of the PA landscape zone. Negative impacts may arise as the NSP achieves greater protection of PA biodiversity resulting in a loss of benefits previously available. Positive benefits may arise from AIG activities support by the NSP and/or the CM Committee and, over the long term, the NSP hopes to achieve a variety of economic benefits from increased tourism.

To date, no assessment of cost-effectiveness has been made by NSP. While it is somewhat early in the project to measure economic benefits, an effort should be made to obtain the necessary baseline information that will permit an assessment of cost-effectiveness when information on benefits is available. This will require an assessment of past and future benefits derived from PAs, income levels of the population within the landscape zone, AIG activities, tourism, PA revenue sharing, *etc.*

7. Expected Project Impacts

The NSP will have completed three of its five year contract at the end of May 2006. This section presents some of the expected impacts of the NSP based on progress made to date and anticipated achievements of the NSP over the remaining two years.

7.1 Environmental Impacts

It is difficult to forecast the long term environmental impact within the limited time frame that the NSP has been active. Nonetheless the initiation of the co-management model that has led to community patrolling has started to bear some results. CM Councils together with the FD have demonstrated a reduction of illegal felling in the three northern sites. Mechanisms to sustain joint FD and community patrolling remains, however, unclear within the NSP. In some sites community patrols are paid by the NSP, in other sites they are given incentives (flashlights, uniforms, *etc.*). The evaluation team was informed illegal logging continues to remain an extremely lucrative and potentially attractive activity with the income available far exceeding other potential income sources. The NSP FD staff has requested incentives similar to those received by community patrollers to carry out their duties, suggesting the need for ongoing support to the FD. There is also the question of whether community patrolling will continue over the long term and how it will be financed?

Achieving long term environmental benefits through protecting PA biodiversity will require many actions by the CM Committee beyond sustaining the existing patrolling. First and foremost are the impacts of fuelwood and pole wood removal and the continued and existing village encroachment and agricultural activities. The difficulty being for the CM Committee to develop management techniques which deal with these issues in an effective yet responsible manner such that biodiversity is protected without significant negative impacts to the population of the landscape zone. In the longer term there are the many varied issues of PA management and restoration. Positive environmental benefits are expected such as increased native species diversity, watershed protection and the protection of rare and endangered species such as the Hoolock Gibbon.

The NSP project has worked with communities to establish baseline values of eight unique birds at each of the sites. Initial data from the second year of monitoring suggests changes are already occurring in response to a reduction of human activity associated within PAs. Indicator birds of the lower strata have increased in Satchari National Park. Tree seedlings raised by members of FUGs will ultimately be planted out in the landscape zone, as an alternative to forest destruction, by generating a stock of trees in local area. The introduction and operation of 180 improved stoves at Chunati has demonstrated a useful approach for reducing pressure for fuel wood from the protected area and will result in improved air quality through reduced emissions, particularly within households, due to the use of chimneys that vent smoke outside.

7.2 Economic Impacts

With a stated aim of improving both biodiversity conservation and livelihoods, the NSP is intended to contribute to sustainable economic growth of the forest dependent poor living within the landscape zone of PAs. Economic growth may come from AIG activities initiated by the NSP in the short term and AIG supported by the CM Committees over the long term. It is also expected that there will be a significant increase in tourism associated with PAs and that this will translate into positive economic impacts.

The NSP has suggested the following 5 categories of economic benefit:

i. household level benefits to people engaged in AIG activities
ii. community level benefits related to AIG promotion and support
iii. individual and HH level benefits associated with improved PA management
iv. community level benefits tied to improved PA management (including ecosystem services)
v. HH and community benefits associated with increased productivity, sustainable use and improved management of buffer zones and other sites in the surrounding landscape

The NSP's Enterprise Development study identified 14 priority and secondary tiers of AIG activities. About 700 FUG members have received training in various AIG activities including nursery raising, poultry rearing, cattle fattening, pig rearing, fish culture, eco-guiding, *etc.* Following training, some members have received inputs for AIG activities through grants. This process of capacity building for AIG activities is ongoing (see Section 2.2 for proposed changes to project support for AIG). AS AIG activities start generating income and local level enterprises develop, positive economic impact will help reduce poverty and it is hoped reduce impacts to PAs. To date a relatively small proportion of the population of the landscape has been engaged in AIG demonstration training activities and there are no targets established for AIG over the remaining two years of the project that would permit an assessment of additional positive economic impact through AIG training and support. Overall it appears the NSP will have quite a limited positive economic impact for the poor and ultra poor population living within the PA landscape zone given the size of this population and the level of AIG training and support feasible within the remaining two years of the project.

Positive economic impacts related to increasing tourism can only be speculated at this point in time. Nonetheless some quantitative forecasts could and should be made for this and other project components to assess the effectiveness of AIG activities in providing a positive impact on forest users as one of the goals established by the NSP. It is recognized that there is an increasing urban elite population with disposable income that are interested in visiting PAs and a Government Order to share 50% of PA revenue has recently been in the process of approval. In addition, looking at the economic benefits generated by PAs within other countries in the region suggest tourism has the potential to generate income for local populations. The realization of economic benefits for the local poor/ultra poor from tourism will, however, rely on a number of factors, first and foremost the long term management, restoration and protection of biodiversity within PAs and secondly substantial capacity building that engages the local population in tourism and thirdly transparent systems for deciding how financial benefits will be used to ensure the benefits are distributed equitably.

7.3 Social Impacts

Although the NSP is primarily a PA conservation project, during the three years since its inception it has been able to initiate remarkable social change by involving the FD and a variety of stakeholders in co-management of PAs, in contrast to the traditional adversarial relationship, which has on occasion turned violent. Advocacy for co-management through the formation of CM Councils and CM Committees have empowered the local people and established social-environmental linkages. This has developed a sense of ownership of the resources by community members and created social awareness among a wide section of people in Bangladesh through a variety of promotion mechanisms utilized by the NSP (*e.g.* competition of the "Nishorgo" name, architectural competition for Lawachara visitor centre, plus others). Empowerment and sense of ownership have encouraged community members to organize community patrolling which in turn has resulted in a dramatic reduction of illegal logging in some areas. Cross-visits of stakeholders and FD staff to West Bengal have created greater understanding of the potential success of co-management and these visits have fostered greater communication, respect and friendship between the FD and local stakeholders necessary for the co-management model to work. Those persons the evaluation team spoke with that attended the West Bengal program proved to be vocal spokespersons for the overall participatory approach to PA management.

The approach of the NSP used to convey knowledge of co-management is linked with the formation of Forest User Groups (FUG) among the local poor/ultra poor population living within the landscape zone. AIG training and grants are also provided to key local stakeholders of low-income households in FUGs. To date approximately 90 FUGs have been formed around five sites, each group with between 15-20 members, and more than half of the members are women. The inclusion of women in FUGs and a variety of AIG activities may be viewed as providing a degree of empowerment leading to greater gender equalization in the project area. The involvement of women within areas that are predominantly Muslim is something of a breakthrough given the traditional conservative nature of these communities.

CM Councils and CM Committees are made up of a cross-section people, including landless poor, local elites, illegal loggers, timber traders, FD staff, Union Parishad members, and Upazila staff, *etc.* in a common forum is another important social impact of the NSP that should not be overlooked in terms of its impact on focusing attention both on the protection of biodiversity within PAs and on the needs of the poor/ultra poor populations living within the landscape zone. The NSP has also made a special effort to engage young members of the local population (youth groups, scouts) in NRM activities such as the monitoring of birds. The NSP is also attempting to engage and educate the urban elite population who has the power to affect government decision-making that may ultimately be the key to effective long term protection.

The NSP has also formed links to ethic minorities living inside the PAs to ensure these traditional forest villages have a voice in co-management. Ethnic minorities, which traditionally have low social status,

should be given special consideration by the NSP including the development of specific strategies that address their special needs.

8. Effectiveness of NSP Monitoring and Evaluation

The M&E program developed by the NSP is evaluated below; the M&E program has the following three levels:

Level 1: Biological and Social Monitoring

Level 2: Programmatic M&E

Level 3: Work Plan Monitoring

8.1 Core Indicators for Biological and Social Monitoring

Core monitoring is intended to provide the basis for long-term monitoring beyond the life of the NSP. The design and implementation of core monitoring should therefore be done in consultation with the stakeholders who will ultimately be responsible for long-term data collection, analysis, reporting and adaptive management based on the results of monitoring. Monitoring systems established during the Project should also be sufficiently clear and simple that they can be replicated by the Forest Department after the Project closes.

Biological Monitoring

- Indicator Birds (ground, low, mid, high canopy species)
- Tree Basal Area (prism sweep method; individual trees not measured)
- Photo-monitoring (digital photos at specific points identified by GPS coordinates)
- FD Offence Register (review FD ledger to assess illegal logging)

Social Monitoring

- Management Scorecard (based on Reporting Progress at Protected Area Sites. A Simple site-level tracking tool developed for the World Bank and WWF)
- Community Scorecard (based on *Measuring Success: The Parks in Peril Site Consolidation Scorecard Manual*)

Comments on NSP "Core Biological and Social Indicators"

The evaluation team has determined that the M&E framework for Core Biological Indicators is weak and that the Core Social Indicators are yet to be implemented. The lead staff person responsible for the M&E program has limited experience in the development of an M&E program for a project of this scale.

Other specific comments on components of the Core Biological and Social Indicators follows:

- The use of indicator birds inhabiting a variety of structural niches within forests is an excellent indicator to track the health and recovery of NSP sites. This indicator reflects current thinking in the use of indicator birds in biological monitoring. The limited preliminary results suggest that NSP initiatives that have resulted in increased protection of PAs and reduced forest understorey disturbance may be leading to the recovery of species occupying the lower levels of forest ecosystems (*e.g.* ground floor, lower shrub strata)

- The use of indicator birds easily identifiable by laypersons permits the development of community based monitoring programs and this is being undertaken by NSP (*e.g.* training of Bangladesh Scouts in monitoring birds)
- Tree basal area monitoring provides a long-term measure of ecosystem condition and is a measure regularly used in forestry to assess the quantity of tree biomass in a forest stand. In NSP basal area will provide a limited amount of information on illegal logging based on those sites where measurements are completed. When interviewed the NSP staff member responsible for M&E stated that attempts by NSP to initiate community based participation in basal area monitoring have not been successful. The NSP uses the prism method to assess basal; while this is an accepted method in forestry, it provides limited meaningful information on ecosystem condition as it does not provide basal area measurements for individual trees to permit an analysis of the number of trees and amount of biomass within individual basal areas size classes.
- Photo-monitoring has been initiated; as of yet no interpretation of photographs has been completed and the NSP staff member responsible for M&E was unable to explain any proposed method for analysis. Project documents suggest photo-monitoring is to be used in the analysis of understorey regeneration, whereby photos will in a qualitative manner show whether the forest is re-growing or not. With the rapid growth of forests in Bangladesh, the NSP estimated that visible changes would/should be visible by project end, and could help in explaining project impact.
- The FD Offence Register is intended to provide information on illegal felling. The quality of this information may vary, as not all trees illegally felled are recorded. Some quality assurance field testing has been conducted by NSP and this has shown that an average of 75% of felled trees is recorded. In the southern sites, the reliability of the Offence Register data is 40-50%, while at northern sites it is 85-90%.
- The social monitoring scorecards are currently completed but not yet implemented.
- The Management Scorecard has been presented to the FD for comment and implementation, but as yet little feedback has been received and no data has been collected.
- The Community Scorecard was designed for the CM Councils and CM Committees, so its rollout has awaited their formation. As a result, no Community Scorecard data has been collected. As CM Committees have only just been formed or are about to be formed, it is too early to determine the level of acceptance/implementation of the Community Scorecard. These scorecards have the potential to provide important feedback on the success of the NSP; as such, every effort should be made to obtain the first round of monitoring data.

9. Performance Monitoring Plan (PMP) for USAID SO 6

NSP conducts M&E that provides insight into the project's progress in relation to USAID Strategic Objective 6. These indicators and some preliminary results from the Year 3, Quarter 2 Progress Report are shown in Annex 2.

COMMENTS ON NSP "PERFORMANCE MONITORING"

Progress against the PMP SO6 was not presented in the first and second year progress report. The NSP Year 3, Quarter 2 Progress Report (November 2005) has created a table including PMP SO6 outcomes, that establishes units of measure, the end of contract indicators and data for Year 2 is shown as "actual/baseline" with some achievements to date shown for Year 3. In most cases, no targets have been established that can be used in an analysis of the degree of current project performance. In the case of some indicators this is due to the evolving nature of the PMP SO6 outputs. Without a clear definition of both end of project targets and year-to-year changes for all indicators, it is difficult for performance

monitoring to contribute to an ongoing analysis of project performance throughout the life of the project. A final assessment at project end will rely on an assessment of the end-of-contract indicators.

9.1 Work Plan Monitoring

Annual work plan M&E is conducted in the Dhaka office based on status reports prepared by the regional and head offices. The completion of work plan milestones is measured according to five stages as follows:

- "Preliminary" (work started, score 1)
- "Development" (halfway through, score 2)
- "Consolidation" (three-fourths done, score 3)
- "Near Completion " (work finished, score 4)
- "Completion" (report submitted, score 5)

Work plan milestones are grouped under the following five components, which are largely derived from IRG's contract with USAID:

i. Develop a co-management planning and implementation model

ii. Improve ecosystem management

iii. Enhance the co-management policy environment

iv. Lay the foundation for a conservation constituency

v. Ensure institutionalization of co-management

A sixth area (or component) entitled "Cross-Cutting Project Results" is also assessed. The NSP Second Annual Report (May 2005) states: "The Cross Cutting activities and results are designed to support achievement of all the other project components. Field level implementation and management is included here, as are general management issues."

COMMENTS ON NSP "WORK PLAN MONITORING"

Work plan monitoring is conducted as an enumeration of tasks/milestones completed using the above mentioned five point scoring system with some discussion provided in the annual report on the "status" of individual activities under each NSP component. What appears to be lacking is an "adaptive management feedback loop", whereby the causes for difficulties and/or delays are discussed in the context of refining the NSP programs.

On a monthly basis, the northern and southern regions submit a monthly work plan and a monthly review of progress. Each of these are submitted in draft form and discussed with the Chief of Party (COP) and/or Deputy COP, and modified accordingly. An "AIG Matrix" is updated each month, showing progress against all AIG targets, and resources allocated therein. The COP prepares and circulates a periodic (usually bi-weekly) progress report against high priority work plan items, and these are reviewed in weekly meetings at the Dhaka and regional level. In addition, the NSP team has held semi-annual and annual planning and monitoring sessions with all staff since the project was begun. In this way, work plan monitoring allows for extensive adaptive management processes to take place. While the work plan monitoring is robust, discussions with regional offices and field level site offices did not convey the same understanding of the context of adaptive management as outlined above.

10. Summary Comments on NSP M&E

The M&E program provides a limited amount of reliable information on social, economic and ecological measures related to co-management of PAs. The most meaningful data collected to date is on structural diversity of forests using indicator bird species. Little or no information is presented and/or available on forest users living within NSP's "landscape zone" related to changing patterns of resource use (*e.g.* fuelwood, poles, wildlife, timber, bamboo, rattan, and other NTFPs coming out of PAs) or socio-economic well-being.

The success of NSP relies on an understanding, acceptance and support of PA management, biodiversity conservation, and co-management concepts. Given the complexity and, in some cases, the novelty of these concepts, a good deal of training is required for NSP staff, FD and other government staff and for the public at large, particularly local forest users. Questioning conducted by the evaluation team revealed further training is needed at all levels. Currently the M&E program does not endeavor to test the effectiveness of NSP training programs, and yet NSP should be able to answer questions relevant to NSP, for example:

- Are NSP project staff and FD staff at all levels conveying the right messages in regard to PA management?
- Do CM Council/Committee members understand their roles? Do they understand the content of PA Management Plans? Do they understand the issues for which they will be responsible for "managing"? Do they have the knowledge and experience to manage PAs?
- Are Forest User Group (FUG) members aware of objectives of NSP? Do they understand the concepts of PA, buffer zone and Forest Reserve? Do they understand their role in achieving biodiversity conservation within PAs?

In all cases, M&E information requires analysis against targets and the results of evaluation should be used in an adaptive management context so that this information may be used to enhance the NSP through refinement of project activities.

11. Sustainability and Replicability of Project Results

11.1 Sustainability

In the context of the NSP, sustainability may be assessed in terms of long term protection of biodiversity within PAs and an improvement in the livelihoods of the population within the landscape zone. Sustainable development projects are those that result in positive change that continues to provide benefits long after the development project is completed; in terms of the NSP this means beyond May 2008. While there is no doubt that the NSP has resulted in many significant positive changes within its first three years, there are legitimate concerns regarding the ability of the project to ensure these and other ongoing changes will become sustainable within the remaining two years of the project.

There are four important factors to consider in assessing the sustainability of the NSP's co-management model for PAs.

1. Based on the time required to establish sustainable co-management organizations in MACH (more than 5 years) and based on the history of an adversarial relationship between the FD and local populations, it is anticipated the NSP will require several more years beyond the end of contract (May 2008) to establish positive and effective working relationships between the FD and the local population that may be considered sustainable in the co-management of PAs. The time required to change the status quo is dependent in part on the history of how things were done in the past, for example:

- The FD has a long history of control over the Forest Reserves where PAs are located. The FD also has a history of abusing its control over forest resources, leading to FD staff deriving benefits, and FD has tended to have a confrontational relationship with the local public that want access to forest resources; and
- The public may not respect the FD based on past abuses of authority and in some cases members of the public may have outstanding charges against them.

2. There is long and complicated history of the use of resources from Forest Reserves, including the NSP PAs and buffer zones. In order for the NSP to be considered sustainable traditional forest resource use must change to protect biodiversity and it must change in ways that does not negatively impact the local population. It is recognized that solving the complex issues associated with traditional resource use within PAs will extend many years beyond the NSP. Nonetheless the NSP has not yet demonstrated the initiation of a sustainable mechanism to ensure alternate sources for forest resources (outside PAs) will be made available to traditional users. Some examples of the use of resources from Forest Reserves, including NSP PAs and buffer zones, by the local population are:
   - Fuelwood gathered for local household use or income generation through sale in local markets;
   - Fuelwood gathered for commercial use in brickfields, restaurants, hotels, and larger shipments to urban centres;
   - Poles/bamboo collected for household use or for betel leaf enclosures which in turn provides income generation;
   - Removal of trees by local or outside illegal fellers organized by the elite, sometimes with FD involvement; and
   - Other non-timber forest products (NTFPs) for local household use or income generation.
3. Forest Reserves have a complex pattern of encroachment or "boundaries" that must be addressed to clearly delineate the Forest Reserve, the PA and the Buffer Zone boundaries from forest villages, surrounding villages, commercial development, and agricultural lands that have developed within Forest Reserves over time. Sustainable protection of biodiversity within PAs will require the issues of encroachment be resolved. The NSP has not yet addressed encroachment in any substantial manner (wisely so as it is a sensitive issue requiring good communication between all stakeholders and innovative solutions that do not create hardship for the poor). It is not likely that many issues of encroachment will be resolved within the remaining two years of the project. Sustainability can not therefore be determined until there is good evidence that an effective mechanism is in place dealing with issues of encroachment. The complex pattern of encroachment or "boundaries" for Forest Reserves and in the case of the NSP PA and buffer zone boundaries include the following:
   - Forest (tribal) villages may be permitted but may have expanded beyond permitted lands;
   - Encroachment of surrounding villages that are now illegally present, including villages of refugees from Myanmar;
   - Brickfields and other commercial enterprises may be illegally present;
   - Encroachment gardens, rice fields and upland gardens from villager living outside PAs may be created within PAs;
   - Areas of sungrass (*Imperata cylindrica*) are intentionally created through burning and plots are distributed among local resource users for home use or income generation;
   - There may be persons holding quasi-legal title to land within PAs; and
   - FD Forest Reserve, FD PA, NSP Buffer Zone boundaries not demarcated on the ground.
4. The newly formed CM Councils and Committees require a significant amount of capacity building based on the many challenging tasks before them and the variety of skills required to effectively manage PAs in a manner that will both protect biodiversity while also providing benefits for the local population. What is at issue in regard to sustainability is a concern that the

CM Councils and Committees will not have received sufficient training and support over the life of the NSP to deal effectively (*i.e.* sustainably) with the complex issues of PA management. Some of the many challenging tasks and the variety of skills to effectively managing PAs include the following:

- Managing PAs involves dealing with a complex suite of issues and tasks, requiring skills such as ecology, engineering, tourism, marketing, social mobilization, *etc.*;
- Looking to PA management teams elsewhere in the world we see staff with specialized college/university level training and many years of experience within PAs;
- The PA system within Bangladesh is relatively new and there is limited FD staff with specialized training and experience in the management of PAs and/or in mechanisms of co-management of natural resources; and
- The NSP project has limited capacity among its staff and limited time remaining in the project to provide comprehensive training in PA management to the CM Committees.

Given the appropriate time and resources addressing all the issues raised by the above four points is possible and the protection of biodiversity and improvement of the livelihoods of local populations can be secured through the co-management of natural resources. No project is expected to achieve sustainable results in regard to all of the issues and challenges they encounter. Nonetheless the evaluation team is concerned that **there are insufficient time and resources within the NSP to achieve sustainable results within a sufficient number of the areas identified above within the remaining two years of the project contract for the protection of biodiversity and livelihood improvement to be secured by co-management.**

What is not addressed by the above discussion is the sustainability of AIG activities. Section 2.2 provides an in-depth discussion of the dependency of the local poor/ultra poor population on resources from PAs and the current approach to AIG by the NSP. Given the limited proportion of the population that will be reached by AIG under the NSP there will remain many people that will require AIG training and support for this project to be considered sustainable. There is the potential for ongoing AIG activities provided by the CM Committees utilizing funds available from tourism revenues, however the capacity of the CM Committees to provide AIG and the level of finances available remains unknown and **cannot therefore be considered sustainable at this time.**

Based on the above assessment of sustainability, recommendations are provided in Section 12.

11.2 Replicability

The ability to replicate the co-management model of natural resource management is in fact a part of what is occurring within the NSP based on the success of co-management under the MACH project. Both MACH and the NSP are based on co-management of natural resources: in MACH wetland fisheries resources (*haor*, *beels*, rivers, and canals); in NSP terrestrial based forest PAs (National Park, Wildlife Sanctuary, Game Reserve). Closer examination reveals there are significant fundamental differences between the two projects that require particular attention to ensure the successful replication of the co-management model in the NSP.

A table has been prepared below to assess these differences and to provide an appropriate project response to address the issues that arise as a result. These are issues that should be considered in the replication of the co-management model to the PAs under the NSP or to other PAs using this model.

Comparison Table of Factors Affecting the Replicability of the MACH and the NSP Approaches to Co-Management		
MACH	**NSP**	**NSP Response**
Access to resources		
Returning wetland resource base to local resource users, the fishers, involved the transfer of *jalmahal* leases from elite to RMO	Taking away the forest resource base within PAs from local resource users (buffer zone areas may be available to resource users) At the same time, the NSP co management is working to strengthen FD capacity to work with local communities to benefit from improved management of these PA, through ecotourism, and sustainable use / AIG in the surrounding landscape. So sustainable use is present in both cases, although in different forms.	Proceed with caution so as not to negatively impact local resource users by providing alternate supply of needed resources. Need now to move ahead with LDF, implementation of NSP across the landscape of targeted PA, development of ecotourism and scale up AIG activities – and pay off can be as significant or greater than results seen to date from MACH.
Role of Indigenous knowledge (IK)		
Rich traditional indigenous knowledge among fishers including concepts of sanctuary areas	Indigenous knowledge related more towards distribution of resources and resource use than towards biodiversity conservation	Need to explore the role IK may play in NSP biodiversity conservation Need build understanding of the meaning and value of biodiversity conservation
Capacity of Co-management Group		
Local population and local government have both had a long association with wetland management, but little association with each other or with the Fisheries Department. As a result, there has been only minimal history of co-management discussions or feedback systems.	Local population, local government, FD and NSP staff have limited capacity for PA management FD, has had strong and recognized local presence in forest management for many years, and most recently in form of social forestry activities (under FSP, etc.).	Need to train NSP staff, CM Councils/Committees and FD staff in concepts of PA co-management Need to build FD experience in social forestry, through implementation within the surrounding landscape
Outcomes from Natural Resource Management		
More fish and a greater variety of fish for home use and for income generation	Less fuelwood, poles, timber and other NTFPs for home use and income generation from the core zone. Less land available for agriculture Increased protection and more revenues from the PA as ecotourism development becomes feasible and gains	Need more realistic programs to replace loss of access to resources in PA, particularly through buffer zone management

Comparison Table of Factors Affecting the Replicability of the MACH and the NSP Approaches to Co-Management		
MACH	**NSP**	**NSP Response**
	support. More attention to sustainable use and increased productivity in the buffer zones	
Outcomes from AIG		
Successful training of a large number of individuals in a variety of AIG activities. Evaluation shows AIG is sustainable and replication is occurring	Demonstration training has so far reached a limited number of individuals though showing good signs of sustainability and replication	Need to go beyond demonstration training to reach a larger proportion of the poor/ultra-poor FUG members
Ownership of Natural Resources		
Relatively straight forward leasing of jalmahals turned back to local resource users	Legally PAs are owned by the FD, however, historical local resources use, agricultural lands, forest villages, and village encroachment has created a complex issue of dependency or perhaps perceived "ownership".	Under CM Council structure a new and as yet undefined "ownership" concept is being developed by the NSP NSP staff must work closely with CM Committee to ensure poor/ultra-poor are not negatively impacted by hasty or insensitive decisions such as eviction or denial of access to needed resources without the provision of alternatives

12. Recommendations for Follow-up Actions

The evaluation team has concluded that within the remaining two years of the NSP there should be a strategic focus on areas that can reasonably be accomplished before the conclusion of the project and which will contribute to long-term sustainability of co-management of PAs. Work in these focus areas may require the NSP to seek additional expertise in PA management and to provide additional training to NSP staff. There is also a need to improve the knowledge base of the target population, particularly in regard to current resource use in order to better understand the supply, demand, flows, quantities, and value of natural resources arising from PAs. Finally, the NSP must strengthen monitoring and evaluation at all levels to provide baseline information and feedback that will permit an assessment of sustainability and which will foster adjustment and/or refinement of the co-management approach to PA area management.

Focus 1: Capacity building of Co-Management Committees to ensure they are able to deal with the current issues in PA management that is effective and takes into consideration the needs of all stakeholders

Focus 2: Assist the Co-Management Committees in addressing issues of resource use from PAs, particularly fuelwood and poles, finding innovative solutions in terms of social forestry within buffer zones, homestead forests, roadsides and alternative energy supplies

Focus 3: Greater emphasis on a strategic AIG program that is appropriate, reaches as many persons as possible, and which creates linkages to NGOs and other development initiatives

Focus 4: Continue work on infrastructure building and the development of education and marketing materials that raise the profile of PAs as genuine tourism destinations

In addition to the four focus areas, the evaluation team is making the following recommendations in regard to specific issues:

- Ensure the areas identified as "buffer zones" or "interface landscapes" by the NSP (areas of reserved forest adjacent to PAs) are brought under the statutory authority of the PA managers of the Forest Department, with collaboration in management decision-making by the CM Committees.
- According to the PP, the starting date of the project by FD was July 2004, and the completion date is June 2009. However, based on the release of funds, the actual start date was April 2006, which following the same timeline would create an expected date of completion of March 2011. As IRG's contract ends in May 2008, there is a need to consider how technical support can be extended to the FD over the life of the PP.
- There is a need for the FD to immediately fill all positions of PAs with trained manpower.
- There is a need to define mechanisms of law enforcement by CM Committees.
- Opportunities should be pursued to develop stronger linkages with the Arannayk Foundation to extend the success of the NSP project.
- The NSP should develop a mechanism to involve tea estate owners in CM Councils and Committees at northern sites.
- Incorporate an action oriented research program involving the Bangladesh Forest Research Institute (BFRI) and Universities for the restoration and rehabilitation of ecosystems with indigenous species.
- The NSP M&E system should be reviewed and strengthened to provide a better record of all aspects of project performance.
- Explore opportunities to work with the BFRI and or universities to establish a more comprehensive system of long term monitoring of biodiversity.
- Explore opportunities, using the substantial bamboo resource bases in buffer zones and within the landscape particularly in the northeast, initiatives for alternative bamboo product development as a part of enterprise development. Examine other examples of bamboo product development within other countries of the region particularly Anji County of China.
- Establish mechanisms to link existing service providers or extension services from other government and specialized non-government organizations.
- Organize more cross visits of stakeholders among the PAs in Bangladesh and other countries in the region.
- Continue training exercises and cross visits of local level forest officers to encourage the development of new ideas and attitudes in PA management.
- Continue work on the development of a market information system within the framework of enterprise development.

Annex 1: Illustrative Description of NSP Activities

As might be expected, the investments and interventions of the program will be organized in five principal and complementary components congruent with the five intermediate results and their indicators for the USAID Strategic Objective (SO). The illustrative description of the activities which follows has also been developed based on an in-depth analysis of the issues and opportunities for co-management of protected areas (PA) in Bangladesh which was prepared as part of a working document for this design effort. It was also based on a thorough review of the most pertinent literature from the environment sector in Bangladesh. Although first generally comes first, the list of activities is not intended to convey absolute priorities or sequencing.

Component No. 1- Development of a Co-Management Planning and Implementation Model

The activities under this component will be directly responsive to **Intermediate Result 6.1-- Effective Community Based Resource Management Mechanisms Implemented** and its Indicators. Anticipated illustrative activities include:

- The Forest Department (FD) and its counterparts in the Program Team (Technical Assistance Team and Partners) agree on a select list of PAs as priority options for a phased approach and obtain the concurrence of the Program Steering Committee and USAID based on an agreed site selection criteria.

- Program Team (FD and Technical Assistance staff) carry out reconnaissance surveys on status of forest and its biodiversity assets and identify zones of influence (buffer zones) for each PA. This will involve the development of certain planning tools including a forest biodiversity survey instrument and the definition of a potential zoning code (e.g., ecosystem management zone or core zone, village use/sustainable use zone, resource rehabilitation zones, adjacent critical watershed areas, buffer zones, etc.) Updated maps of each targeted PA with important topographical features, infrastructure and present land-use will be prepared.

- Establishment of a GIS/GPS based mapping and monitoring facility as a key planning and performance tracking tool. These services could be subcontracted to a local private sector institution.

- Identify adjacent areas that are parts of the watershed between the PA (usually at the top of the watershed) and the lower riparian/wetlands areas they serve to ensure comprehensive watershed management planning and actions.

- Program Team led by the NGO specialists begins a Participatory Rural Appraisal (PRA) process with the local communities living in or adjacent to the PA to identify their needs and opportunities. These PRA's will use tools such as community mapping and needs assessment.

- Program Team led by the NGO specialists begins community organization process identifying resource management committees and potential interest groups. The RMO's will adopt the methodology used by the MACH Project for this purpose although it may have to be adapted for terrestrial applications.

- Work with neighboring stakeholders (e.g., Tea Estates, private land owners, the Ministry of Land) to identify their constraints and opportunities for protecting natural forest areas within their boundaries. Ensure that Tea Estate workers are informed of the goals of the co-management approach and its requirements if they are not part of the communities involved in co-management.

- Develop and apply the rules and methodology of sustainable use zoning within the PAs where necessary to accommodate established and recognized forest villages and their inhabitants. Give particular emphasis to garnering traditional knowledge about forest-based farmacopia.

- A Draft Co-Management Plan will be prepared with annual operational targets discussed and agreed with the communities through the intervention of the RMO's for each of the targeted PAs under the program.

- Study the opportunities for the possible expansion of the PAs into adjacent contiguous areas of reserve forests and work with the Forest Department to secure their official notification as such.

- Communities and RMO's assess their achievements in light of the annual work plan (monitoring and evaluation) with the Program Team and perhaps adjust expectations in the out-years.

Component No. 2--Interventions and Investments for Improved Ecosystem Management

The activities under this component will be directly responsive to **Intermediate Result 6.2-- Select Habitats and Ecosystems Restored, and the Sub-IR's 6.2.1--Innovations and Best Practices Adopted and 6.2.2--Alternative Incomes Realized for Target Groups** and their Indicators. Anticipated illustrative activities include:

- Ensure that the recognized boundaries of each targeted PA are clearly and permanently marked and that suitable and prominent signage regarding their special status is placed at key access points. In cases where the limits may be in dispute, work with the local authorities and community leaders to re-establish the limits, registering them in the field with a GPS and later plotting them on official maps.

- Program Team prepares habitat restoration manual as a guide to the rehabilitation of areas within the PA in need of improvement.

- Restoration and watershed management activities get underway with community assistance in designated forest compartments where they are required for watershed management and biodiversity conservation purposes.

- Determine the potable water supply circumstances of forest villages and consider development of safe, piped water in return for their agreement to protect watersheds.

- Forest resource development, agricultural improvement, soil and water conservation activities get underway in buffer zones, including with private sector interests (Tea Estates) in order to begin to ensure the sustainability of the watershed.

- Develop a methodology for transparently quantifying human impact on the PAs as a key to gauging the compensatory measures that may be required to achieve conservation imperatives.

- NGO personnel, perhaps with technical assistance, undertakes feasibility studies for alternative income and employment generation activities. Companion studies on the micro-economics or business planning and market access elements are carried out to ensure that participants are fully likely to benefit from their participation in these activities.

- Program Team develops an annotated action-research oriented issues agenda as the basis for a modest program of research grants to be contracted with institutions like the BFRI and others, focused on

forest ecology, natural forest management, biodiversity assessment, watershed management, co-management and other germane topics.

- Alternative income and employment activities get underway among the target communities. Lead participants in each of the categories of AIG activities are chosen and their efforts monitored carefully as an indicator of successful performance for monitoring and evaluation purposes.

- Possible community support and working credit program elements are operationalized (e.g. water supply, seed supply, etc.).

- Identify keystone forest tree and plant species that might be re-introduced or whose populations need enhancement within the P.A. Study the methods for their regeneration including the possibility of direct seeding and the feasibility of planting seedlings.

- Develop a response to possible issues of crop-raiding by animal inhabitants of the PAs.

Component No. 3--The Enabling Policy Environment for Co-Management Enhanced

The activities under this component will be directly responsive to **Intermediate Result 6.3-- Select Policies Implemented that Support IR's 1 & 2** and its Indicators. Anticipated illustrative activities include:

- Regular twice yearly inter-ministerial Program Steering Committee meetings with the Technical Working Group providing secretariat services (meeting agenda; issues papers and follow-up actions).

- Program Team assists in the organization of the Local Government Committee and uses this mechanism to present and explain the co-management approach, its activities and implications to the local government level decision-makers (Union Parishads and the Upazila Development Committees).

- Program Team prepares a "white paper" on the local and national policy agenda for co-management for submission to Steering Committee and as the basis for continuing policy dialogue about the enabling environment for the promotion of co-management of natural resources.

- As a result of the decisions of the Program Steering Committee, the Team commissions policy studies to enhance the quality of the informed debate among the program decision-makers. For example, one such study might address the macro-economics of biodiversity conservation and co-management of PAs. Another might address the institutional strategy for integrated natural resources management and its implications for the ministries concerned.

- Develop a policy and process for a permit and fee structure for day visitors to the P.A.'s. In selected P.A.'s, there may be future opportunities for limited, low impact camping facilities but this needs further study and a sound policy established.

- Co-management of tropical forest resources operations manual prepared and vetted by the Program Steering Committee and all of the participating GOB departments. This draft manual provides the substance for a national workshop on the topic.

- Mid-term evaluation carried out; lessons learned identified and any reformulation of program objectives and indicators along with necessary reprogramming of activities, staffing needs or financial resources considered.

Component No. 4- Laying the Foundation for a Conservation Constituency in Bangladesh

The activities under this component will be directly responsive to **Intermediate Result 6.4-- Public Awareness of Key Issues Raised** and its Indicators. Anticipated illustrative activities include:

- Public Awareness Strategy developed by the Program Team perhaps with short-term technical assistance.

- Invite local authorities on one day visits to the P.A.'s in their areas to explain and demonstrate program actions and the co-management approach--to include district, upazila and union parishad authorities and the officers of the security forces (e.g., the BDR detachments) stationed in the area.

- Co-Management Plans presented at national workshop along with approach and specifics of community involvement.

- Inter-Community study visits encouraged and facilitated, including between upstream communities and downstream (wetland) communities and local authorities with the cooperation of the MACH Project.

- Prepare a brief illustrated brochure for each targeted P.A., explaining the forest, its natural components, biodiversity assets and the co-management approach for sale to visitors (in Bangla and English).

- A limited number of community members selected and trained as nature guides for PA visitors. Nature guides successfully completing the training course would be authorized by the Forest Department to escort visitors. A certificate and perhaps a shirt and cap with suitable insignia could be provided to them. A fee structure established for these services and a brochure in Bangla and English prepared for circulation among travel agencies in Bangladesh.

- Environmental education activities identified and promoted to serve recreation and tourism users. This will include signage in each of the areas as well as the development of a nature walk through the forest led by trained members of the participating communities. Nature trails may include limited and rustic structures to accommodate visitors (benches for resting along the way, foot bridges over wet areas and chharas, a latrine).

- Develop a conservation-oriented training package for local elementary schools and provide teacher training in its use. Sponsor visits by school children from adjacent areas to the PAs. Seek private sector (corporate) support for modest funding to finance these visits.

- Work with avid local birdwatching groups to develop an illustrated guide to the birds of the PAs of Bangladesh. Seek private sector sponsorship for its publication with the proceeds going to investments within the P.A.'s.

- Regular program of media messages promoted and prepared with Team assistance. One or two high level governmental study tours to working co-management areas and media coverage of these events facilitated.

Component No. 5--Towards an Exit Strategy--Ensuring Institutionalization of Co-Management

The activities under this component will be directly responsive to **Intermediate Result 6.5-- Improved Institutional Capacity** and its Indicators. Anticipated illustrative activities include:

- Training needs assessment carried out for Forest Department, other Ministries and NGO staff involved in the Program and a comprehensive training plan developed.
- Team develops model and methodology for training Local Government staff under a co-management of tropical forest training program.
- Establish a re-invigorated regime of beat patrols by Forest Department staff (consider the provision of radio communications) with special reference to monitoring biodiversity assets.
- Assist the Forest Department to develop a rapid response policy and protocol (disaster prevention) for addressing problem issues like forest fire, illegal logging, flash floods, land invasions, etc.
- Assist the Forest Department authorities in the preparation of staffing position descriptions related to PAs and co-management.
- Program assists the local environmental and forestry schools (such as the Institute of Forestry and Environmental Sciences, University of Chittagong) to develop curriculum elements for training in the Co-Management Approach to Biodiversity Conservation and Natural Resources Management.
- Strengthening of the Wildlife and Nature Conservation Circle, aiming at establishing a PA Management System as part of its organizational structure.
- Program Team makes a presentation about their achievements to the multi-lateral development banks (ADB, World Bank) with a view to attracting investment level resources for wide scale replication of co-management in Bangladesh.

Annex 2: Progress Against USAID PMP

The following table is from the NSP Year 3, Quarter 2 Progress Report, September 1, 2005 to November 30, 2005.

Indicators	Unit	Year 2 (actual/baselin	Year 3 (achievement)	Remarks
SO 6 Indicator: 6.a Extent to which best practices from USAID projects are used elsewhere	No. of Occasions	0	0	The "best practice" referred to here is the co-management approach itself, which is expected to be used elsewhere at other national parks and other PAs beginning in 2007 or 2008.
SO 6 Indicator: 6.b : Increased production of natural resources in targeted areas	Kg/ha/Year No. of trees	0	24 women owned nursery operations have produced estimated 12,000 saplings. Ecotourism conditions being put in place.	Increased production will come from two sources: tree planting/regeneration in the buffer and ecotourism.
SO 6 Indicator 6.c Maintaining or increasing biodiversity in the targeted areas	No. of indicator bird species/km2	Baseline population set in 5/05 for eight indicator bird species in all five PAs.	Next measurement 5/06	Bird populations has already been increased, and are expected to show measurable increases by 2007 or latest May, 2008.
IR 6.1 Effective Community Based Resource Management Mechanisms Implemented				
Indicator 6.1 b: One third of the Protected Areas (PAs) network operating under a collaborative management model.	No. of PAs out of the 16 PAs existing when NSP started. One third would be 5 or more PAs.	0	5	All five pilot sites are beginning to operate under a co-management model.
Indicator 6.1.c: Number of hectares of forest covered by co-anagement agreements and covered by landscape investment plans for	Ha of forests, and ha under investment plan (landscape)	0	PAs covering 22,664 ha -- conditions for investment being put in place	Targeted forested area is 22,664 ha and landscape is 107662 ha. Landscape has been defined, investment has started.

Indicators	Unit	Year 2 (actual/baselin	Year 3 (achievement)	Remarks
sustainable resource management.				
Indicator 6.1 d: Existing Protected Areas network increased in size by 10 percent.	Ha	0	2 new PAs added during the year, at Satchari (242 ha) and Medhakachapi a (~350 ha)	Most increases will come from buffer zones around existing PAs
Indicator 6.1 e: Management performance scores improve at pilot protected area sites.	Performance Index; lowest – 36, highest is 264.	36	45	Management scores have improved, principally with posting of senior officers to PAs (ACF-level). Coming years will see additional improvements.
Intermediate Result 6.2: Select Habitats and Ecosystems Restored				
Indicator 6.2.c: Habitat within targeted protected areas improved.	Ha	0	1767 ha	The project has successfully initiated protection of LNP (1250 ha), RKWS ,SNP (242 ha) and 275 ha of valuable Garjan Plantation of TGR. The protection is given by the community surrounding PAs under the Co-management council. Within the coming months CWS will be brought under community patrol.
Indicator 6.2 d: Declining incidence of unsustainable and illegal use of natural resources	BA/ha	82		The baseline data indicates total basal area of all sample plots in the five PAs. Year 3 data collection is scheduled on Jan-Feb. Unchanged figures will indicate declining incidence of illegal use of nature resources. Basal area re measurement is due in 2006.

Indicators	Unit	Year 2 (actual/baselin	Year 3 (achievement)	Remarks
Indicator 6.2.e: The rate of deforestation is reversed in pilot co-managed PAs.	% reduction	Rate of deforestation for LNP is 106 trees/month/year.	36% reduction occurred at LNP.	The baseline data for LNP (and for others as well) represents last two years average data. Data collection for other PAs ongoing.
Intermediate Result 6.2.1: Innovations and Best Practices Adopted				
Indicator 6.2.1.c: Households implementing improved land-use practices and activities within and surrounding pilot protected areas	Number of households.	0	142	Alternative income activities are on a rapid upswing, now that low income groups formed in year 2 are adopting improved practices.
Indicator 6.2.1.d: Number of Hectares outside of protected areas under community management agreements	Ha	0	50	Social forestry agreements from FSP have been adapted and used on NSP sites, bringing fuelwood plantations on these lands to support NSP goals.
Indicator 6.2.2b: Number of income generating activities, introduced by the forestry project, and consistent with protected areas conservation being implemented by targeted stakeholders in targeted landscapes.	nos	0	8	Major activities amongst these eight now include milk cow rearing, poultry rearing, vegetable home gardening, fish pond cultured and nursery development.
Indicator 6.2.2c: Number of households implementing alternative income generation activities in targeted landscapes	nos	0	Northern sites – 76, Southern sites - 56	Impact is yet to be understood.

Indicators	Unit	Year 2 (actual/baselin	Year 3 (achievement)	Remarks
Intermediate Result 6.3: Select Policies Implemented that Support IRs 1 and 2				
Indicator 6.3c: Comanagement conceptual model developed and implemented in the pilot PAs.	Number of protected areas with comanagement agreements	0	0	Councils have formed at all sites, and those Councils are now reviewing draft Constitution for formalizing their role. Constitutions not yet signed.
Indicator 6.3d: Key operational procedures in place enabling the implementation of comanagement of pilot protected areas.	Identified key procedures developed, approved, and implemented.	0	3	Procedures for completion of new PA-related participatory benefit sharing agreements have been adapted for PAs. The new draft Wildlife Act has established procedures for establishing comanagement.
Indicator 6.3e: Comanagement agenda established and being acted upon.	Number of locally generated policy issues addressed at the national level.	0	0	No such issues have yet arisen, with the exeption of the Rema Kalenga council addressing the problem of corrupt practices by one local Range Officer and two Guards, all of whom were protected by senior national-level political forces.
Indicator 6.3.1: Number of communities and resource management groups actively participating in the co-management of protected areas.	Number of communities and/or resource management organizations with signed comanagement and/or concessionary contracts.	0	35	At each PA, many local groups are now members of the comanagement process, including local CBOs, local NGOs, local associations and other groupings.
Intermediate Result 6.4: Public Awareness of Key Issues Increased				
Indicator 6.4a: Number of individuals reached by public awareness activities	Number	20	15,000/+	Communication & outreach activities were many during the period, including Scouts Hike, 1st Chunati Alternative

Indicators	Unit	Year 2 (actual/baselin	Year 3 (achievement)	Remarks
				Energy Fair, Ntv interview, West Bengal trip press conferences (local level), local school art competitions (southern sites), people's theatre, world environment day rally, and similar activities.
Indicator 6.4b: Increase in newspaper, television, and radio coverage of biodiversity and NRM issues.	Number	News Paper = 5; TV = 2	Local News Paper = 66, National News Paper = 67; TV = 7	BTV, NTV, Channel I & ATN Bangla covered news on major events and various NSP activities.
Indicator 6.4c: Tenfold increase in the number of paying visitors to target PAs	Annual numbers of paid visitors and annual percent increase of paid visitors.	0	0	FD is now preparing to institute entry tracking systems and a new entry fee for all five PAs, upon which we expect a rapid increase in paying visitor numbers.
Indicator 6.4d: Increased capacity of local environmental NGOs, RMOs (civil society) capable of advocating for priority conservation issues.	Number of policy initiatives identified and advocated by local organizations.	0	0	BELA and others supporting protection of the Lawachara National Park (used our materials)
Intermediate Result 6.5: Improved Institutional Capacity				
Indicator 6.5a: Forest Department skills and experience improved to promote co-management of PAs.	Recording of administrative changes within the FD and observation of field operations.	0	8	This includes mostly appointments of young and skilled staff to PAs, and relocation of non-productive staff members. In addition, oversight by FD of field operations has

Indicators	Unit	Year 2 (actual/baselin	Year 3 (achievement)	Remarks
				improved markedly with the National Project Coordinator (Mr. M.K. ROy) now appointed as the CF/Wildlife, overseeing the protected areas system.
Indicator 6.5b: High level inter-agency Government Steering Committee functioning and advancing the cause of improved PA management and NRM programs	Committee meeting minutes and recording of actions taken by the Committee.	2nd meeting of SC	2nd meeting of SC, including support to public private partnerships (NPC)	Steering Committee has been briefed on developments, approved the co-management councils, perused the proposal of benefit sharing of gate money by councils. But has not yet become an active and strong voice for change.
Indicator 6.5c: Improved local government, CBO and RMO capabilities to support integrated conservation and development programs.		Virtually no Involvement except initial awareness sessions.	West Bengal trip and other initiatives make large impact on local govt and CBOs	
Indicator 6.5 d: At least $1 million dollars of additional funds raised from national and international donors.	Cumulative funds raised.	$0	$100k	Includes GTZ/PURE ($25k) plus leveraged support from ADB FSP Project ($75k).

Annex 3: Formation, Membership and Functions of the CM Council and Committee

Protected Area Conservation Co-management Committee: Protected Area Conservation Co-management Committee is formed by a way of election organized by the Co-management Council following a structured guideline. The ACF will serve as the Chairperson to the Committee. If the landscape of the Protected Area is too big, the Co-Management Committee will segment the landscape into multiple sectors and form an informal action committee in each sector to undertake actions aimed at protecting the forest and conserving biodiversity.

Composition of the Protected Area Co-Management Committee: ACF/Range Officer-Convener, representatives from Forest Villages: Village Headman/Minister, Representatives from NGO-Organized Federations/Groups, representatives from the Local Government, representatives from NGOs, representative from CBOs, representatives from Local Elite, representatives from Resource Owning Group, representatives from Law-Enforcing Authorities, Representatives from the Government Department

Protected Area Conservation Council: Protected Area Conservation Council is formed by drawing people from different strata of the community from the total landscape of a particular area. The DFO or ACF of the Forest Department will serve as the Chairperson of the Council.

Composition of Protected Area Conservation Council: DFO/Assistant Conservator of Forest (ACF), representatives from NGO Organized Federations/Groups, representatives from the Local Government, representatives from Local Elite: Teachers, Doctors, Social Activists, Journalist, Religious Leaders, others, representatives from Resource Owning Group: Sawmill Owners, Brickfield Owners, Timber Traders, Furniture Shop Owners, Large Land owners, Representatives from Bazaar Committees, Representative from Tea gardens, representatives from the Forest Department: Range Officer/Beat Officer, representatives from Law Enforcing, authorities: BDR, Police, Ansar/VDP, representatives from NGOs/CBOs, representatives from Ethnic Communities, representatives from Other Government Departments: Dept of Agricultural Extension (DAE), Ministry of Health and Family Planning (MOHFP), Department of Fisheries, Department of Land.

Functions of the Council:

- Review in the half yearly meeting the progress made on the programme of action prepared by the Co-management Committee, give feedback and necessary advice, if required.
- Assist meaningfully, both individually and collectively, in implementation of the six-month programme plan.
- Undertake awareness building and motivational campaigns, both individually and collectively, within the project sites to make people aware of the negative consequences of forest depletion, and assist the Co-Management Committee in its efforts towards building resistance against forces involved in destruction of forest resources and biodiversity.
- Assist the Co-Management Committee to take appropriate actions to prevent illegal encroachment of forest land.
- Identify people who are involved in regular extraction of forest resources, motivate them and generate public opinion against such action to bring about their behavioral change.
- Identify local resources and promote alternative livelihood options for them to reduce their dependence on forest.
- Assist the Co-Management Committee in resolving local conflicts, if needed, in advocacy campaign and networking with other agencies and groups.

- Work wholeheartedly and collectively to make the area safe and attractive to national and international tourists.
- Assist in creating public opinion at all levels of the society to ensure that the Nishorgo Support Project achieves its desired objectives.

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Composition of the Protected Area Co-Management Committee:ACF/Range Officer-Convener, representatives from Forest Villages: Village Headman/Minister, Representatives from NGO-Organized Federations/Groups, representatives from the Local Government, representatives from NGOs, representative from CBOs, representatives from Local Elite, representatives from Resource Owning Group, representatives from Law-Enforcing Authorities, Representatives from the Government Department

Functions of the Co-Management Committee: The Co-Management Committee will perform the following tasks apart from addressing others that may need its attention:

- The Co-Management Committee shall prepare a six-monthly plan of action for forest protection and bio-diversity conservation (as per management plan prescription) with the support of the facilitating NGO, and meet bi-monthly to review the status of the planned activities--achievements made, problems encountered, and suggest remedial actions.
- Undertake awareness building and motivational campaigns within the project sites using different communication techniques to make people aware of the negative consequences of forest depletion and involve schools children, scouts, girls guides to undertake specific actions at the project sites.
- Take appropriate actions to prevent illegal encroachment of forest landand take stern social actions against the encroachers jointly with the Forest Department. If needed, approach the law enforcing authorities to prevent such encroachment by the encroachers.
- Divide the forest into sectors, form informal action groups and assign a block to each group with specific tasks aimed at protecting the forest and conserving the bio-diversity, assist and take appropriate actions to help them perform their tasks effectively.
- Develop with the help of the facilitating partner NGO monitoring tools and indicators of forest resource and bio-diversity protection and conservation, and monitor periodically with the help of community people to see the achievements made in each block. This will generate a sense of ownership and accountability and will also develop a positive competition among the groups, which could have positive impact in the long run.
- Motivate brickfield owners and other resource user groups not to assist in illegal extraction of forest resources and generate strong public opinion against such actions so that they conform to public demand.
- Undertake actions to allow natural regeneration of the forest, and also undertake plantation activities, if required, as per the advice and technical support of the forest department.
- Undertake afforestation activities involving community people, organized poor in particular, along the roadsides, railway tracts, khash land, and other degraded areas with the advice and support of the Forest Department following the benefit sharing principles of social forestry.
- Identify and assign families, if possible, from amongst organized group members, to raise nurseries as part of income generating activities. Also identify other alternative resources that

could be accessed and used for generating income and employment for the poor people of the community.

- Work wholeheartedly and collectively to make the area safe and attractive to national and international tourists and work with the FD to ensure proper upkeep of the areas.
- Assist the facilitating NGO in having access to local resources for poor people, and also assist in ensuring timely repayment of the loan money borrowed by project beneficiaries.
- Develop financial management skills within the structure having a trained accounts person. Open a bank account to deposit a portion of income from the park and other income that the committee can generate, and prepare a guideline for use of the accumulated funds for social development of community people, poor in particular.
- Maintain proper books of accounts have audit done regularly and submit statement of accounts to the Council at the Annual General Meeting. It is expected that the system will prepare the committee to operate and manage funds during the post-phase out period.
- Resolve local issues and conflicts that may arise from time to time. Also provide appropriate information and technologies to community people. Maintain close linkage with other government departments that have presence at the community level and interact closely with the community people.

Annex 4: NSP Achievements

Component # 1 & PP Objective #1: Develop a functional model for formalized collaboration in the management of Protected Areas.

- **Social mobilization into co-management structure**
  - Eight Co-management councils formed in all sites and started functioning.
  - Co-management committees formed in all northern three sites.
  - The Co-management councils and committees have been approved by the Government.
  - Community patrolling groups developed in two northern sites and slowed down illegal felling.
  - Cross visit to West Bengal by Council members have boosted to mobilization.

- **Improved and participatory management plans**
  - Participatory Management Plans for five PAs have been completed and submitted to the FD.
  - Simplified Bangla versions prepared for Council members.

- **Participatory impact monitoring**
  - Baseline studies completed for all sites.
  - Eight indicator birds identified for impact monitoring.
  - A 3-level project monitoring system developed

    Level 1 includes a small number of easily recognizable indicators of change to the quality of the natural resource and to the local population.

    Level 2 includes programmatic indicators, such as those included in the Mission PMP.

    Level 3 is simply a project impact achievement system. Notable elements and achievements of this overall monitoring system include the following:

  - Guides at sites trained in bird recognition.

Component # 2 & PP Objective #2: Create alternative income generation opportunities for key local stakeholders in and round Protected Areas.

- **At low-income household level**
  - 157 Forest users groups formed at five sites including 965 women and 863 men.
  - Training imparted to 672 persons in various AIG activities.
  - Plus FSP forestry beneficiary involved in AIG activities.
  - GTZ co-funded energy fair organized at Chunati site and 180 improved stoves in operation in Chunati and expansion in other two sites.

- **In enterprise development**
  - A Strategy paper on local level enterprise development completed and identified 14 priority and secondary enterprises for selected sites
  - Local enterprises on eco-tourisms developed in each site and in operation
  - Elephant hike enterprise development concept paper for Teknaf and Chunati sites completed
  - Export quality handicrafts, groups and cites identified, and the groups introduced with market system.

Component # 3 & (part of) PP Objective #3: Develop policies conducive of improved Protected Area management and build constituencies to further these policy goals

- **Policy**
  - "Nishorgo Vision 2010"- a strategy paper for Pas complteted and widely used
  - Helped in revision of Wildlife Act and submitted to FD for further perusal
  - Project Proforma (PP) for FD developed and approved
  - Government approved all Co-management Councils and Committees and issued Government Order
  - Proposal for retention of 50% entry fees prepared and approved by the Project Steering Committee for further government process

Component # 4 & (part of) PP Objective #3: Build constituencies to further policy goals

- **Constituency building through communication**
  - Co-management councils continue to include women, minorities and low income groups as key stakeholders
  - Partnership developed with Scouts
  - "Nishorgo" clubs formed at all sites
  - Community Development Schools formed at all sites
  - Partnership developed with Bird Club and organized training for scouts and local committee members for monitoring
  - Developed partnership with IUCN Bangladesh
  - Developed linkages with electronic and press media
  - Country wide and local awareness of Nishorgo increased
  - Developed Public-Private Partnership with seven private partners
  - Developed website and web based digital information system
  - Developed a good number of communication materials

Component # 5 & PP Objective #4: Strengthen the institutional systems and capacity of the Forest Department and key stakeholders so that improvements under the Project can be made permanent.

- An Institutional Development for PA Systems developed
- Expanded Nishorgo Program offices established and functioning at the FD
- New uniform designed and in use by Nishorgo Program staff in the field
- Code of Conduct of FD staff in PAs developed through consultative process, finalized, printed and circulated
- Organized orientation training courses for FD (completed for all Nishorgo Beat Officers, Range Officers and ACFs; and half of Forest Guards)
- Organized orientation training for all council members
- Cross visits of FD staff and 25 council members to West Bengal

PP Objective # 5: Build or reinforce the infrastructure within Protected Areas that will enable better management and provide limited visitor services.

- Signboards showing the map of the PA, general instructions to use the PA and map of hiking tracks are in place in all five Pas.
- Established and developed 3-hours, 1-hour and ½ hour hiking tracks in all five Pas.
- Construction of visitors' facilities in Lawachara is in process.

PP Objective # 6: Design and implement a program of habitat management and restoration of Protected Areas

PA Management Plans have been prepared by the NSP, submitted to FD and received approval. The implementation of recommendations related to habitat management and restoration may now be initiated by CM Committees.

USAID
FROM THE AMERICAN PEOPLE

RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT:

APPENDIX C - RECOMMENDATIONS FOR FUTURE NATURAL RESOURCES MANAGEMENT STRATEGY

June 2006

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APPENDIX C: RECOMMENDATIONS FOR FUTURE NATURAL RESOURCES MANAGEMENT STRATEGY

In this Appendix, the evaluation team first re-states the case for USAID's continued involvement in natural resources management in Bangladesh, suggests some priorities within that field, summarizes evaluation recommendations for immediate follow-up to the Management of Aquatic Ecosystems through Community Husbandry (MACH) project and the Nishorgo Support Project (NSP), and finally suggests some avenues for future assistance.

1. The Case for Natural Resources Management

Given that Bangladesh has one of the highest population densities in the world, pressure on natural resources of all kinds is intense and growing. Almost every square meter of the country's territory is used for one human purpose or another and areas of undisturbed nature are very few. The 50% of the population classified as poor depend heavily on natural resources for their daily survival and are the first to be affected by the diminution or degradation of those resources.

Bangladesh's recent moderate rate of economic growth, coupled with generous external support, has gradually reduced the numbers of absolute poor and erased the specter of widespread famine, thus potentially easing some pressures on the environment. At the same time, urbanization and industrialization has heightened pressures on the quality of air and water resources. Significantly, a small but increasingly vocal middle class is demanding a cleaner environment and the reversal of past trends of resource degradation. In fact, chances for effective environmental and natural resources protection will be small, until the public – or, at least the urban elite – begins to press the politicians and policy-makers for action, a reason why improving public awareness of environmental and natural resources issues should be the first priority of any program.

In its 2002 "Strategic Plan for Improved Management of Open Water and Tropical Forest Resources, FY2002 –2008", USAID/Bangladesh argued for a reinforced USAID role in natural resources management, with special emphasis on floodplain wetlands and protected forest areas. It noted that other donors were addressing other natural resource and environmental issues. That paper was the basis for the extension of the MACH program and for the initiation of the NSP the following year and the case it makes remains valid

2. Priorities for 2006 – 2010

With the short time available to the evaluation team, its review of options for future USAID involvement was necessarily limited in scope and far from exhaustive. Nevertheless, a review of available documents, observations of conditions in the field and interviews with knowledgeable informants, suggest that the two priorities selected in 2002 – floodplain wetlands and forest protected areas - should remain USAID's top environmental priorities for the immediate future. This would be consistent with USAID/Bangladesh's Strategic Statement for FY 2006 – 2010, which includes under SO 11 (More Effective and Responsive Democratic Institutions and Practices) a Program Component 7: *Improve Sustainable Management of Natural Resources and Biodiversity Conservation*. This program component emphasizes transparency and accountability, through community-based management, with broad based local participation.

Other important natural resource management issues are receiving attention from other donors. Water resources management is dealt with in the National Water Management Plan, the implementation of

which is being supported by the World Bank (WB)[1] and a number of other donors. These programs address urban and rural water supply and sanitation issues, as well as the problem of arsenic contamination. Energy, industrial and transport pollution have been addressed by other USAID programs and by the United Nations Development Program (UNDP), WB, Asian Development Bank (ADB) and others. The implications of greenhouse gas emissions for climate change and sea level rise are being studied under more than one program. A UNDP/GEF project is making a modest effort at addressing coastal zone management (though much remains to be done).

Floodplain wetlands form the basis for the country's inland capture fisheries and thus provide the livelihoods for millions of poor and ultra poor, including the *traditional* poor fishers whose livelihoods are solely dependent on these resources. Productivity of the inland capture fisheries subsector, however, continues to decline for reasons of resource degradation and mismanagement. However, as detailed in Appendix A, MACH (together with the government's new Inland Capture Fisheries Strategy, for which MACH supplied much technical backing) has now provided a firm basis for future expansion and development. Nevertheless, the team has noted that, with the imminent closure of the WB's Fourth Fisheries Project and the associated UK Department for International Development (DFID) and Global Environment Facility (GEF) projects, there is at present no committed donor funding for floodplain fisheries beyond October 2006. Furthermore, some wetlands have been designated as Ramsar sites and some as Ecologically Critical Areas (ECA) by the Department of Environment (DoE).

The private sector seems capable of funding the growth of the dynamic inland and coastal (shrimp) aquaculture sub-sectors, though donor support for mitigating negative environmental impacts may be warranted (USAID is providing some technical assistance in this area). Apart from the small UNDP/GEF project cited above, marine fisheries have perhaps not received the donor attention it deserves.

The MACH project has touched on issues of soil erosion and sedimentation, as they affect the floodplain wetlands, and has pioneered some effective techniques, including wetland and riparian reforestation. However, this work does not amount to a systematic approach and further analysis of this problem based on an assessment of country-wide priorities and on a watershed based approach would be warranted, followed by project development.

The forest resources of Bangladesh, including its modest network of protected areas (PAs), are under intense pressure from illegal logging, fuelwood collection, encroachment and other unsustainable resource uses. Surrounding populations are poor and are often dependent on free resources from the forests. NSP is attempting to alleviate those pressures, for five PAs, by strengthening protection on the one hand, providing alternative income sources on the other, and with the hope that tourism and related other small enterprises will grow and add to the local economy around protected areas. It should be noted, however, that efforts to assist the country's largest PA in the Sundarbans, have come to a halt, with the cancellation of the major ADB and associated GEF projects, for what ADB felt was a lack of responsiveness of the Forest Department (FD) to ADB's concerns on project management. Coupled with the reputation of the FD for corruption, this event will likely deter significant donor interest in the forest sector for some time to come. However, given that NSP appears to have successfully insulated itself from the inadequate accountability of the "mainstream" of the FD, further assistance to PAs may well be feasible from a fiduciary point of view, as well as highly justified from an environmental perspective.

3. Follow-up to MACH and NSP

As detailed in Appendix A, the successful outcome of MACH II and its high degree of potential sustainability argue for the following continued USAID support:

[1] World Bank Office, Dhaka,"Bangladesh Country Water Resources Assistance Strategy, December 2005.

a) a "no cost" extension of MACH II by 8 to 12 months, to ensure an even higher level of sustainability and the completion of important civil works; and

b) a follow-on project, in collaboration with other donors[2]. This might take the form of technical assistance and capacity building elements of another donor's investment project. Alternatively, or as a prelude to a major project (which might take some time to be prepared), USAID might consider a "transition" or bridge project, to move from the pilot project focus of MACH to a replication phase of broader impact, with greater management involvement of the Department of Fisheries (DoF).

For NSP, as set out in Appendix B, the chances of achieving full sustainability after the present project is completed in 2008 appear slim. A clear lesson from MACH is that building co-management institutions takes considerable time – 4 to 6 years in the opinion of the evaluation team. NSP co-management must establish a working relationship between the FD and local stakeholders and, with the limited knowledge and experience of the co-management committees, address the varied issues of PA management, such as illegal felling, encroachment, current resource use, restoration, wildlife management, and tourism. An additional challenge for NSP is the necessity for finding viable compensatory mechanisms (alternative income generation) for the many people whose livelihoods will be adversely affected by restricting access to resources from PAs on which they have come to depend. Although that process has started, a lot of learning by doing is still needed, including strategies and mechanisms for providing alternative sources of fuelwood, as well as sticks, poles, posts and other forest products for the local poor[3]; initiatives that are not yet in the project. Both these challenges argue for a second project to complete the work that has started and to establish PAs that are self-sustaining. Such a follow-up project could also be the vehicle for extending the co-management model to a limited number of other PAs, including those not in forest areas.

While it is too early to be very definite about the size, scope or duration of an NSP II, it would likely be of comparable size to the current project. Every effort should be made to supplement USAID funds with local currency funding from the outset.

4. Medium-Term Strategy

The co-management model has been shown convincingly to work in the floodplain fisheries sector and shows promise of achieving the same result in forest protected areas, provided in the latter case that well-targeted support can be continued beyond 2008. The time may now be ripe for Bangladesh to generalize this experience into a *Protected Areas System Strategy*. Given USAID's lead role in this subject over the past several years, it would be logical for the agency to support the government in developing such a strategy. The National Biodiversity Strategy and Action Plan of 2005 would provide one foundation for the proposed work. Another key ingredient would be the 2004 assessment of the FD's capacity to manage PAs prepared under NSP[4]. This analysis includes a detailed action plan for institutional changes and capacity building activities. Additional work, however, is needed to articulate the roles of the FD, DoF and DoE in future biodiversity protection and to lay out the steps needed to ensure consistent approaches for forest and wetland PAs, and possible future additions such as coastal and marine sanctuaries. A possible outcome in the long run would be a single government

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2 The World Bank is showing interest in a substantial project in the inland capture fisheries area.

3 This leaves aside the question of sawn timber, which is beyond the scope of NSP and this evaluation. However, Bangladesh should be considering options such as the removal of tariff and non-tariff barriers on imported timber and wood products, in order to ease the pressure on its domestic forests.

4 "Assessment of the Forest Department's Institutional Organization and Capacity to Manage the Protected Areas System of Bangladesh", NSP, August 2004.

agency to manage PAs; the framework most commonly seen in other countries is a national parks agency.

By supporting the development of a protected areas system strategy, USAID would be able to identify the critical challenges, which call for its support at the project level over the medium term. While it would be premature to forecast the scope of future projects resulting from adoption of a Protected Areas System Strategy, one might envisage further support of the NSP type – combining co-management with alternative income generation – for some or all of the remaining 14 forest PAs, plus possibly new PAs for wetlands, coasts or marine sanctuaries. However, this approach would entail a massive capacity building effort, given the problems noted in Appendix B in developing a management cadre for the NSP sites alone. This is all the more reason to stay the course on NSP, to provide a firm basis for future expansion.

Another project type which may fit USAID strategic objectives could be a program for carbon sequestration through plantations of various kinds (excluding fuelwood, obviously) – long-rotation timber, wetlands, mangroves, or riparian. The last may represent a more fruitful opportunity (compared to, say, roadside plantations, which have been the target of many projects), as relatively little appears to have been done up to now, apart from MACH. While such a project would probably involve the "mainstream" of the FD, which might be seen as a barrier, it would also present excellent prospects for a public-private partnership, in which US corporations may see advantages in leasing land for planting from the FD or private owners in return for carbon credits or offsetting carbon footprints.

RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

APPENDIX D – STATEMENT OF WORK

June 2006

THIS PUBLICATION WAS PRODUCED FOR REVIEW BY THE UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT.
IT WAS PREPARED BY WEIDEMANN ASSOCIATES, INC.

APPENDIX D: STATEMENT OF WORK

TYPE OF TASK ORDER

This is a Firm Fixed Priced Task Order, issued under RAISE PLUS Indefinite Quantity Contract (IQC) No. AEG-I-00-04-00010-00 with Weidemann Associates, Inc.

PURPOSE

The purpose of this task order is to procure the technical services through Weidemann Associates to conduct a thorough evaluation of the ongoing Environment Program in order to help USAID/Bangladesh in setting the course of its program implementation under the Mission's new strategic options. Specific objectives are to:

1. Evaluate the overall technical performance of the ongoing programs.
2. Suggest potential variations on interventions to improve the ongoing programs.
3. Recommend realistic strategic as well as programmatic options to help realign the programs to meet the requirements of the new Mission strategy as well as new developments in the environment sector in Bangladesh.

STATEMENT OF WORK

Background:

The Biophysical Setting

Bangladesh is situated at the downstream of the watershed of a sprawling inter-linked basin of three great river systems of the world – the Ganges, Meghna and Brahmaputra. Its extensive alluvial spread, rich water resources and biological diversity makes it one of the greatest natural resources regions anywhere. Yet, the country has one of the world's poorest populations. The situation presents an unacceptable paradox of poverty in the midst of plenty. Due to its unique biophysical setting – the juxtaposition of a large deltoid freshwater outlet and a large sea fan – Bangladesh, despite its relatively small size, is endowed with a surprisingly rich heritage of plant and animal species. Pressures on Bangladesh's biological patrimony are, however, intense and growing due to poor management of aquatic and terrestrial resources, population growth, overexploitation, indiscriminate and unplanned development of infrastructure, and agricultural expansion onto marginal lands. Loss of biodiversity is driven in large part by overall loss of critical habitat, which in turn results directly or indirectly from Bangladesh's expanding human population growth. Most of Bangladesh's tropical forests and almost all of the freshwater floodplains have been impacted by human activities that are particularly detrimental to the natural resource base.

USAID/Bangladesh recognizes that poor surface water management is leading to severe degradation of the aquatic and floodplain ecosystems. The (perennial) wetland habitats and ecosystems have lost connections with larger water bodies (rivers and canals) due to siltation and conversion of agricultural and homestead use. Massive deforestation has also taken place, with negative consequence for both diversity and production of tropical forest resources. In addition, and more alarmingly, degradation of floodplain and terrestrial upland has resulted in the degradation of aquatic ecosystems (both function and health) and important wetland habitats. As a result, both diversity and production of aquatic resources, including open water fish species has decreased drastically along with the diversity and production of tropical forest resources. Drastic reduction of aquatic resources has negatively impacted food security and income of the

poorest elements of the population. Reduction of forest biodiversity and production has negatively impacted food, fodder, medicine, and shelter and overall livelihood of poor people.

The Environment Program under the Mission Strategic Premise

In light of the three areas of greatest importance to the sustainability of economic growth in the country – **people**, **land** and **water**, USAID/Bangladesh's environment program is based on the globally learned lessons that simultaneous consideration of the resource, economic, and governance dimensions of natural resource management is critical for success. Natural resource management rests on the interaction of resource characteristics, policies, institutions, skills, and economic signals. Democracy – particularly voice for those whose resources may be exploited and degraded by outside actors – is critical for creating healthy ecosystems as well as creating local wealth. Experience demonstrates that programs that integrate **nature** (environmental management), **wealth** (economic concerns), and **power** (good governance) have promising results.

The program is testing whether an alternative model, involving low income resource users as key implementation agents, could effectively challenge the long tradition of a "command and control" approach to natural resource management in the country. The primary goal is to promote sustainable management of natural resources and biodiversity conservation. The program works to expand broad-based economic opportunities, in order to protect and enhance the assets and livelihoods of the natural resources dependent poor at a landscape level, keeping conservation of natural resources as central to implementation approaches. The program promotes co-management of natural resources in the wetland and natural forest habitats for the conservation and sustainable management of biodiversity and natural resources, invoking a transparent process of environmental governance through strengthening the civil society. By its very nature, co-management also addresses issues of local governance, economic opportunity and food security. Achieving the objective involves management of complex systems where ecological, economic, bureaucratic and socio-cultural elements form a web. The model involves the entire community, including government agencies at local level, elected local government and others with a stake in the resources. Activities, that are truly crosscutting, have been designed to be interwoven and complementary to each other, aiming at composing a success story of resources management through community-driven, multi-stakeholder participation.

USAID's current program to improve the management of open water and tropical forest resources focuses on five areas to help augment natural resources management in Bangladesh:

- Implement effective community-based resource management mechanisms;
- Improve select aquatic and tropical forest habitats and ecosystems;
- Implement select policies at the local level to create awareness among the stakeholders, local government and the national level policy-makers;
- Increase public awareness of the importance of natural resources management; and
- Improve institutional capacity for natural resources management in the government and concerned NGOs.

New USAID/Bangladesh Strategy: USAID/Bangladesh is at a strategic transition; a new Strategic Statement has been approved with four new SOs:

- *SO 11: More effective and responsive democratic institutions and practices;*
- *SO 12: Expanded economic opportunities created through equitable economic growth;*
- *SO 13: A better educated, healthier and more productive population*; and
- *SO 14: Improved food security and disaster mitigation, preparedness and relief.*

The Environment Program is operating under SO 11, More Effective and Responsive Democratic Institutions and Practices, specifically addressing the Program Component: Improve Sustainable Management of Natural Resources.

Current Program Elements

At present, two full-fledged activities are being implemented under the existing environmental strategy: Management of Aquatic Ecosystems through Community Husbandry (MACH), being implemented by Winrock International along with three local NGOs, and Co-management of Tropical Forest Resources in Bangladesh (now called the Nishorgo Support Project), being implemented by the International Resources Group (IRG) along with a number of local and international partners, including IUCN/Bangladesh and East West Center, Hawaii.

In addition, USAID/Bangladesh considers the Arannayk Foundation to be a close and active partner working in tandem with the bilateral projects towards developing a conservation constituency in Bangladesh. Starting from negotiating the debt-for-nature swap agreements to formally registering the Arannayk Foundation, USAID/Bangladesh played a pivotal role. The Arannayk Foundation (AF) – a not-for-profit company without share – was established in July 2003 under the Bangladesh Companies Act of 1994 as the "Tropical Forest Fund" pursuant to the Tropical Forest Conservation Act (TFCA) of 1998. The main objective of AF is to promote activities designed to conserve, maintain or restore the natural tropical forest and forest biodiversity of Bangladesh.

USAID is designing a new activity this year focusing on "Capacity Building for Protected Area Management" that will work with the Ministry of Environment and Forest and, among other GOB agencies, the Ministry of Finance to establish a protected area management system as well as develop institutional capacity for protected area management.

MACH Project (\$6.5 million for Phase I, \$3.1 million for Phase II with additional Local Currency Support of ~\$6 million equivalent): The Management of Aquatic Ecosystems through Community Husbandry (MACH) Project is essentially implementing the "open water" part of the SO. MACH – the pioneer of natural resources co-management in Bangladesh – is an innovative program to assist local communities and local government to establish participatory management and conservation of vital open water (floodplain wetlands and rivers) and fisheries resources. This program was being implemented under a Results Package Agreement between the Government of Bangladesh and USAID began in 1999, which was eventually folded into a SOAG in 2003 by concurrently terminating the RPA. The first phase of MACH ended in September 2003 and USAID entered into a new Cooperative Agreement with Winrock International for implementation of the three-year (October 2003 – October 2006) second phase of the Program. The program currently operates in three sites in the northeast of the country: Hail Haor located on the floodplains of Moulvibazar District; the Lower Turag-Bongshi River Basin in Gazipur District; and the Upper Kongshaw-Malijhee River Basin located in the wetland portions of Sherpur District. A brief summary of the achievements of MACH is provided in **Annex 1 of the RFQ**.

The Nishorgo Support Project (Co-management of Tropical Forest Resources in Bangladesh) (\$6.5 million for 2003-2008 with an additional Local Currency Support of \$3 million equivalent): The Nishorgo Support Project (NSP) is the principal mechanism through which USAID is implementing the "tropical forest" part of the program. Building upon experience in co-management of open water resources, USAID in 2003 began implementing an integrated approach for conservation of Bangladesh's fast-disappearing tropical forest resources. The NSP is designed to improve the conservation and management of increasingly rare tropical forests in Bangladesh through institution of an improved governing structure at the level of Protected Areas. A more transparent, open and participatory governance of these Areas is to be led by the Forest Department, in partnership with local poor citizens. The Project seeks to

develop this governance model at pilot sites that can then be replicated throughout Bangladesh's entire system of 19 Protected Areas, including National Parks, Wildlife Sanctuaries and Game Reserves. NSP focuses on: (1) development of a co-management planning and implementation model for selected Protected Areas (National Park, Wildlife Sanctuary and Game Reserve); (2) interventions and investments for improved ecosystems management; (3) encouragement of a positive policy environment for co-management (4) creation of a conservation constituency in Bangladesh; and (5) ensuring institutionalization of co-management.

The initial pilot sites include the five landscapes around: (1) the Lawachara National Park (Moulavibazar District); the Rema-Kalenga Wildlife Sanctuary in Habiganj District; the Satchuri National Park (proposed) (Habiganj District); the Chunati Wildlife Sanctuary (Chittagong District); and, the Teknaf Game Reserve (Cox's Bazar District). A sixth pilot site will be added prior to the end of year three of implementation. A brief summary of the achievements of NSP is provided in **Annex 2 of the RFQ**.

Scope of Work

A. Review and Coordination

The contractor shall, at a minimum, address the following coordination principles:

- The contractor shall coordinate with the Director of the Economic Growth, Food and Environment Office, Director of the Program Office, the Democracy and Governance Program, the MACH program and the NSP.

- The contractor shall also coordinate with the Senior Forestry and Natural Resources Management Advisor of the USAID/Washington's Asia and Near-East Bureau and the EGAT Biodiversity Team as well as the Land Resources Management Team.

- The contractor shall review all available documents related to SO6, including those produced by MACH, and the NSP. The contractor shall also review all relevant documents related to environment and natural resources of Bangladesh including, but not be limited to: Bangladesh Forestry Master Plan, Bangladesh National Environment Management Action Plan (NEMAP), Bangladesh National Conservation Strategy (NCS), National Biodiversity Strategy and Action Plan, National Water Policy, National Fisheries Policy, Fisheries Sector Review, Inland Capture Fisheries Strategy, and forestry and environmental legislation.

- The contractor shall have meetings with other donors and relevant projects that are playing key roles in the environment sector and will gain a keen understanding of the ongoing programs and processes. Of particular importance are the Sustainable Environment Management Program (SEMP) funded by UNDP, Fourth Fisheries Project funded by the World Bank, Coastal and Wetland Biodiversity Management Project funded by UNDP/GEF and Forestry Sector Project funded by ADB.

- The contractor shall have to work closely with the lead local and national NGOs engaged in natural resources management, including the Board of Director and the technical staff of Arannayk.

- The contractor will also be expected to work with appropriate representatives of the Government of Bangladesh, including the Ministry of Environment and Forest (MOEF), Ministry of Fisheries and Livestock (MOFL), Department of Fisheries, Bangladesh Forest Department (FD) –

particularly the Nishorgo Program and the Wildlife Circle, Department of Environment (DOE) – particularly the Biodiversity and Natural Resources Division, and Bangladesh Forest Research Institute (BFRI).

- The contractor will be expected to take adequate field visits to as many MACH and NSP project sites in Bangladesh as necessary.

B. Tasks

1. Review the progress and performance of the MACH project as it is nearing completion under the current Cooperative Agreement. The review will focus on, but not be limited to, addressing the following fundamental strategic questions:

    a. Is the implementation of the Exit Strategy realistic enough to ensure the stability and management capacity of the Resource Management Organizations in sustaining the co-management approach?

    b. Given the fact that an enormous database covering biological, socioeconomic and hydrological aspects of wetland co-management has been created, has MACH done sufficient "knowledge management" in terms of dissemination of the information for the policy-makers, researchers and the general public? What are the institutional arrangements MACH has come up with to maintain and manage the database?

    c. Has MACH done enough to prepare the Department of Fisheries and the Ministry of Fisheries and Livestock to sustain and scale up the wetland co-management approach?

    d. Given the fact that MACH – working as a pioneer – has been successful in leveraging some initiatives, has the message resonated enough? Can USAID expect that the co-management approach will automatically be adopted and scaled up by the GOB and other donors after MACH ends in October 2006?

    e. If the decision is made by USAID to extend MACH, how may the existing structure of MACH implementation be modified, particularly beyond October 2006, to make the program focus more on institutionalizing and scaling up of the co-management approach?

2. Review the progress and performance of the Nishorgo Support Project as the project is on the third year of implementation. The review will focus on, but not be limited to, addressing the following fundamental strategic questions:

    a. Given the fact that NSP had some early policy-level success in institutionalizing forest protected area co-management – particularly the Forest Department launched a protected area management program – Nishorgo, is NSP is on the right track in balancing its efforts between policy advocacy and field implementation?

    b. Given the fact that NSP has made extensive adjustments to the work plan, without compromising the technical scope of the project, especially in an effort to accommodate the habitat restoration efforts as spelled out in the MOEF's Project Proposal (PP), is NSP on the right technical and strategic track and implementation pace to achieve the project targets?

    c. Given the fact that NSP is making significant strides (1) in creating much needed baseline information on protected areas to identify appropriate points of intervention, (2)

conducting feasibility studies for identifying enterprise potential for nature-based industries with appropriate market linkages, and (3) conducting applied research that will help strengthen protected area management capacity, is NSP on the right track in managing all those efforts in a balanced way to address the issues of economic growth, governance and livelihood security?

d. NSP is tasked with converting paper parks into true protected areas. Are field activities, including social mobilization efforts, aligned appropriately to ensure achieving the ultimate technical goal? Are the assumptions realistic and valid?

3. Conservation of natural resources is central to the current and future implementation approaches of the USAID environment programs that work to expand broad-based economic opportunities at a landscape level, giving the poor a central role in the planning and implementation process and also encourages participation of other members of the community who have a stake in the management and utilization of natural resources, including local government and private enterprise. The ultimate goal of the program is to establish a true protected area management system. Where is USAID in achieving the goal? Can you suggest a roadmap, in light of the current implementation and the Mission's new strategic approach, for the environment program for FY 2006-2010?

4. The Arannayk Foundation will not be part of the evaluation. The USAID Environment Program has two full-fledged ongoing projects. An evaluation of these projects –MACH and Nishorgo Support Project – should provide sufficient information regarding the future of USAID/Bangladesh's environment program."

C. Deliverables

The following deliverables are required:

1. Workplan: The contractor shall prepare the workplan in consultation with and approval of the CTO within seven days of commencement of the task order. During the workplan preparation period, the CTO will explain what USAID envisions to achieve. The workplan must be submitted in both electronic form and hard copies (drafts - electronic and at least two hard copies, final - electronic and at least five hard copies).

2. A complete evaluation of the MACH program, including recommendations for further interventions and/or technical adjustments if need be, that is acceptable to USAID. A draft evaluation shall have to be submitted to the CTO for review and comments within 30 days of commencement of field work. The final evaluation, addressing the comments, shall have to be submitted on or before the completion date of the task order. The evaluation must be submitted in both electronic form and hard copies (drafts - electronic and at least three hard copies, final - electronic and at least 10 hard copies).

3. A complete evaluation of the NSP, including recommendations for technical adjustments if need be, that is acceptable to USAID. A draft evaluation shall have to be submitted to the CTO for review and comments within 30 days of commencement of field work. The final evaluation, addressing the comments, shall have to be submitted on or before the completion date of the task order. The evaluation must be submitted in both electronic form and hard copies (drafts - electronic and at least three hard copies, final - electronic and at least 10 hard copies).

4. An evaluation of the overall implementation of the current environmental strategy and a roadmap, in light of the current implementation and the Mission's new strategic approach, for the

environment program for FY 2006-2010. USAID does not expect the Contractor to provide a complete design. All USAID is interested in an annotated list of plausible future directions for the program, which can serve as a basis for the design(s) of future program(s)]. A draft report shall have to be submitted to the CTO for review and comments within 30 days of commencement of field work. The final evaluation, addressing the comments, shall have to be submitted on or before the completion date of the task order. The report must be submitted in both electronic form and hard copies (drafts - electronic and at least three hard copies, final - electronic and at least 25 hard copies).

5. The deliverables include:
   a. A draft work plan
   b. A draft report
   c. A final report

D. Anticipated Schedule of Deliverables

Time	Tasks
Week 1- April 3	Task order signed by March 29. Work starts. The team receives all available documents (MACH, Nishorgo). CTO and team leader discuss work plan. CTO provides list of Washington area to the expat team. Review of documents provided by the mission.
Week 2- April 9	Team prepares draft work plan. Expat team meets in Washington DC. (two days). Expat team submits an electronic draft work plan for CTO approval. CTO sends comments on the draft work plan. Review of documents provided by the mission. Expat team responds to comments.
Week 3- April 16	Expat team travels to Dhaka. Meet with CTO. Meets with MAH and Nishorgo Team Review documents. Draft work plan is finalized.
Week 4- April 23	Meet with Forest, Fisheries Dept, and Environment. Conduct field visit at MACH and NSP sites in the northeast
Week 5 April 30	Conduct second field trip focusing on MACH. Meets with NGOs & Donors Agencies.
Week 6 May 7	Conduct third field trip on MACH. Discuss issues with MACH & Nishorgo Debriefing presentation at USAID/Bangladesh.
Week 7 May 15	CTO sends comments on the draft report within I week
Week 8- May23	Team incorporates and finalizes the draft report. The final report is sent to CTO within a week

TERM OF PERFORMANCE

Work shall commence in o/a April 3, 2006 and be completed by o/a June 2, 2006.

USAID
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RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

APPENDIX E – LIST OF KEY DOCUMENTS

June 2006

This publication was produced for review by the United States Agency for International Development.
It was prepared by Weidemann Associates, Inc.

APPENDIX E: LIST OF KEY DOCUMENTS

SERIAL NO.	NAME OF THE DOCUMENTS
MACH Documents	
1.	MACH Project Profile, August, 2001
2.	MACH II Annual Report, November 2004-October 2005, Government of Bangladesh/ USAID, December 2004.
3.	MACH-II Briefing Packet for USAID Evaluation Team, Part 1-Achievement, Influence and Future, March 2006.
4.	MACH-II Briefing Packet for USAID Evaluation Team, Part 2-Performance Monitoring, March 2006.
5.	MACH Completion Report, Volume 1, Main Report
6.	Fourth Fisheries Project, Bangladesh: Looking Back on Five Years of Lessons and Learnings, Department of Fisheries (date).
	Key Lessons and Learning from Inland Open-Water Fisheries, FFP Report No. 4, Department of Fisheries, Bangladesh (undated).
	Peter Hislaire, A Strategic Proposal on Community Based Sustainable Management of Tanguar Haor, Swiss Development Cooperation, December 9, 2005.
	Inland Capture Fisheries Strategy: Summary, Department of Fisheries, Banagladesh, September 2004.
	Action Plan for the Inland Capture Fisheries Sub-Strategy, Department of Fisheries, Bangladesh (undated).
	Summary List of MACH I and MACH II Reports, Winrock Consortium (undated).
NSP documents	
1.	NSP Project Pro-forma, Government of the People's Republic of Bangladesh, Ministry of environment and Forest, October 2005
2.	Operationalization of Co-Management In Protected Areas, Bangladesh Forest Department, GoB and Nishorgo Support Project, International Resources Group
3.	Core Indicators For Protected Areas Monitoring Report-Part-1
4.	NSP Year 1, 3rd Quarter Report: For the Period October 23, 03 to February 29, 04
	NSP First Annual Progress Report: June 1 2003 to May 31 2004
5.	NSP year 2, 3rd Quarter Report December 1, 04 to February 28, 05
	NSP Second Annual Progress Report: June 1 2004 to May 31 2005.
6.	NSP 3rd Year Work Plan, June 2005
6.	NSP Year 3 Quarter 3 Progress Report, December 1, 2005 to February 28, 2006
7.	NSP Year 3, Quarter 1Progress Report June 1, 2005 to August 31, 2005
8.	Nishorgo Vision 2010, Forest Department, Ministry of Environment and Forest
9.	Designing a Co-management Model for Protected Areas in Bangladesh, Monoj Kanti Roy, CF, Central Circle, Forest Department, Bangladesh, August 5-21. 2004
10.	Management Plan For Lawachara National Park, 2006
	Assessment of the Forest Department's Institutional Organization and

SERIAL NO.	NAME OF THE DOCUMENTS
	Capacity to Manage the Protected Area System of Bangladesh, NSP, August 2004.
	Pre-Assessment of Enterprise Development Opportunities Associated with Pilot Protected Areas of the Nishorgo Support Project, NSP, June 2004.
	Site-Level Field Appraisal for Protected Area Co-Management: Satchari Reserve Forest, NSP, August 2004.
	Management Plans for Satchuri National Park (Proposed), NSP, April 2005.
	Towards Better Forest Management, Jafar Ahmed Chowdhury, Oitijjhya, Dhaka, February 2006, ISBN 984-776-455-7.
	Reports and Other Digital and Non-Digital Outputs of the Nishorgo Support Project, IRG Consortium, April 12, 2006.
Other documents	
1.	USAID/ Bangladesh's Strategic Plan for Improved Management of Open Water and Tropical Forest Resources, FY 2002-2008, USAID/ Bangladesh (undated).
2.	USAID/ Bangladesh Strategic Statement FY 2006-2010, USAID/Bangladesh, September, 2005
	Program Design: Co-Management of Tropical Forest Resources in Bangladesh, Strategic Objective 6 (Environment) Team, USAID/ Bangladesh (undated).
	Unlocking the Potential: National Strategy for Accelerated Poverty reduction, General Economics Division, Planning Commission, Government of Bangladesh, October 30, 2005.
	Bangladesh Country Water Resources Assistance Strategy, Bangladesh Development Series No. 3, World Bank, Dhaka, December 2005

RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

APPENDIX F – LIST OF KEY PERSONS MET

June 2006

THIS PUBLICATION WAS PRODUCED FOR REVIEW BY THE UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT.
IT WAS PREPARED BY WEIDEMANN ASSOCIATES, INC.

APPENDIX F: LIST OF KEY PERSONS MET

Serial no.	Name of the person	Designation/Organization	Email
Management of Aquatic Ecosystems through Community Husbandry (MACH)			
	Darrell L. Deppert	Chief of Party, MACH/ Winrock	Tel: 880-2-8814598 01711-530305 ddeppert@winrockbd.org
	Paul Thompson	Senior Natural Resources Adviser, MACH/ Winrock	01713-017825 pthompson@winrockbd.org
	Mujibur Rahman	Senior Fellow, MACH/ BCAS	01711-565031 mujibur.rahman@bcas.net
	Esha Husain	Communications Strategy Specialist MACH/ CNRS	0187-106626 eshahusain@winrockbd.org
	Md. Daniel Bhuiyan	Institutional Development Specialist, MACH	01711-593592 db@winrockbd.org
	Md. Mizanur Rahman	Programme Officer, MACH/ CARITAS	01711-400275 cfp@bangla.net
	Nishat Shahid Chowdhury	Research Fellow, MACH/ BCAS	01716-808520 nishat.chowdhury@bcas.net
	S. N. Choudhury	National Coordinator, MACH/ BCAS	01711-541784 snc@winrockbd.org
	M. Mokhlesur Rahman	Executive Director, MACH/ CNRS	01711-549460 mokhles_cnrs@dominox.com
	Ali Akbar Bhuiyan	Habitat Restoration Specialist, MACH	880-2-8814598
	Mahbub. A. Mahmood	Manager ISMP Project, MACH/ BCAS	880-2-8814598 0191408108 Mahbub.mahmood@bcas.net
	Sheikh Md. Ziaul Haque	Site Coordinator, Sherpur, MACH/ CNRS	880-2-9886700 cnrs@dominox.com
	Erin Hughes	Senior Program Officer, Winrock International	1-501-280-3000 ehughes@winrock.org
	Darlene Middleton	Program Associate, Winrock International	1-703-525-9430 dmiddleton@winrock.org
	Daniel J. Gudahi	Contracts Officer, Winrock International	1-501-280-3058 dgudahi@winrock.org
Nishorgo Support Project (NSP)			
	Philip J. Decosse	Chief of Party, NSP/ IRG	880-1-987-3229 Philip@irgbd.com
	Mehrin A. Mahbub	Communication Specialist, NSP	01199-808012 mehrin @irgbd.com
	Khaled Rahman	Director, Admin & Finance, NSP	01713-011253 khaled@irgbd.com
	Kazi M. A. Hashem	Technical Coordinator, NSP	01711587516 hashem@irgbd.com
	Nasim Aziz	Ecological and Social Monitoring Specialist, NSP	01715-032875 nasim@irgbd.com
	Mohammad Asif Shams	Enterprise Development Specialist , NSP	0187-545939 asif@irgbd.com
	Shamsul Huda	Local Governance and Capacity Building Specialist, NSP	01711-868178 huda@irgbd.com
	Ram Sharma	Protected Area Management Specialist, NSP	880-2- 9873229 01713-011563 ram@irgbd.com
	Md. Tariqul Islam	Field Coordinator, NSP	01716089652
	Dhruba Kanta Kundu	Participatory Monitoring Officer,	880-2-08626-698

Serial no.	Name of the person	Designation/Organization	Email
		NSP	01712043472
	M. Monirul H. Khan	Wildlife Specialist, NSP	880-2-7708478 (ext. 1329) 880-1716-067769
	Douglas J. Clark	Corporate Vice-President, International Resources Group (IRG)	1-202-289-0100 dclarkirgltd.com
	Robert T. Winterbottom	Senior Manager, Environment and Natural Resources Division, IRG	1-202-289-010 bwinterbottom@irgltd.com
	George F. Taylor II	Senior Manager, Environment and Natural resources Division, IRG	1-202-289-0100 gtaylor@irgltd.com
	Joan Ablett	Communications Manager, IRG	1-202-289-0100 jablett@irgltd.com
United States Agency for International Development (USAID)			
	Richard Steelman	Deputy, Office of South Asian Affairs	1-202-712-0518 rsteelman@usaid.gov
	John O. Wilson	Senior Environmental Officer	1-202-712-4633 jwilson@usaid.gov
	Mary Melnyk	Senior Advisor, Natural Resources Management	1-202-712-4906 mmelynk@usaid.gov
	Barbara A. Best	Coastal Resources and Policy Advisor	1-202-712-0553 bbest@usaid.gov
	Richard Volk	Coastal and Aquatic Resources Advisor	1-202-712-5373 rvolk@usaid.gov
	Gene V. George	Mission Director, USAID/ Bangladesh	880-2-885 5500 ggeorge@usaid.gov
	Beth Paige	Deputy Mission Director, USAID/ Bangladesh	bpaige@usaid.gov
	Todd M. Sorenson	Director, Office of Demo-cracy, Governance and Education, USAID	880-2-885 5500-2798 tosorenson@usaid.gov
	Paul Andrew Sabatine	Director, Program Office, USAID/ Bangladesh	880-2-885 5500-2552 psabatine@usaid.gov
	Anne Williams	Office Director, Economic Growth, Food and Environment, USAID	880-2-8855500-2381 01711593253 awilliams@usaid.gov
	Azharul H. Mazumder	Environmental Team Leader and Cognizant Technical Officer, USAID	880-2-885 5500-2540 email: azmazumder@usaid.gov
	Alia Islam	Programme Assistant, USAID/ Bangladesh	880-2-885 5500-2721
	Winston H. Bowman	Regional Environment Director, USAID/ Asia	662-263-7469 wbowman@usaid.gov
	Apichai Thirathon	Senior Program Development Specialist, Regional Environment Office, USAID/ Asia	662-263-7471 athirathon@usaid.gov
	Piyachatr Pradubraj	Program Development Specialist, Regional Environment Office, USAID/ Asia	662-263-7463 ppradubraj@usaid.gov
Government of Bangladesh			
	Kamrul Hasan	Secretary, Ministry of Fisheries and Livestock	880-2-7164700 fislivsec@moestab.gov.bd
	Fakrul Islam	Deputy Secretary, Ministry of Fisheries and Livestock	880-2-7169563
	Martuza Ahmed	Deputy Secretary, Ministry of Fisheries and Livestock	880-2-7162783 mar_tuza@yahoo.com
	Rokeya Sultana	Joint Secretary, Ministry of Fisheries and Livestock	880-2-7161977 rokeya0307@yahoo.com
	Mohammad Ayub	Senior Assistant Secretary,	880-2-7161977

Serial no.	Name of the person	Designation/Organization	Email
		Ministry of Fisheries and Livestock	
	Md. Nasir Uddin Ahmed	Director General Department of Fisheries	088-02-9562861
	Rafiqul Islam	Director (Inland Fisheries), Department of Fisheries	880-2-9571812 rafiq@fisheries.gov.bd
	Jafar Ahmed Chowdhury	Secretary, Ministry of Environment and Forests	880-2-7160481 secretary@moef.gov.bd
	Khandokar Azizul Islam	Senior Assistant Secretary, MoEF	880-2-7161676 knak@webbangladesh.com
	Md. Osman Gani	Chief Conservator of Forests, Forest Department	880-2-8828364
	Monoj Kanti Roy	Conservator of Forests, Wildlife and Nature Conservation Circle, Forest Department (NSP National Coordinator)	880-2-9886282 bforest@citechco.net
	Laskar Muqsudur Rahman	Division Forest Officer, Sylhet Forest Division	880-2-08626-262 01711455761
	Md. Modinul Ahsan	Assistant Conservator of Forest, Wildlife Circle, Moulvibazar Forest Range	01715455761
	Md. Harunur Rashid Khan	Assistant Conservator of Forest, Moulvibazar Forest Range	01711-455761
	Shyamol Roy	Beat Officer, Lawachara National Park	01718005422
	Mokhlesur Rahman	Forest Ranger, Satchari Range	
	Ishtiaq U. Ahmad	Deputy Conservator of Forest, Cox's Bazar	0341-63493
Donor Organizations			
	Mohinder S. Mudahar	Economic Adviser, World Bank, Bangladesh	880-2-8159001-28 mmudahar@worldbank.org
	S.A.M. Rafiquazzaman	Irrigation Engineer, World Bank, Bangladesh	880-2-8159001-14 srafiquzzaman@worldbank.org.bd
	M. Khaleq-uzzaman	Environmental Scientist, World Bank, Bangladesh	880-2-8159001-14 dkhaliquzzaman@worldbank.org.bd
	Mamunul H. Khan	Programme Officer, United Nations Development Programme	01715-015944 880-2-8113196 Mamunul.khan@undp.org
	Zahir Uddin Ahmad	Project Implementation Officer, Asian Develop-ment Bank, Bangladesh	880-2-8156000 zahmad@adb.org
	Yolande Wright	Environment and Livelihood s Advisor, Department for Inter-national Development, UK	880-2-8810800 Y-Wright@dfid.gov.uk
	Christian Poffett	Deputy Country Director, Swiss Agency For Development and Cooperation	880-2-8812392, 8814396 christian.poffet@sdc.net
	Asif Munier	Programme Officer, Swiss Agency For Development and Cooperation	880-2-8812392, 8814099 Asif.munier@sdc.net
Non-Government Organizations (NGOs)			
	Zahurul Karim	Executive Director, Arannayak Foundation	880-2-9873275 zkarim@arannayak.org
	Md. Abu Naser Khan	Senior Program Officer, Arannayak Foundation	880-2-9873275 (ext-105) anaser@arannayak.org
	Md. Abedul Haque Chowdhury	Manager, Finance and Administration	880-2-9873275 (ext-106) anaser@arannayak.org

Serial no.	Name of the person	Designation/Organization	Email
	Bimal Kanti Kuri	Deputy Director, Society for Social Service	0921-53195 sss@bol-online.com
	Edward L Webb	Associate Professor, Asian Institute of Technology	662-524-5585 ewebb@ait.ac.th
	Mark Sandiford	Program Manager, Regional Community Forestry Training Center for Asia and the Pacific	66-0940-5700x1218 omarks@ku.ac.th.
	Tim Redford	Director, Surviving Together, WildAid Foundation (Thailand)	662-204-2722 wildaid@ioxinfo.co.th
	William Schaedia	Coordinator, Surviving Together, WildAid Foundation (Thailand)	662-204-2719 bill@wildaidasia.org
Civil Society			
	G. P. Shuchiang	Muntry, Kashia Tribal, Magurchara Pungi, Moulvibazar	01711-467711 gshuchiang@yahoo.com
	Md. Shamsuzzaman	Chairman, Chunarughat, Habiganj	O1711353631
	Razzakurrrahman	Chairman, Shahjahanpur, Habiganj	01712263739

The evaluation would also like to acknowledge the several hundred other local elected and government officials, officers and members of project co-management organizations, officers and members of resource users' groups, NGO field staff, and villagers met, whose names were not recorded.

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RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

APPENDIX G – LIST OF PLACES VISITED

June 2006

This publication was produced for review by the United States Agency for International Development.
It was prepared by Weidemann Associates, Inc.

Appendix G: List of Places Visited

APRIL 14th	
AM	Peter Whitford and Brent Tegler arrive in Dhaka

APRIL 15th		
PM	Peter Whitford and Brent Tegler meet with the local experts, Dr. Anwarul Islam and Dr. Khairul Alam	
1600	Peter Whitford and Brent Tegler discusses evaluation parameters and work plan with Azharul Mazumder	Crystal Garden

APRIL 16th		
0930	Peter Whitford and Brent Tegler meet with Gene George and Beth Paige (Anne/Azhar)	Gene's Room
1100	Peter Whitford and Brent Tegler meet with Todd Sorenson, Anne Williams and Azharul Mazumder	DG office
1300	Meeting with the Chief Conservator of Forests at Forest Department (Anne/Azhar)	FD
1430	Evaluation Team meets with the MACH Team (MACH presentation, discuss work plan, field trips)	Winrock office

APRIL 17th		
0900	Evaluation Team meets with the Nishorgo Team (Nishorgo presentation, discuss work plan, field trips)	IRG office
1600	Meeting with the Secretary, Ministry of Environment and Forest	Secretariat
1730	Peter Whitford and Brent Tegler meet with Azharul Mazumder to finalize work plan	Crystal Garden

APRIL 18th		
0930	Meeting with the Director General, Department of Fisheries (Anne/Azhar/Mary)	Dept. Fisheries
1030	Meeting with the, Joint Secretary MOFL and the MACH National Project Director (Fakhrul Islam) at MOFL	MOFL
1500	Team meet with larger Program Office (Paul Sabatine and Angela Hogg) and others from USAID offices	3rd Floor

APRIL 19th to APRIL 23rd: Field trip, by road, to MACH and Nishorgo sites at Srimangal (includes weekend) (Azhar, Mary Melnyk)

SITE	PLACE	ACTIVITIES	REMARKS
APRIL 19TH: NSP (Satchuri NP)			
(Dhaka-Satchuri-Srimongal)	Teliapara	Popular Theatre Display on Biodiversity Conservation	

	Satchuri On way to Srimongal Srimongal NSP office	Short hike, West Bengal experiences sharing, FD discussions, Nishorgo Club AIG activities at Tiprapara, Ratanpur, Anatabad and Deorgach NSP presentation, Dinner and Cultural Event	
APRIL 20TH:	***Lawachara National Park***		
	Baghmara - Baligaon Kamalgonj Lawachara FRH Magurchara Punji Dolubari - Radhanagar	AIG activities, community patrolling Committee Meeting and Discussions with UNO Short hike with FD staff, teak tree enumeration Discussions with Forest Village Chief on Community Assets and Patrolling, Community Development School Community Patrolling and AIG activities	
18:30-19:30 or after dinner	Tea Resort	MACH Baikka beel Sanctuary film	
APRIL 21st:	***MACH (Hail Haor)***		
8:00-8:30	MACH site office	Briefing on MACH Sreemangal site and activities: a) Introduction and wetland resource & permanent sanctuary management, habitat restoration, achievements. b) AIGA & micro credit	
8:30-9:15	-	▪ Travel to Baragangina area	
9:15-9:45	On the way to Haor	▪ Visit to Resource Management Organization (RUG) near Haor	
9:45-10:00	-	▪ Travel to Baikka beel sanctuary site	

10:00-12:30	Baikka beel area	▪ Baikka beel Permanent Sanctuary observation and Resource Management Organization (RMO) plan discussion. • Fish catch monitoring discussion	
12:30-13:15		▪ Travel to MACH site office	
13:15-14:15	MACH Site Office	▪ Lunch/Prayer	
14:15-15:30	Khoiya beel	▪ Travel to to Khoiya beel	
15:30-16:15	Khoiya beel Ramedia RMO	▪ Khoiya beel habitat restoration through excavation. ▪ Discussion with Ramedia RMO members about management of resources & UP Chairman	
16:15-17:15	Kalapur Field Office	Travel to Kalapur Field Office	
17:15-18:15	Kalapur Field Office	Meeting with Kalapur Federation of Resource Users Group (FRUG) and discussion with the members about management of organization	
18:15-18:45	-	Return to Guest House	
APRIL 22nd	***MACH (Hail Haor)***		
8:00-8:15	Fulchhara	Travel from site office to Fulchhara	
8:15-8:30	Dhaka-Srimangal highway side	• Visit to Ful Chhara tree planting area and discussion with Chara management committee members	
8:30-8:45	Dumuria	▪ Travel from Fulchhara to Dumuria	
8:45-10:00	Dumuria	▪ Dumuria Resource Management Organization (RMO) meeting and discussion with the members	
10:00-10:30	Dumuria	▪ Discussion with a female monitor for household fish consumption	
10:30-11:00	Fayzabad	▪ Travel from Dumuria to Fayzabad	
11:00-11:30	Foyzabad	▪ Contour cultivation of pineapple at Foyzabad and, ▪ Discussion with farmers.	
11:30-12:00	Gandharbapur	▪ Travel from Fayzabad to Gandharbapur	
-	Mirzapur road side	▪ Planted riparian area on Joita chhara	
12:00-13:15	Gandharbapur	▪ Visit to see AIG activities of RUG members at : ▪ Gondharbapur plant nursery operated by a woman member,	

		▪ Panchaun tailoring training for youth.	
13:15-14:00	-	▪ Travel from Gandharbapur to MACH site office	
14:00-15:15	MACH site office, Sreemangal	Lunch	
15:15-15:30		MACH office to Caritas Trade School	
15:30-15:50	Caritas Trade school, Sreemangal	Visit to Caritas Trade School to see MACH youth trainees in different trades.	
15:50-16:10		Travel from Trade school to Sabujbug	
16:10-17:00	Sabujbag	Visit to Sabujbug to see the entrepreneurship interventions by RUG members in different trades. Discussion with RUG members.	
17:00-17:30	-	Return to Guest House	
Acronyms: RMO: Resource Management Organization formed under MACH RUG: Resource Users Group under MACH FRUG: Federation of Resource Users Group under MACH			
APRIL 23rd:	***NSP (Rema-Kalenga Wildlife Sanctuary)***		
	Kalenga/ Chonbari	Committee meeting, FSP-NSP linkages, AIG activities	
		Return to Dhaka	

APRIL 24th		
1100	Peter Whitford and Brent Tegler meet with Mary Melnyk, Anne Williams, Todd Sorenson and Azharul Mazumder to share field observations	DG office
1230	Steering Committee Meeting of NSP (Azhar & Peter)	Secretariat
1530	Meeting with the Executive Director, Arannayk Foundation	Arannayk Foundation

APRIL 25th		
1000	Meeting with the Secretary, Ministry of Fisheries and Livestock (all team/Azhar)	MOFL
1530	Team meet with Dr. S. Rafiquzzaman, Dr. Mahinder Mudahar, World Bank	World Bank

APRIL 26th to April 28th: Field trip, by road, at MACH sites at Sherpur and Kaliakoir (Mary Melnyk)

APRIL 26th:	***Sherpur Site, Sherpur***		
7:00		Departure from Dhaka for Sherpur	
11:00		Arrival at Sherpur Site Office	
11:00-11:15	Sherpur	Refresh	
11:15-12:00	Sherpur site office	Brief presentation of site and activities: a) Introduction, wetland resource management, habitat restoration, organizations, achievements b) AIGA, micro-credit	
12:00-13:00	Sherpur site office rest house	Lunch at site office's rest house	
13:00-14:30	On the way to Jhenaigathi	▪ Katakhali sanctuary observation. ▪ Plantation activities along the Katakhali canal. ▪ Discussion with RMO members. ▪ Riparian plantation at Paglarmukh and discussion with Chhara plantation committee.	
14:30-15:30	Upazila campus	Meet Jhenaigathi LGC members and discussion	
15:30-16:30	Upazila campus	▪ Ceremony of handing over RLF to Malijheekanda FRUG at Jhenaigathi.	
16:30-17:00		▪ Travel to Dainner Kur	
17:00-17:45		▪ Dainnerkur permanent sanctuary observation ▪ Meet RMO representatives and discussion on sanctuary management.	
17:45-18:30		Return to Hotel	
APRIL 27th:	***Sherpur Site, Sherpur***		
8:30 -9:30		Travel to Dholi-Baila complex, Jhenaigathi	
9:30-10:30	Dhali-Baila RMO office	Meet Dholi-Baila RMO and discussion.	
10:30-11:15	Dhali-balia beel	Dhali-Baila sanctuaries being managed by RMO.	
11:15-11:45	Kalibari	Travel to Kalibari from Dhali-Baila	
11:45-12:30	Kalibari	Visit to Kalibari poultry farm of a woman RUG and sharing of her experience.	
12:30-13:45		Travel to Moroshi Chhar plantation place. Visit plantation and discussion with the plantation committee.	

13:45-14:30		Travel to Sherpur town.	
14:30-15:30	Shepur	Lunch at Site Office, Sherpur	
15:30-17:30	Pakuria	Meeting with PDB FRUG. See some of the AIGA activities, by one Group.	
15:30-17:30	Tilkandi	Cane and bamboo handicrafts run by women RUG as AIGA and meeting with Tilkandi RUG.	
17:30-18:00		Return to Hotel.	
APRIL 28th:	***Sherpur Site, Sherpur***		
7:30-10:00	Netrokona	Travel to Netrokona Jalghaghutia Beel FMC	
10:00-11:15		See the intervention by MACH, discussion with FMC, SUFO, DFO on the activities	
11:15- 12:30		Travel to Mymensingh from Netrokona	
12:30-13:30	Rest House, Caritas Regional Office,	Lunch at Caritas Rest House, Mymensingh	
13:30-15:15		Travel to Dhaka from Mymensingh. Arrival in Dhaka.	
Acronyms; RMO: Resource Management Organization formed under MACH			

APRIL 30th		
1130-1230	Peter Whitford and Brent Tegler meet with Anne Williams, Todd Sorenson and Azharul Mazumder to share field observations	
	Meetings with MACH/Nishorgo partners	
0900-1000	Team meet with Jahiruddin of ADB (Anne+Azhar)	
1530	Team meet with Dr. S. Rafiquzzaman Dr. Mahinder Mudahar, World Bank (Anne+Azhar)	

APRIL 30th: Field trip Turag-Bangshi Site, Gazipur (2 Evaluation Team Members)

APRIL 30th:	**Turag-Bangshi Site, Gazipur**		
8:30		Departure from Dhaka	
9:30	Railway bridge	Travel along the Railway track up to bridge to see pollution and factory outlets	
10:30	Matikata	Visit to Matikata to see the extent of pollution around Ratanpur canal and Mokosh Beel.	
11:30		Visit Lalkhar kum sanctuary and confluence of Mokosh khal. Discussion with representatives of Mokosh & Turag RMO and concerned UP Chairman on impact of pollution.	
12:45	Safipur	Visit to Gumti Textile Industry and observed the production process. Visit Interstoff Textile Industry, discussion with management.	
15:00		Arrival in Dhaka	

May 1st:		
After 12 pm	Team meet with DFID (Anne + Azhar)	DFID

May 2-5: Field trip by air and road, to the Nishorgo southern sites

May 2nd:	***Dhaka-Cox's Bazar (by air)***		
	Whekeong-Teknaf Game Reserve (GR)	West Bengal experience sharing, Discussions with Eco-Rickshaw Promotors, Protection of Forest Regeneration Areas	
May 3rd:	***Teknaf GR***		
	Shilkhal and Teknaf	Kudumguha trail hiking, community patrolling discussions, AIG activities, Committee interactions and visit to Mochini eco-tourism complex	
May 4th:	***Chunoti WS***		
	Chunoti and Banskhali/Jaldi	At Chunoti discussions with CMC members, community patrolling groups, West Bengal visitors, Nishorgo Club members and NSP staff Observing AIG activities	

		At Banshkali visit to Chambal regeneration areas and discussion with FD and NSP staff	
May 5th: *Chunoti WLS (Cox's Bazar-Dhaka)*			
	Cox's Bazar	Meeting with NSP staff Departure for Dhaka	

May 7th:		
1030	Peter Whitford and Brent Tegler meet with Anne Williams, Todd Sorenson and Azharul Mazumder to share field observations. Discussion on draft conclusions	
AM	BRAC Director of Micro Finance	BRAC
AM	Grameen Bank- Deputy Managing Director	GB
1400	Team meet with Swiss Development Cooperation (Christian Poffett and Asif Munier) (Anne+Azhar)	SDC
1530	Team meet with Shireen Kamal Syed, Assistant Resident Representative, UNDP(Anne+Azhar)	UNDP

May 8th:		
AM	Team submits draft executive summary of the report to Azharul Mazumder. Peter Whitford and Brent Tegler meet with Anne Williams and Azharul Mazumder to share field observations. Discussion on draft conclusions and recommendations.	
1030-1200	Exit debriefing to Secretary, Ministry of Fisheries and Livestock	
After 1430	Exit debriefing at Forest Department	

May 9th:		
AM	Team submits draft executive summary of the report to Azharul Mazumder. Peter Whitford and Brent Tegler meet with Anne Williams and Azharul Mazumder to share field observations. Discussion on draft conclusions and recommendations.	
0930-	Exit debriefing at USAID.	

1030		
1100-1200	Exit debriefing with Mission Director and Deputy Director (Azharul, Todd and Anne)	

May 10th:	
	Peter Whitford and Brent Tegler depart for Bangkok.

May 11 – May 12: Meetings at Regional Development Mission/Asia programs

May 13 – Peter Whitford and Brent Tegler depart for USA

May 15 –CTO sends comments on draft report

May 22 –Team incorporates comments and sends final draft for CTO review

May 29th to June 6th – Team submits final report

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APPENDIX H - POWERPOINT PRESENTATIONS

June 2006

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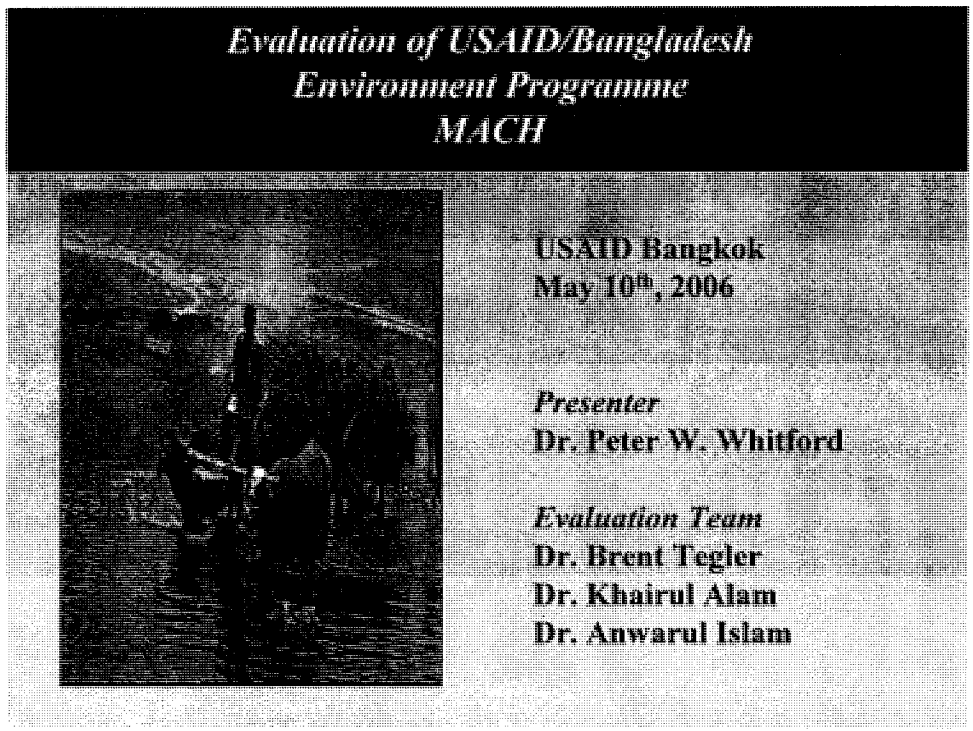
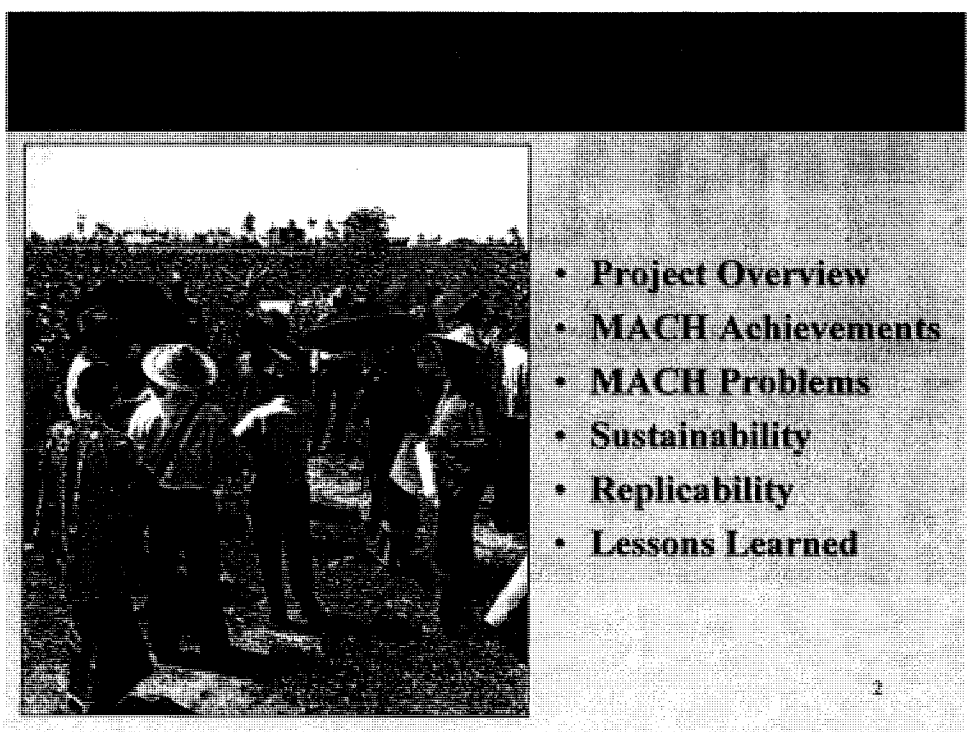
Appendix H: Powerpoint Presentations/Bangkok Meeting





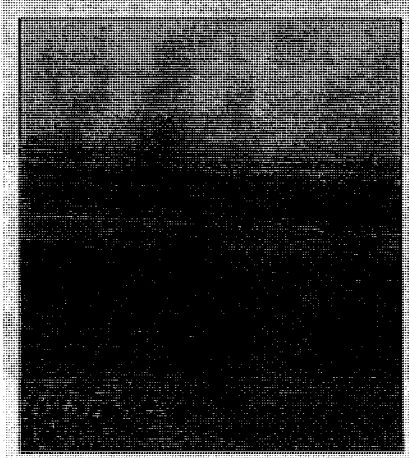
Project Overview

Three Project Sites

- **Hail Haor – 13,000 ha**
- **Turag-Bangshi – 10,000 ha**
- **Kanshi-Malijhi – 8,000 ha**

3

Project Components - 1



1. **Co-management**
   - **Establishment of 16 RMOs**
   - **Fisheries Management Plan**
   - **Leases (jalmahals)**
   - **Sanctuaries**
2. **Associated Infrastructure**
   - **Re-excavation of beels and khals**
   - **Fish aggregating devices**
   - **Meeting sheds**

1

Project Components - 2

3. Biodiversity Enhancements
   - ❖ Wetland and riparian reforestation
   - ❖ Hail Haor sanctuary
   - ❖ Ecotourism promotion
4. Alternative Income Generation
   - ❖ 5,100 members in 248 RUGs (167 male & 81 female)
   - ❖ 13 FRUGs established
   - ❖ Revolving Fund Tk 2 m for FRUG
   - ❖ Active loans Tk 16 m
   - ❖ Total savings Tk 7 m

2

Project Components - 3

5. Outreach Program
   - ❖ 9 sites under Fourth Fisheries Project
6. Inland Capture Fisheries Strategy

3

MACH findings (Achievements)

Co-Management

- **Project well designed**
- **Co-management model very appropriate and working well**
- **RMOs – structure, membership, meetings, minutes**
- **RMOs are managing resources**
- **LGC - working, being converted to UFC**
- **Endowment funds will support system**

1

MACH findings (Achievements)

Biodiversity Objectives

- **Sanctuaries – major, local**
- **Species diversity**
- **Biodiversity enhancements**
  - **–Riparian & wetland reforestation**
  - **–Pineapple pilot**
  - **–Nesting boxes and platforms**
  - **–Eco-tourism information**

2

MACH findings (Achievements)

Economic Impacts

- Clear fish production benefits – 140% increase
- Consumption increase – 52%
- B/C Ratio of 2.4
- Alternative Income Generation
  - Approach well designed - RUGs, FRUGs
  - Working capital/ micro-credit working
  - Short and long term training – sewing, metal work etc.
  - Recovery rate: 96%

3

MACH findings (Achievements)

Social Impacts

- Non-capture of benefits by elites
- Empowerment of women
- Equal access between Hindus and Muslims

Infrastructure

- Re-excavation, meeting sheds
- Riparian plantations

4

MACH findings (Achievements)

Institutional

- **Impact on Fisheries Department sub-optimal**
- **Appointment of Fisheries Department officers**
- **Consultant/NGO linkages**
- **Strong monitoring and evaluation system**
- **Use of MACH experience in developing Inland Capture Fisheries Strategy**

MACH findings (Problems)

Co-Management

- **RMOs established later need more support**
- **Lack of LGC in Moulvibazar Sadar**
- **Enforcement issues for some RMOs**
- **Outreach program has focused on infrastructure not co-management**

MACH findings (Problems)

Biodiversity Objectives

- Private land in permanent sanctuary
- No strategy for restoration of locally extinct species
- Lack of academic involvement
- Possible oxygen depletion in winter

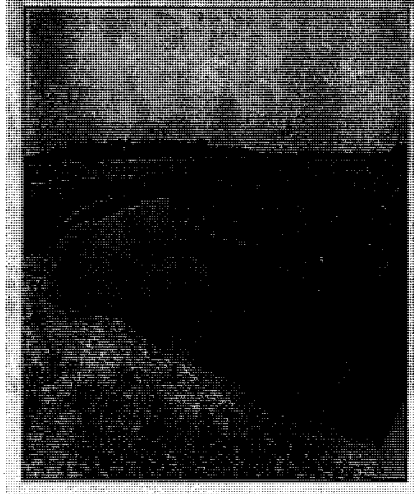
1

MACH findings (Problems)

- Non-systematic approach to watershed management
- Need to involve all stakeholders – Forest Department and tea estates
- Pineapple work should be turned over to extension service
- Ecotourism potential not yet fully promoted
- Pollution issues at Kaliakoir

2

MACH findings (Problems)



Economic Benefits

- **Need to evaluate short- and long-term AIG training**
- **Alternative to arms length relationship with other micro-credit NGOs**

3

MACH findings (Problems)

Social Impacts

- **Plantation committee membership and revenue sharing formulae**

Infrastructure

- **Incomplete infrastructure – major expenditure**
- **Use of B/C analysis**
- **Limited erosion impact of plantations**

4

MACH findings (Problems)

Institutional

- **Lease system (Ministry of Land) – need to forego revenue for co-management**
- **PP approval process**
- **Limited capacity of Fisheries Dept to support RMOs**

5

MACH findings (Problems)

- **Exit strategy to be articulated in next semi-annual report – in case project not extended**
- **Strategy for disseminating knowledge base, especially to field staff, to be spelled out in next semi-annual report**
- **Simplified monitoring system to be developed by October**

6

MACH findings (Sustainability)

- Largely sustainable as it stands
- Further support needed to lagging RMOs, RUGs, FRUGs
- UFCs and endowment funds need further support to be fully effective
- Highly desirable to find mechanism for spending remaining 416 b funds
- Strengthening of DoF

1

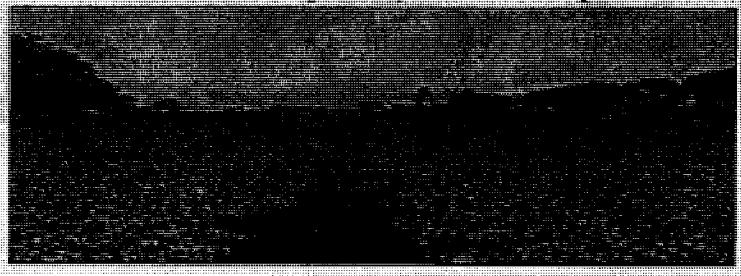
MACH findings (Sustainability)

- Team proposes 8 to 12 month extension of MACH - very specific and focused
- Extension would cover:
  1. Strengthening the DoF
  2. Completion of infrastructure with 416b funds
  3. Separation of RMOs and FRUGs into two (approximately equal) groups – stronger group to receive semi-annual monitoring and emergency support only; weaker group to continue to receive motivational and capacity building support

2

MACH findings (Sustainability)

4. Further outreach to FFP and other sites
5. Further training and support to UFOs and UFCs
6. Pollution control at Kaliakoir
7. Implementation of simplified monitoring and evaluation system
8. Identification of priority areas for expansion



3

MACH findings (Replicability)

- No external donor funding after October 2006 for important floodplain fisheries sector
- Challenge is to lower unit costs while maintaining quality
- Very positive economic returns
- Recognize that institution building at the local level is a time consuming and labor intensive process e.g. 4 to 6 years
- Possible ecosystem approach e.g. whole watershed
- Geographic expansion: in-filling (eg. Hail Haor), stepping out to adjacent areas, plus new pilots in other regions

4

MACH findings (Replicability)

- Expansion to whole country not recommended
- Do you need the whole MACH package?
  - Co-management and associated infrastructure as the core
  - AIG possibly by others e.g. major NGOs
  - Biodiversity enhancements possibly by others e.g. GEF, IUCN

5

MACH findings (Replicability)

- More central role of Dept of Fisheries in a larger project
- Possibility of USAID providing TA input to a loan project and/or solely funding a bridge project
- Use of instruments like WB's Adaptable Program Lending (APL) to divide a long-term program into phases with clear performance indicators and triggers for moving from phase to phase

6

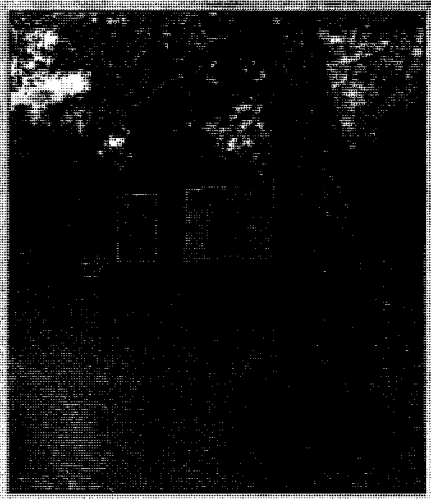
Lessons Learned

1. **Restoration of wetlands in Bangladesh both to restore biodiversity and to improve the livelihoods of the many poor people who depend on them is very feasible. Moreover, it can lead to attractive economic rates of return.**

2. **Co-management has been found to be highly effective in balancing the interests of the various stakeholders in wetland natural resources. However, it is a slow and staff intensive process and no "quick fixes" are available if sustainability is to be ensured.**

3. **A pilot project implemented outside the normal government structure can assure transparency and expedite implementation. However, the consequent low impact on government capacity can impede replication.**

USAID Environment Program Evaluation
Nishorgo Support Project (NSP)



USAID Bangkok
May 10th, 2006

Presenter
Dr. Brent Tegler

Evaluation Team
Dr. Peter Whitford
Dr. Khairul Alam
Dr. Anawarul Islam

Nishorgo Support Project - Introduction

Project Concept and Strategy

- **NSP is led by the Forest Department with technical and financial support of USAID**
- **Intent is to support a co-management model of Protected Areas (PA) to achieve biodiversity conservation**
- **Six PA sites are to be involved:**
  1. **Satchari National Park (240 ha)**
  2. **Lawachara National Park (1,250)**
  3. **Rema-Kalenga Wildlife Sanctuary (1,796 ha)**
  4. **Chunati Wildlife Sanctuary (7,761 ha)**
  5. **Teknaf Game Reserve (11,615 ha)**
  6. **yet to be determined**

Nishorgo Support Project - Introduction

NSP Co-management Framework

- **National Steering Committee (relevant high level GoB officials)**
- **Co-management Council (one or more at each PA, 40-60 members local stakeholders and FD)**
- **Co-management Committee (smaller number of individuals selected from Council) – this will be the "working unit" for co-management**
- **Forest User Groups (several groups formed of poor/ultra poor living around/within each PA) – this will be the target for Alternate Income Generation**

3

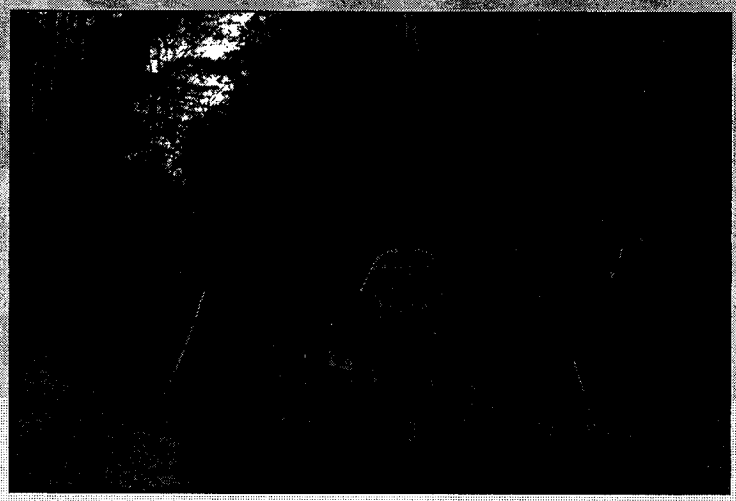
Nishorgo findings - Achievements

Co-Management

- **Government Orders have given official status to the Co-Management Councils and Committees and will allow revenue sharing**
- **Co-Management Councils and Committees recently formed and have begun meeting**
- **There was evidence of a greater sense of ownership among the people**
- **Bringing FD and community together is represents a significant change in status quo**
- **Joint FD and community patrols appear to have reduced illegal felling**
- **West Bengal study tour FD & CMC a great success**

4

Nishorgo findings - Achievements



5

Nishorgo findings - Achievements

Biodiversity Objectives

- **Declaration of Satchari as a National Park**
- **PA management plans submitted to FD for approval**
- **Publicity materials and sign boards**
- **Training of some eco-guides**
- **Trail construction and signage started**
- **Infrastructure being planned – visitor centers, entrance gate, *etc.* to attract and educate public**
- **Folk theatre presentations underway**
- **Monitoring of indicator birds, basal area and photo monitoring initiated**
- **Nishorgo Vision 2010 completed by FD**

6

USAID
FROM THE AMERICAN PEOPLE

RAISE PLUS-LIMITED SCOPE OF WORK

FINAL REPORT

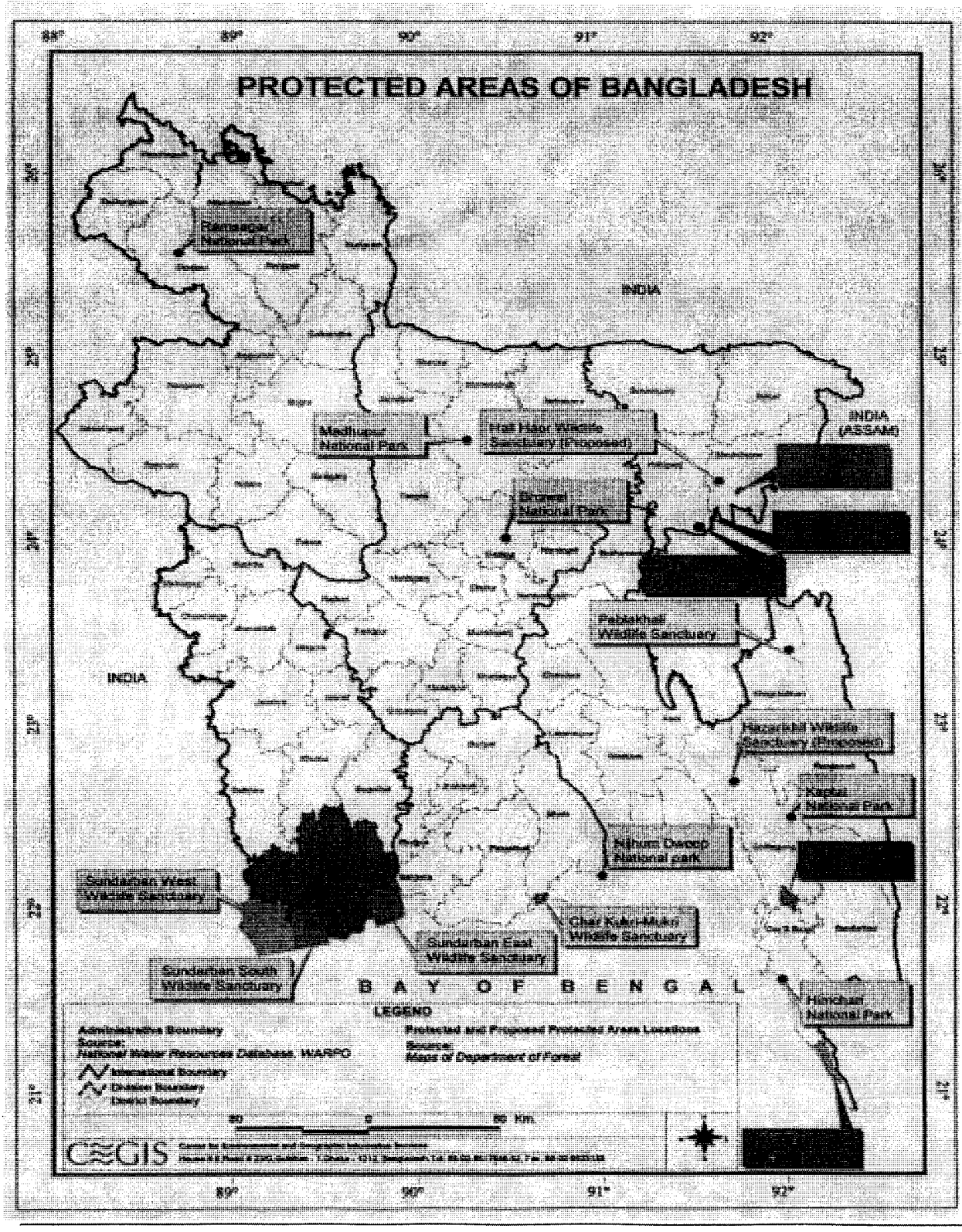
APPENDIX I- MAPS

June 2006

THIS PUBLICATION WAS PRODUCED FOR REVIEW BY THE UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT.
IT WAS PREPARED BY WEIDEMANN ASSOCIATES, INC.

APPENDIX I: MAPS

Location of NSP project sites (figure taken from Nishorgo - Protected Area Management Program of Bangladesh, NSP 2005)



Location of MACH project sites (figure taken from MACH II Annual Report November 2004 – October 2005)