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INTEGRATED PROTECTED AREA CO-MANAGEMENT (IPAC)

REVISED PERFORMANCE MONITORING PLAN

June 5, 2008 – May 31, 2010

Second Edition, October 13, 2010

October 13, 2010

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Revised Performance Monitoring Plan

Integrated Protected Area Co-management In Bangladesh

June 5, 2008 – May 31, 2010

October 13, 2010

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Introduction

This document presents the revised Performance Monitoring Plan (PMP) of the Integrated Protected Area Co-Management (IPAC) Project in Bangladesh. The PMP incorporates indicators related to the development of a coherent strategy for integrated protected areas co-management and biodiversity conservation, building stakeholder and institutional capacity and site specific implementation of co-management in five targeted clusters of sites in Bangladesh. Additional indicators are designed to monitor progress in improving the welfare of rural communities through reduced vulnerability and increased adoption to climate change, improved access to drinking water supplies, as well as the development of public-private partnerships, sustainable conservation financing, and strengthening of value chains associated with alternative income generation by communities participating in co-management.

This draft updated PMP will be finalized in consultation with USAID/Bangladesh's Environment team, and IPAC implementing partners and stakeholders.

Context and Purpose of the PMP

Under the reporting requirements for projects funded by USAID, a performance monitoring plan (PMP) must be prepared for the review and approval of USAID. This PMP updates the detailed definitions of the set of indicators to be used in assessing progress in the achievement of the results targeted by IPAC interventions and investments during the life of the project, and reports on achievements from June 2008 to May 2010.

This performance monitoring plan lays out indicators that are being measured on a quarterly and/or annual basis throughout the implementation of IPAC to establish trend lines for project performance, and to assess progress in achieving the annual targets agreed upon with USAID and IPAC stakeholders. **The proposed annual targets for each indicator are cumulative**.

Two types of indicators are designed to monitor the contribution of IPAC to globally important impacts targeted by USAID and to specific or customized indicators for monitoring IPAC interventions:

- *Common Indicators of the U.S. Foreign Assistance Framework*: these indicators are referenced in the statement of work for IPAC and are used to report on the contribution of IPAC to the achievement of results in priority program areas identified in the US Foreign Assistant Framework; this includes 12 indicators related to the impact of IPAC investments on biodiversity conservation, economic growth and poverty alleviation, climate change and water supply. A list of common indicators is shown in Table 1.

  Custom Indicators for IPAC: There are a number of indicators which are not explicitly cited in the IPAC statement of work but which are proposed in order to track and report on additional important project impacts and results, particularly intermediate results that contribute significantly to the longer term achievement of

the specified common indicators. A detailed list of 10 custom indicators is shown in Table 2.

The information collected by the performance monitoring activities of IPAC are fed into the overall program monitoring and performance reporting system for development assistance programs funded by USAID. The PMP data also help USAID, key stakeholders and the IPAC team to identify changes in the management and implementation of IPAC that may be required to ensure that the targeted results of IPAC are progressively achieved over the project duration.

Primary data for several indicators are collected from a variety of sources including IPAC staff and partners working on field level interventions, and by local and national government agencies involved with the IPAC program. Whenever applicable, PMP data are gender disaggregated. As necessary, the IPAC team provides assistance to selected government stakeholders to develop systems to track and report on program results.

Indicator reference sheets have been prepared for each indicator, to provide detailed information on the definition of each indicator, units of measure, their management utility, proposed methods for collecting and analyzing data including the frequency of data acquisition, location of supporting information and performance indicator values. The reference sheets also specify the relevant sources of information and identify the staff or institutions responsible for providing the data. A full set of indicator reference sheets is included as Annex A, along with explanatory notes and summary data from which the final indicators are compiled.

In preparing this revised PMP, the opportunity has been taken to review and revise the original set of targets set at the project outset in the light of adjustments made in planned project coverage during the first two years, which have tended to widen the scope; and in terms of methods and more realistic estimates of potential impacts. In some cases of custom indicators targets were not set earlier, and these have now been developed.

Table 1- Targets and Achievement for Common Indicators of the U.S. Foreign Assistance Framework for IPAC

Indicators		Baseline	2009	2010	2011	2012	2013
1: Number of hectares under improved natural resource management as a result of USG assistance.		134,268	T: 15,000 A: 0	T: 100,000 A: 201,500*	T: 256,500 A:	T: 716,500 A:	T: 716,500 A:
2: Number of hectares in areas of biological significance under improved management as a result of USG assistance.		23,918	T: 15,000 A: 0	T: 50,000 A: 147,553	T: 170,000 A:	T: 600,000 A:	T: 600,000 A:
3: Number of hectares of natural resources showing improved biophysical conditions as a result of USG assistance.	3a Land-scape only	na	T: 50 A: 50	T: 500 A: 329	T: 1,000 A:	T: 1,500 A:	T: 2,000 A:
	3b Core plus land-scape	48,817	T: 50 A: 70	T: 10,500 A: 553	T: 101,000 A:	T: 201,500 A:	T: 302,000 A:
4: Number of hectares in areas of biological significance showing improved biophysical conditions as a result of USG assistance.		2,673 intervention 23,918 condition	T: 0 A: 20	T: 10,000 A: 224	T: 100,000 A:	T: 200,000 A:	T: 300,000 A:
5: Number of policies, laws, agreements or regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance.		4	T: 2 A: 2	T: 9 A: 9	T: 12 A:	T: 15 A:	T: 20 A:
6 Number of people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance.		137,830	T: 100,000 A: na	T: 150,000 A: 23,968**	T: 200,000 A:	T: 350,000 A:	T: 500,000 A:
7: Number of people receiving USG supported training in natural resources management and/or biodiversity conservation.		32, 203	T: 5,000 A: 228	T: 10,000 A: 8,932	T: 15,000 A:	T: 18,000 A:	T: 20,000 A:
8: Number of people with increased adaptive capacity to cope with impacts of climate variability and change as a result of USG assistance.	8a: aware	None	T: 50,000 A: 450	T: 75,000 A: 129,597	T: 100,000 A:	T: 150,000 A:	T: 200,000 A:
	8b: adapted	None	T: 0 A: 0	T: 0 A: 0	T: 10,000 A:	T: 40,000 A:	T: 70,000 A:
9: Quantity of greenhouse gas emissions reduced or sequestered as a result of USG assistance (metric ton of CO_2 equivalent).		na	T: 3,000 A: 2,710	T: 30,000 A: 29,875	T: 150,000 A:	T: 200,000 A:	T: 540,000 A:
10. Number of people in target areas with access to improved drinking water supply as a result of USG assistance		0/na	T: 5,000 A: 0	T: 10,000 A: 6,694	T: 20,000 A:	T: 25,000 A:	T: 30,000 A:
11. Number of people receiving USG supported training in environmental law, enforcement, public participation, and cleaner production policies, strategies, skills, and techniques		0	T: 150 A: 35	T: 300 A: 453	T: 450 A:	T: 600 A:	T: 750 A:
12. Number of people receiving USG supported training in global climate change including framework convention on climate change, greenhouse gas inventories, mitigation, and adaptation analysis		0	T: 0 A: 0	T: 25 A: 378	T: 50 A:	T: 75 A:	T: 100 A:

Notes:
T = Target, A = Actual or Achievement, na = not available (not estimated, for example not applicable or likely to be very low in early project years)

* The landscape area estimates used in calculating targets are reported, a more accurate calculation of achievement is now in progress based on development of GIS and mapping the landscapes covered by CMOs and their management plans.

** Only new direct beneficiaries are counted, if all of the baseline direct beneficiaries achieve further gains the target in 2010 is met (but this requires verification) and data to quantify indirect beneficiaries is not yet available.

In Indicator 4 Biophysical condition targets are shown, but for 2009 and 2010 data is only available on intervention areas to restore or improve habitat since baseline surveys for biological indicators were then underway and changes in indicator species populations will be estimated in 2011 onwards as attributable changes can only happen after co-management is established and habitat starts to improve.

2009 to 2013 columns are in addition to the baseline, and are cumulative between years. Thus the actual total area under improved NR management (indicator 1) in June 2010 is 134,268 + 105,725 = 239,993 ha. However, the baseline status is not attributable to USG support through IPAC, and so areas or people counted in the baseline are only included in the IPAC indicator achievements if there are additional improvements in condition, benefits, etc. over and above the baseline level that can be attributed directly or indirectly to IPAC.

Table 2 - Targets and Achievement for Custom Indicators for IPAC

Indicators	Baseline	2009	2010	2011	2012	2013
13: Number of individuals benefiting from use of improved stove and bio-gas plants.	25,167	T: 5,600 A: 2,800	T: 19,600 A: 6,281	T: 28,000 A:	T: 36,400 A:	T: 44,800 A:
14: Market and non-market revenue generated from Protected Areas (in USD)	na	T: $250,000 A: $156,933	T: $800,000 A: $724,236	T: $1,200,000 A:	T: $1,600,000 A:	T: $2,000,000 A:
15: Increase in density of indicator bird species in wetland and forested landscapes compared with baseline	Occurred in previous projects	na	*			Forest >10% increase for all species Wetland >30% increase total count
16: Amount of leveraged financing for conservation (in millions of USD)	na	T: $4.30 A: $12.73	T: $8.60 A: $17.26	T: $12.90 A:	T: $17.20 A:	T: $21.50 A:
17: Number of individuals that are aware of a national protected areas network.	320,000	T: 50,000 A: 16,722	T: 500,000 A: 182.978	T: 1,000,000 A:	T: 2,000,000 A:	T: 2,500,000 A:
18: More active and decisive support for PA co-management from Forest Department, DOE & DOF and local government (% of PAs with substantive support in year)	na	T: none A: na-	T: none A: na	T: 60% A:	T: 80% A:	T: 100% A:
19: Number of communities with co-management agreements.	Forest – 260; wetland - 127	T: 20 A:	T: 100 A: 142	T: 250 A:	T: 400 A:	T: 400 A:
20: Number of training curriculums and modules designed and taught	0	T: 4 A: 1	T: 6 A: 10	T: 10 A:	T: 15 A:	T: 20 A:
21: Number of recorded visitors to targeted PAs.	na	T: 50,000 A: 70,000	T: 250,000 A: 252,525	T: 500,000 A:	T: 750,000 A:	T: 1,000,000 A:
22. Number of protected area management units with improved capacity for co-management	24	T: 5 A: na	T: 20 A: na	T: 25 A:	T: 30 A:	T: 45 A:

Notes:
T = Target, A = Actual or Achievement, na = not available (not estimated, for example not applicable or likely to be very low in early project years).

* intermediate year targets are not set as anticipated % changes are small and may fluctuate, but changes from baseline will be measured in subsequent years.

For indicator 15 monitoring will be conducted each year, achievements are likely only from 2011 onwards as a result of improved condition of PA habitats, and initial changes may be small; so only a final year target is shown.

For indicator 18 measurement will be at the level of co-management units (CMOs), so assessments are planned from 2010-11 onwards to reflect support once CMOs have been formed.

Additional Supporting Performance Monitoring Activities

The IPAC team uses performance monitoring as an integral part of our adaptive management approach to implement IPAC. Monthly reporting provides information on interim progress, and quarterly progress reports serves to collect data and assess trends in the achievement of indicator targets. Semi-annual team meetings are held with all implementing partners and key stakeholders to collectively assess progress in completing activities and deliverables scheduled in annual work plans, and in achieving results and targets established in the PMP.

IPAC's performance monitoring system is also integrated into the IPAC communication strategy. Information from the monitoring system serves to inform decision making and project management, as well as contribute to the identification and sharing of lessons learned, success stories and increased public awareness of IPAC impacts and program benefits.

Training and capacity building includes short courses and other assistance designed to increase the level of local participation in data collection and analysis for performance monitoring, and to increase institutional capabilities at all levels to manage the PMP data and to make effective use of it to enhance program results.

An Applied Research Small Grant Program established by IPAC and coordinated by the WorldFish Center makes small grants available to support applied research and field level surveys that directly contribute to the performance monitoring process, while building capacity among students, researchers and other stakeholders supporting PA co-management. The Small Grants program is overseen by a committee including respected conservationists, scientists and researchers, including an environmental expert from USAID, to ensure that the funded applied research activities are consistent with IPAC objectives and USAID's overall interests in environmental management and economic development.

Organization and Staffing of Performance Monitoring Activities

The IPAC COP oversee the analysis and overall reporting of performance monitoring data, and collaborates closely with USAID, GOB Project Directors and IPAC key personnel to review and assess data as it becomes available. In the field, Cluster Coordinators and Technical Advisors oversee the collection and periodic reporting of monitoring data in each Cluster. WFC oversees scientific quality and soundness of monitoring data, in collaboration with IRG M&E specialists and EWC.

The day to day operations of IPAC performance monitoring and applied research (PMAR) are being managed by the PMAR team, led by the PMAR specialist, and assisted by Dr. Paul Thompson (socio-economic advisor) and Dr. Golam Mustafa (biophysical advisor and Small Grants Manager mobilized by The WorldFish Center). Additional short term expertise in PMAR will be mobilized through IRG, WFC and the East West Center.

All protocols for information collection under the Project are reviewed by the Performance Monitoring and Applied Research Committee, chaired by the COP and coordinated by the PMAR Coordinator. The Committee's core members include Dr. Golam Mustafa and the

M&E socio-economic specialist consultant, although others may be requested to join the Committee on an ad hoc basis to review technical protocols specific to his/her areas of expertise.

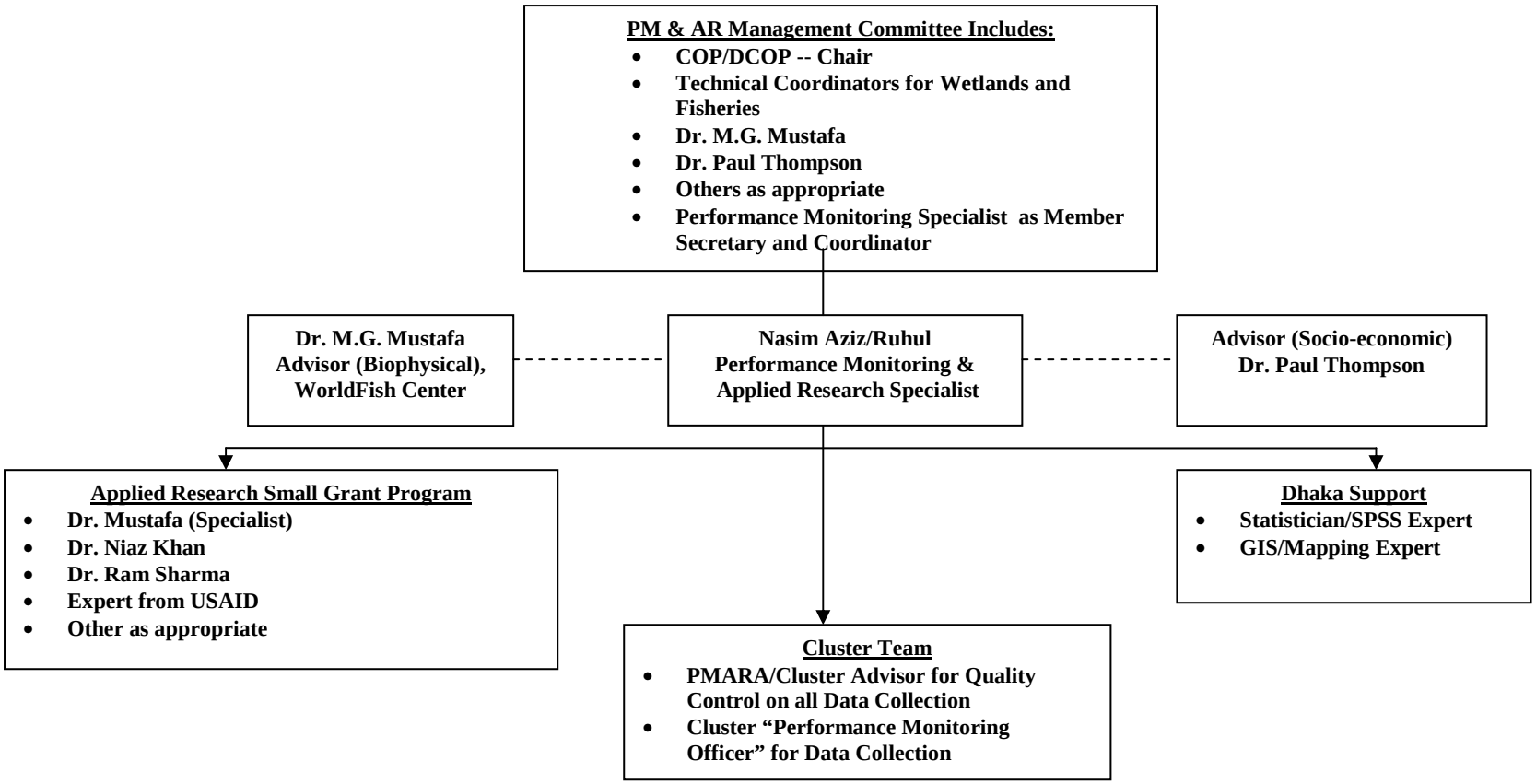
A central feature of IRG's PM&AR approach is the investment in highest quality information tool design and quality control during information collection and analysis. Our partnership with the WorldFish Center is brought to bear especially on this quality control process, a role that is fitting for WFC in light of its being one of the centers within the Consultative Group on International Agricultural Research CGIAR). WFC's monitoring specialist Dr. M.G. Mustafa will support the Team in setting protocols for wetland biophysical information collection so that it is both appropriate for local community monitoring and directly useful for statistically valid scientific analysis.

At the field level, The WorldFish Center's partnership is furthered through the presence of designated Performance Monitoring and Applied Research Associates as Cluster Advisors at each Cluster. These Cluster Advisors, in addition to other roles, are directly involved in ensuring the quality and consistency of all information collection undertaken by the implementing NGOs. The WorldFish Center staff additionally conduct quality control checks of data as it is being collected and digitized.

The quality control process in design and analysis will be further supported through the creation of a PM&AR Management Group. This small Group will have the authority to vet and modify, as necessary, any and all data collection and analysis instruments and processes proposed under the Project. Its role is to provide frank, honest and strategic feedback on proposed survey instruments.

At the Dhaka level, the Team is supported by a mid-level Statistician and data analyst (SPSS) and a GIS analyst to facilitate GIS and mapping processes. Mapping for protected landscapes will be conducted using Resources Information Management System (RIMS) unit of Forest Department. IPAC will provide GIS/Remote Sensing data supports and logistics for mapping process.

PERFORMANCE MONITORING
AND
APPLIED RESEARCH TEAM
ORGANIZATIONAL STRUCTURE



Annex - Detailed Indicator Reference Sheets

1. Common Indicator-1: Area under improved natural resource management (NRM) as a result of USG assistance

IPAC INDICATOR REFERENCE SHEET
Program Area: Environment
Element: EG 8.1 – Natural Resources and Biodiversity
Indicator 8.1.1: Number of hectares under improved natural resource management (NRM) as a result of USG assistance
DESCRIPTION
OP Definition: "Improved NRM" includes activities that promote enhanced management of natural resources for one or more objectives, such as sustaining soil and/or water resources, mitigating climate change, and/or promoting sustainable agriculture, etc. Management should be guided by a stakeholder-endorsed process following principles of sustainable NRM, improved human and institutional capacity for sustainable NRM, access to better information for decision-making, and/or adoption of sustainable NRM practices. **Specific Definition:** The areas to be measured under this indicator include the targeted PA sites (both forests and wetlands), adjacent buffer areas and surrounding landscapes of IPAC targeted sites in 5 Clusters. Area under improved NRM will be measured in hectares (ha). The areas measured will be those in which management plans for improved NRM are implemented as a result of the project in both direct and indirect sites. Direct sites of IPAC are forests and wetlands where co-management and community management bodies are formed by IPAC. In indirect sites existing co-management bodies and CBOs and those developed by other agencies are influenced by IPAC to enhance co-management of NRM. "Improved NRM" refers to activities defined in management plans endorsed by the area stakeholders and approved by GOB authorities, that directly promote improved NRM including biodiversity conservation, habitat protection and restoration, establishment of sanctuaries, afforestation / reforestation, forest regeneration, timber stand improvement and other sustainable forest management operations, sustainable production and harvesting of fisheries and forest products, soil and water conservation, reduction of vulnerability and adaptation to climate change, and/or promoting sustainable agriculture and tree crops. Relevant management plans and actions may be supported by stakeholder organization, empowerment, clarification of rights and responsibilities, strengthening of locally organized rules and enforcement systems governing the access and use of natural resources and stimulation of value added enterprise opportunities linked to the improved management and sustainable use of these natural resources. Core areas of PAs are considered in indicator 2, which is added into this indicator and is defined separately as the area covered by declared/gazette/official records of concerned protected forest, or waterbodies transferred for community based management. The definition of the additional area for indicator 1 focuses on the landscape area around co-management PAs to be defined in agreements with communities and measured in the basis of mouzas (revenue villages) taking up these plans.
Unit of Measure: hectares
Disaggregated by: Type of area – forest production area, wetland production area, agroforestry and tree crop systems, and sustainable agriculture
Justification/Management Utility: This indicator includes all natural resource management interventions that help generate sustainable livelihood opportunities for the people living within the proposed integrated co-management cluster areas including biodiversity conservation, improved local governance and empowerment.
DATA ACQUISITION PROCESS OF IPAC
Management Notes: **(1) Protected Areas** (from indicator 2): designated areas for which co-management organizations have been formed. **(2) Forest Production area:** (***a) Reforestation:*** all past social forestry plantations (benefits yet to be realized), Forest Dept. new social forestry activities, social forestry activities implemented / overseen by the Co-Management Organization (CMO) for benefit sharing and conservation purposes. ***(b) Afforestation*** includes those plantations in non-forested lands for benefit sharing and conservation purposes such as wetland (swamp) forest, roadside, river and stream bank, and other public lands. **(3) Wetland Production area:** wetlands and floodplains that are connected by water to wetland "protected areas"/co-managed areas (indicator 2) and thereby can benefit from conservation and restoration of aquatic life. **(4) Agroforestry or tree crop farming:** This includes private woodlots, tree nurseries and other areas under homestead improvements promoted by the Project. Homestead improvements may include introduction of fruit trees, and timber and fuel wood species **(5) Sustainable agriculture or farming:** Environmentally sound agricultural practices for both field crop and homestead production that may include organic fertilizers, integrated pest management, water and soil conservation, living barriers, low-input aquaculture among others
Method of Acquisition by Project Monitoring Unit: Baseline information and target indicator values will be developed by collection and analysis of existing information from USAID and other donor projects, GOB Ministries, and approved management plans. We will build on GIS mapping available from MACH and NSP, expanding digitized maps to new areas using satellite imagery. Local stakeholders, cluster performance monitoring specialists, field implementing partners, Nishorgo sahayak (village facilitators), and collaborating CMOs/Resource Management Organizations will collect information and data.
Data Source(s): MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, local NGOs, Ministry of Lands, Department of Fisheries, Forest Department, and donor agencies
Frequency/Timing of Data Acquisition: Quarterly

IPAC INDICATOR REFERENCE SHEET			
Survey Instrument for the data: Total areas derived from (indicator 2) official area of PA (where present, or of wetland handed over) under community co-management, plus for this indicator areas of villages covered by management plans of co-management bodies. Disaggregation based on records of areas covered by these initiatives from co-management bodies, Nishorgo sahayak (village facilitator) and IPAC records.			
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP			
OTHER NOTES			
Relevant Reference Sources: MACH and NSP project documents, data and information from the Department of the Environment, local NGOs, Ministry of Environment and Forests, Ministry of Lands, Department of Fisheries, Forest Department, and donor agencies			
Notes on Baselines: this includes core and landscape areas under NSP and MACH sites which is 138,421 ha.			
Other Notes: above area (ha) figures with respect to Protected Areas are based on RIMS – GIS database as opposed to Gazette notification area. For ease of calculation of interface landscape area (based on PRA) the RIMS's figures are used. No such digital database exists for wetland sites and figures are obtained from site profiles prepared under MACH.			
PERFORMANCE INDICATOR VALUES			
Year	**Planned / Targeted**	**Actual**	**Notes**
2009	15,000	0 ha	Following review of methods and conditions for including areas where previous projects (NSP and MACH) had established improved management, 10,524 ha reported earlier from Chunati Wildlife Sanctuary, Teknaf Game Reserve, and Hail Haor are not considered to have changed status.
2010	100,000	201,500 ha (provisional estimate	Area is significantly above target following formation of CMOs and development of strategic management plan for the Sundarbans, covering PAs of: Medhakachapia NP (396 ha), Fashiakhali WS (1,302 ha), Kaptai NP (5,464 ha), Khadimnagar NP (679 ha), Sundarbans WS (three – total 139,698 ha) and Aura Baura Beel (202 ha); and 10 ha improvements at Kaptai NP landscape. Improvement in methods indicates that the areas of indirect wetland sites should not yet be considered under improved management resulting from IPAC support. Landscape areas for these PAs have not yet been measured accurately (GIS work is in progress), so the target estimates are shown as provisional estimates for the actual figures.
2011	256,500		
2012	716,500		
2013	716,500		Part of Sundarbans Reserved Forests (462,000 ha) and Dudpukuria-Dhopachari WS (4717 ha) incorporated in the target whereas Publakhali WS (42,087ha) dropped.
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

2. Common Indicator-2: Area of biological significance under improved management as a result of USG assistance.

IPAC INDICATOR REFERENCE SHEET
Program Area: Environment
Element: EG 8.1 – Natural Resources and Biodiversity
Indicator 8.1.2: Number of hectares in areas of biological significance under improved management as a result of USG assistance.
DESCRIPTION
OP Definition: "Improved Management" includes activities that promote enhanced management of natural resources for the objective of conserving biodiversity in areas that are identified as biologically significant through national, regional, or global priority-setting processes. Management should be guided by a stakeholder-endorsed process following principles of sustainable NRM and conservation, improved human and institutional capacity for sustainable NRM and conservation, access to better information for decision-making, and/or adoption of sustainable NRM and conservation practices. **Specific Definition**: ***"Areas of biological significance***" are identified through national, regional, or global priority-setting processes and include all or part of national parks, wildlife sanctuaries, game reserves, Ecologically Critical Areas (ECAs), RAMSAR sites, World Heritage Sites, Important Bird Areas, and wetlands designated for biodiversity-based management. They represent the core protected forest/wetland areas with the most significant or highest levels of biodiversity. In particular it is noted that ECAs can include areas of biological significance and/or the landscape associated with such areas (for example the Sundarbans ECA comprises of villages in the landscape area using the Sundarbans, where the entire reserved forest is of biological significance and designated as a Ramsar site not just the wildlife sanctuaries. In the case of wetlands dry season water areas are considered to be the areas of biological significance. ***"Improved management***" indicates that plans exist and are being implemented for protection, restoration, regeneration, enrichment and improved management activities in these areas based on ecosystem management, and that have been developed and endorsed jointly by local stakeholders and the respective departments and ministries.
Unit of Measure: Hectares
Disaggregated by: Types of protected areas: national parks, wildlife sanctuaries, game reserves, inland and coastal wetlands
Justification/Management Utility: A prerequisite of improved NRM is a stakeholder endorsed, government approved management plan for areas of biological significance (as well as interface landscape) ensuring conservation and sustainable management and generating sustainable livelihood opportunities for the people living within cluster areas, improving local governance system and empowering the local people
DATA ACQUISITION PROCESS OF IPAC
Management Notes: **1.** ***Forest Area:*** (a) National Parks, (b) Wildlife Sanctuaries & (c) Game Reserve **2.** ***Wetland Area*****:** (a) Inland wetland, (b) Coastal Wetland
Method of Acquisition: Baseline information and target indicator values derived from existing information from USAID and other donor projects, GOB Ministries, and approved management plans. Cluster performance monitoring specialists and government partners will provide official areas for inclusion.
Data Source(s): MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Ministry of Lands, Department of Fisheries, Forest Department.
Frequency/Timing of Data Acquisition: Quarterly
Survey Instrument for the data: Official records of PA areas. Approved management plans.
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP
OTHER NOTES
Relevant Reference Sources: MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Ministry of Lands, Department of Fisheries, Forest Department.
Notes on Baselines: At the baseline five forest PAs previously supported by NSP and three wetlands previously supported by MACH had management plans that qualified under this indicator covering **23,918 ha.**
Other Notes: Detailed calculations and status for PAs/sites brought under co-management plans through IPAC are given in the additional notes

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**15,000**	0 ha	After review of methods areas in Chunati Wildlife Sanctuary, Teknaf Game Reserve, and Hail Haor reported earlier (3,500 ha) but already covered by previous projects (NSP and MACH) are now considered not to have changed management status and are no longer counted.
2010	**50,000**	147,553 ha	Area is significantly above target following formation of CMOs and development of a strategic management plan for the Sundarbans: Medhakachapia NP (396 ha), Fashiakhali WS (1,302 ha), Kaptai NP (5,464 ha), Khadimnagar NP (679 ha), Sundarbans WS (three – total 139,698 ha) and Aura Baura Beel (official area 14 ha). Areas of indirect wetland sites previously reported are after refining methods not considered so far to have changed status due to IPAC support.

2011	**170,000**		
2012	**600,000**		Target revised based on areas of IPAC target PAs. The entire Sundarbans Reserve Forest and WS are now considered of biological significance, but it was found not feasible to work in Pablakhali WS, and the ECAs of Sundarbans and Teknaf actually are not of biological significance but overlap with the landscape areas reported in indicator 1.
2013	**600,000**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

3. Common Indicator – 3: Area of natural resources showing improved biophysical conditions as a result of USG assistance.

IPAC INDICATOR REFERENCE SHEET
Program Area: Environment
Element: EG 8.1 – Natural Resources and Biodiversity
Indicator 8.1.3: Number of hectares of natural resources showing improved biophysical conditions as a result of USG assistance.
DESCRIPTION
OP Definition: "Improved biophysical conditions" are demonstrated where there is biophysical monitoring data showing stability, improvement, or slowing the rate of decline in one or more selected natural resources parameters over time. **Specific Definition:** The areas to be measured under this indicator are those located in buffer areas and surrounding landscapes of the targeted IPAC sites plus the areas under indicator 4 inside the PAs**. Improved biophysical conditions** will be determined by data on interventions designed to improve biophysical conditions supported by field level surveys of changes in the condition of natural resources: extent of restocking, restoration or rehabilitation of habitats, reduction in erosion or sedimentation or other forms of degradation, changes in growth rates (e.g. trees) and resource productivity (e.g. fish catch per ha), changes in soil fertility as reflected in sustainable crop yields, changes in biodiversity as reflected by changing populations or presence of indicator species and other measures of improved biophysical conditions agreed upon with field staff, local technical departments and stakeholders.
Unit of Measure: hectares
Disaggregated by: Type of area – forest protection area (covered in indicator 4), forest production area, wetland conservation (covered in indicator 4) and production areas, agroforestry and tree crop systems, and land devoted to sustainable agriculture.
Justification/Management Utility: This indicator helps to measure the impact of IPAC interventions on the biophysical conditions of targeted natural resources, as a consequence of the effective implementation of improved management practices and other natural resource management interventions that help to restore and improve NR productivity and generate sustainable livelihood opportunities for the people living within the proposed integrated co-management clusters.
DATA ACQUISITION PROCESS OF IPAC
Management Notes: Track the adoption and implementation of recommended NRM practices (conservation areas are covered in indicator 4) including: **(1) Protected Areas** (from indicator 4): areas of designated core protected areas where biophysical changes occur (both forest and wetland) and the indicators of biophysical change as recorded in indicator 4. **(2) Forest Production area:** *reforestation and afforestation* through existing and new social forestry plantations linked with co-management of the target PAs for benefit sharing and conservation and located in Forest Department or other lands (including wetlands - swamp forest, roadsides, river and stream banks, and other public lands. **(3) Wetland Production area:** wetlands and floodplains that are connected by water to wetland "protected areas"/co-managed areas and thereby can benefit from conservation and restoration of aquatic life. **(4) Agroforestry or tree crop farming:** This includes private woodlots, tree nurseries and other areas under homestead improvements promoted by the Project. Homestead improvements may include introduction of fruit trees, and timber and fuel wood species **(5) Sustainable agriculture or farming:** Environmentally sound agricultural practices for both field crop and homestead production that may include organic fertilizers, integrated pest management, water and soil conservation, living barriers, and low-input aquaculture among others.
Method of Acquisition by Project Monitoring Unit: Baseline information and target indicator values will be developed by collection and analysis of existing information from USAID and other donor projects, GOB Ministries, and approved management plans. We will build on GIS mapping available from MACH and NSP, expanding digitized maps to new areas using satellite imagery and aerial photography. Local stakeholders, cluster performance monitoring specialists, field implementing partners, Nishorgo sahayak (village facilitators), and collaborating CMOs/Resource Management Organizations will collect information and data.
Data Source(s): MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Ministry of Lands, Department of Fisheries, Forest Department; project data on areas with changed natural resource management and conditions.
Frequency/Timing of Data Acquisition: Quarterly (buffer and landscape areas) and in 2012 (for PA core areas)
Survey Instrument for the data: IPAC beneficiary records and follow up interviews and visits in buffer and landscape areas (also for indicator 4 bird monitoring, fish catch monitoring, and remote sensing).
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP
OTHER NOTES
Relevant Reference Sources: MACH and NSP project documents, data and information from the Department of the Environment, local NGOs, Ministry of Environment and Forests, Ministry of Lands, Department of Fisheries, Forest Department.
Notes on Baselines: Based on the same measurement methods the total area showing improved biophysical conditions at the end of the previous projects was 23,628 ha for NSP and 25,189 ha for MACH, giving a total of 48,817 ha (see annex for details).
Other Notes: Until the final project year only areas in the landscapes and PAs where interventions change biophysical conditions can be expected to be measured (quarterly). For core PAs, and the overall condition of wetlands, biophysical improvement will be assessed and reported in 2012. Target areas after plus sign are derived from indicator 4.
PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes

IPAC INDICATOR REFERENCE SHEET			
2009	**50 ha + 0 ha**	70 ha	20 ha plantation has been established in Khadimnagar NP. 50 ha established plantation at Rema Kalenga Wildlife Sanctuary. Earlier areas (10 ha) reported for habitat changes in Baikka Beel sanctuary in Hail Haor did not represent improvemens over those achieved during MACH and this area is not counted here.
2010	**500 ha + 10,000 ha**	553 ha	Enrichment plantation Khadimnagar 128 ha, Lawachara NP buffer plantation 60 ha, Rema-Kalenga WS 20 ha, Satchari NP buffer plantations 45 ha, Chunoti WS plantation 94 ha and coppice 20 ha, Teknaf WS 99 ha (10 ha enrichment, silvicultural operations 6 ha, Plantation 70 ha, organic farming 13 ha), Kaptai NP 12 ha fruit and vegetable farming. After review of methods, 3,646 ha from Hail Haor is not now counted since there is no clear evidence of improved biophysical condition since the base line (MACH); and areas with reinforced patrolling (500 ha in Teknaf WS and 3,000 ha in Chunati WS) have not yet demonstrated improved biophysical condition.
2011	**1,000 ha + 100,000 ha**		Targets revised to reflect expected areas outside forest PAs and wetlands where interventions to improve biophysical conditions can be expected
2012	**1,500 ha + 200,000**		
2013	**2,000 ha + 300,000 ha from indictor 4**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

4. Common Indicator – 4: Area of biological significance showing improved biophysical conditions as a result of USG assistance.

IPAC INDICATOR REFERENCE SHEET
Program Area: Environment
Element: EG 8.1 – Natural Resources and Biodiversity
Indicator 8.1.4: Number of hectares in areas of biological significance showing improved biophysical conditions as a result of USG assistance.
DESCRIPTION
OP Definition: "Improved biophysical conditions" are demonstrated where there is biophysical monitoring data showing stability, improvement, or slowing the rate of decline in one or more selected biodiversity parameters over time. Areas are identified as biologically significant through national, regional, or global priority-setting processes. **Specific Definition**: ***"Areas of biological significance***" are identified through national, regional, or global priority-setting processes and include national parks, wildlife sanctuaries, game reserves, ecologically critical areas, RAMSAR sites, World Heritage Sites, and also those important wetlands or floodplains under improved co-management. These core areas represent the areas with the most significant or highest levels of biodiversity. **Improved biophysical conditions** will be determined by field level surveys of changes in indicators for biophysical conditions based on changes in biodiversity indicators, for forests this will be based on indicator bird species and assessment of tree and plant regeneration in sample plots, and supplemented by evidence on restoration or enrichment of targeted PA sites and assessments by participating CMOs and comparison of remote sensing; in wetlands it will be based on changes in fish catches and waterbird populations.
Unit of Measure: Hectares
Disaggregated by: Types of protected area ecosystem: forests, inland and coastal wetlands.
Justification/Management Utility: This indicator helps to measure the impact of IPAC interventions on the biophysical conditions of targeted protected areas and areas of biological significance as a consequence of the effective implementation of improved management practices and other natural resource management interventions that help to conserve biodiversity and restore and improve the condition of resources in targeted PA.
DATA ACQUISITION PROCESS OF IPAC
Management Notes: 1. ***Forest Areas:*** defined by government designation (a) National Parks, (b) Wildlife Sanctuaries and (c) Game Reserve 2. ***Wetland Area*****:** defined by areas of water reserved for and under community based co-management with a specific aim of conserving and/or sustainably using aquatic biodiversity, i.e. not just fish sanctuaries but total jalmohal or water areas recognized as being under community based co-management (a) Inland wetland, (b) Coastal wetland 3. **Intervention area:** to monitor implementation of measures to improve biophysical condition during the project, the areas covered by any such specific actions within the above two categories of area will be recorded, but recognizing that these lie within the total area that may be counted in 2012 based on overall changes in biodiversity and biophysical indicators
Method of Acquisition: Baseline information and target indicator values will be developed by collection and analysis of existing information from USAID and other donor projects, GOB Ministries, and approved management plans. **Improved biophysical conditions** will be assessed firstly by monitoring indicator bird species for the forest PAs and fish catch monitoring for targeted wetlands over the project life. Based on NSP and MACH experience annual comparison of changes in these indicators may not reveal actual trends, for example fish catches also fluctuate due to annual differences in water volumes and need some time to respond to conservation measures, so changes over a longer period need to be considered. Resident bird populations also make relatively gradual (i.e. small annual) changes which take time to respond to habitat changes and are only detected over several years. The baseline for birds in five NSP PAs comes from the final year of NSP, and the baseline for five new PAs under IPAC comes from specialist surveys in 2009. In MACH wetlands the 2006 catch per unit area estimates form a baseline, while in the Sundarbans similar monitoring of fish catches in 2010-11 will form the baseline (no fisheries management actions have been taken there up to October 2010. Repeat monitoring using the same methods in 2012-13 will be used to assess changes. Waterbird counts for the main wetland areas of biological significance are already conducted each mid-winter and changes will be assessed. In addition in forest PAs tree and sapling growth in a small set of sample plots will be monitored to determine changes in habitat, and where possible will be complemented at the project end by assessment of tree canopy cover change based on satellite imagery.
Data Source(s): MACH and NSP project documents, official records of areas, specialist monitoring and surveys conducted by a mix of IPAC field staff, experts, CMO/RMO members, and volunteers (including local people), supported by cluster performance monitoring specialists, government partners, field implementing partners.
Frequency/Timing of Data Acquisition: Annually, but with enhanced rigor in data in the last project year (with in addition data on habitat management interventions on a quarterly basis).
Survey Instrument for the data: Indicator bird monitoring survey, fish catch monitoring, CMO participatory assessments of forest growth, satellite imagery analysis of core areas of biological significance.
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP
OTHER NOTES
Relevant Reference Sources: MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Ministry of Lands, Department of Fisheries, Forest Department, CMOs/RMOs.

Notes on Baselines: Two baseline figures are available. If areas are considered where direct interventions to improve biophysical conditions in the core areas were taken by the two projects then the area is **2,673 ha**. Forest Area – 2,123 ha (see NSP PMP report – PMP -1, or 17) and wetland area - 550 ha (see indicator 6.2a MACH Completion Report, Volume – 2; MACH - II).
However, those figures do not represent the full impacts in the total forest PA or wetland area as revealed by biodiversity indicators. For example, indicator bird monitoring under NSP in five PAs suggests overall improvements in ground vegetation cover. Reduced illegal felling suggests reduction loss of tree cover across PAs, so that the total area of these five PAs can be counted. Similarly in MACH catch per hectare, per person and fish consumption all increased substantially in all three sites, most notably catch per hectare increased by the project end by 80 to 380 percent depending on the wetland, reflecting improved biophysical conditions and management across the entire monsoon water area. Hence the area of improved biophysical conditions would be the entire biologically significant area of **23,918 ha**.

Other Notes: Biophysical change in the targeted PAs over the project life will be assessed from 2010-11 onwards.. Target areas are set with approximately a one year time lag after coming under improved management and after allowing for improvements in condition not being feasible in 100% of some PAs.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**0 ha**	20 ha	20 ha plantation raised in Khadimnagar by FD which the CMO is taking care of.
2010	**10,000 ha**	224 ha	Year-2 achievements (204 ha) are restoration plantations and forest habitat management: Khadimnagar NP 128 ha, Rema-Kalenga WS 20 ha, Chunati WS 20 ha and Teknaf WS 36 ha. Area removed in revised report: 2,673 ha from Hail Haor since it was in base line (MACH); areas of reinforced patrolling (3,000 ha in Chunati WS and 500 ha in Teknaf WS). Area with improvements in biodiversity and forest condition not assessed yet.
2011	**100,000 ha**		Yearly targets are not estimated; Please see Management Notes
2012	**200,000 ha**		
2013	**300,000 ha**		

THIS SHEET LAST UPDATED ON: 11 October 2010

ADDITIONAL RELAVANT DATA (see annex)

5. Common Indicator - 5: Policies, laws, agreements or regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.1 – Natural Resources and Biodiversity

Indicator: Number of policies, laws, agreements or regulations promoting sustainable natural resource management and conservation that are implemented as a result of USG assistance

DESCRIPTION

OP Definition: Policies, laws, agreements and regulations include those formed and formally endorsed by government, non-government, civil society, and/or private sector stakeholders with the intent to strengthen sustainable natural resource management.

Specific Definition: Policy development/ reform and implementation will take place at the national and local levels. At the ***national level*** assistance for policy reform and implementation will include an assessment of national level policies, laws and regulations to identify priority reforms to strengthen the enabling environment for improved, decentralized natural resources management, as well as preparation of an integrated Protected Area co-management strategy to harmonize implementation of NRM policies and plans; and ***local level*** policies, regulations and stewardship agreements that empower and support communities, CMOs, RMO to conserve, protect and manage resources at the local level. However, only the changes at the national level will be captured here, although these may include measures taken to strengthen NRM and conservation in specific locations.

Unit of Measure: numbers of policies, regulations, agreements, bi-laws, agreements developed and implemented

Disaggregated by: National and local level policies, laws, regulations and stewardship agreements

Justification/Management Utility: This indicator demonstrates that national policies and legal underpinnings are in place and being implemented to enable and sustain natural resources management

DATA ACQUISITION PROCESS IPAC

Management Notes:
- Integrated co-management strategy
- Enabling policies developed/revised
- Enabling laws and regulations
- Declaration of new protected landscapes

Method of Data Acquisition: Initial assessment of current policy and regulatory framework conducted by IPAC staff and respective GOB agencies. Performance monitoring team, cluster performance monitoring specialists and field implementing partners will collect information and data on development and implementation of national and local agreements or regulations, as part of quarterly progress reporting.
Data Source(s): MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Ministry of Lands, Department of Fisheries and Forest Department.

Frequency/Timing of Data Acquisition: Quarterly

Survey Instrument for the data: Initial and subsequent analysis of current policies, laws, agreements or regulations at the national level; analysis of local legal and regulatory instruments, and relevant GOB agencies.

Location of supporting information: COP, DCOP, Policy Advisor and Governance Specialist, IPAC, Dhaka

OTHER NOTES

Relevant Reference Sources: MACH and NSP project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Ministry of Lands, Department of Fisheries, Forest Department.

Notes on Baselines: 4 (Key policy changes/precedents: NSP - the formation of CMOs, MACH - Ministry of Land taking jalmohals out of leasing to be permanent sanctuaries, Ministry of Fisheries and Livestock establishing endowment funds and forming Upazila Fisheries Committees as co-management bodies involving RMOs and government).

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**2**	2	1. Retention of 50% entry fee to be used by CMOs for promoting NRM. 2. MOEF approved building Community Based Nature Interpretation Center through public private partnership, subject to fitting within Government rules.

2010	**9**	9	1. Official Order (*Paripatra*) issued by MoFL allowing Upazilla Fisheries Conservation and Development Committees to operate endowment funds for MACH sites. 2. Revised Social Forestry Rules 2004 gazetted on 13 January 2010; 3. Revised Government Order on Co-management Organizations, on 23 November 2009 and 21 January 2010; 4. Declaration of four new forest protected areas, each considered a policy change: Sangu Wildlife Sanctuary, Hazarikhil Wildlife Sanctuary, Barayadhala National Park, and Dudpukuria-Dhopachari WS (all on 6 April 2010).
2011	**12**		
2012	**15**		
2013	**20**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

6. Common Indicator – 6: Increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance.

IPAC Indicator Reference Sheet
Program Area: Environment
Element: EG 8.1 – Natural Resources and Biodiversity
Indicator: Number of people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance.
DESCRIPTION
OP Definition: "Increased economic benefits" include increased household income, average increase in income per household, number of new enterprises developed (including but not limited to fisheries, sustainable tourism, forestry/agroforestry, sustainable agriculture, micro-enterprise, etc.), economic benefits from ecosystem services, etc. Economic benefits may be based on actual cash transactions or other economic value of natural resources. **Specific Definition**: This indicator measures the number of direct and indirect beneficiaries with increased income, from the baseline established at the outset of the activity. Beneficiaries are defined as follows: (1) Direct targeted beneficiaries of IPAC support for alternate income generating technologies or training and/ or grant or leveraged credit by the project. "Targeted beneficiaries" are those dependent on wetland and/or forest resources for their livelihoods, and who assist in protection and conservation; (2) Direct beneficiaries of similar targeted support under earlier projects (NSP or MACH) who further develop their economic benefits; (3) Indirect beneficiaries who adopting improved cooking stoves; (4) Indirect beneficiaries dependent on fishing and aquatic resources in target wetlands who benefit from increased fish catches following management improvements; (5) Indirect beneficiaries who provide services to tourists visiting PAs. **Unit of Measure**: number of people within households deriving economic benefits **Disaggregated by**: type of beneficiary and by gender **Justification/Management Utility**: Increased income of target group from new income sources will reduce the dependency on natural resources. This will help protect PAs and other aquatic habitats. Increased incomes for indirect beneficiaries reflect increased productivity or returns from NR under sustainable management.
DATA ACQUISITION PROCESS IPAC
Management Notes: (1) Direct beneficiaries are identified from IPAC records and are counted if they adopted any of these enterprises, and in subsequent years if they continue that enterprise and derive a benefit. Examples include homestead gardening, cow /goat/pig fattening, bee keeping, nursery, handicrafts, ethnic cloth production, sustainable agriculture, social forestry, eco-tourism and value-chain development (2) For direct beneficiaries in PAs covered by previous projects verification of further increases in economic benefits during the IPAC period is through sample surveys. (3) Data obtained from lists of customers of improved cooking stove makers and CMOs that provide subsidies to customers. (4) If fish catch surveys reveal increased catch per unit area and per unit effort in the final year of IPAC then it is assumed that all households engaged in fishing in that wetland benefit economically. (5) Indirect service providers include those employed in hotels, transport, etc. Other indirect beneficiaries of policy changes influenced by IPAC can be counted (for example from improved socal forestry rules) but these benefits may not accrue within the project period and data will depend on records from other agencies and projects. Number of people is calculated as 5.6 times the number of immediate beneficiaries based on average household size in Bangladesh (BBS 2001 Census report, source http://www.bbs.gov.bd/dataindex/census/bang_atg.pdf) and assumption that only one person per household derives an economic benefit or is trained by IPAC or that the whole household is engaged in the activity. **Method of Data Acquisition:** from AIG matrix, monthly progress report, sample surveys of earlier and current direct beneficiaries ,and those serving tourists; fish catch monitoring, household census. **Data Source(s):** field offices. **Frequency/Timing of Data Acquisition:** AIG matrix monthly, fish catch monitoring yearly, sample surveys mid-term and end of project. **Survey Instrument for the data:** various survey instruments.
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP\; and AIGA Matrix, Value chain registrars on different trades, training registrars at Site Offices
OTHER NOTES
Relevant Reference Sources: **Notes on Baselines: Total household – 23,765, total beneficiary including family members – 137,830. NSP beneficiary** – direct household - 18,563, beneficiary including family member - 107,660. **MACH beneficiary** – direct households – 5,202, beneficiary including family member – 30,170. **Other Notes:** To be entirely accurate, the number of "losers" from the conservation activity should be subtracted from this number of beneficiaries. The "losers" would include those who once had access to the PA and extracted from it directly but who no longer have access because of the Project, and have not been given a direct alternative economic activity.
PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes

IPAC Indicator Reference Sheet			
Program Area: Environment **Element: EG 8.1 – Natural Resources and Biodiversity** **Indicator:** Number of people with increased economic benefits derived from sustainable natural resource management and conservation as a result of USG assistance.			
2009	**100,000**	0	Beneficiaries of improved stoves and sanitary latrine, employment, and enterprises. Previous project direct beneficiaries now not counted pending verification of further benefits.
2010	**150,000**	23,968	276,593 beneficiaries were earlier reported, inclusive of MACH and NSP. IPAC direct beneficiaries number 23,968 after review and not counting households that only received improved latrines. The number of beneficiaries from previous projects has been reviewed, and it is planned to verify if they have further increased economic benefits. Other categories of beneficiaries will be counted from 2011 when evidence of indirect benefits become available.
2011	**200,000**		
2012	**350,000**		Target depends on past direct beneficiaries receiving further benefits and on indirect benefits being achieved (for example from fisheries)
2013	**500,000**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

7. Common Indicator- 7: People receiving USG supported training in natural resources management and/or biodiversity conservation

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.1 – Natural Resources and Biodiversity

Indicator: Number of people receiving USG supported training in natural resources management and/or biodiversity conservation

DESCRIPTION

OP Definition: The number of individuals participating in learning activities intended for teaching or imparting knowledge and information on natural resources management and biodiversity conservation to the participants with designated instructors or lead persons, learning objectives, and outcomes, conducted fulltime or intermittently.
NRM and biodiversity conservation training can consist of transfer of knowledge, skills, or attitudes through structured learning and follow-up activities, or through less structured means, to solve problems or fill identified performance gaps.
Training can consist of long-term academic degree programs, short- or long-term non-degree technical courses in academic or in other settings, non-academic seminars, workshops, on-the-job learning experiences, observational study tours, or distance learning exercises or interventions.

Specific Definition:
Training will be tailored to key stakeholders and includes local training in NR- related management and enterprises (e.g. those covered in indicator 6).
Training will include short-term, medium term (certificate and diploma), interactive applied research, regional cross-visits and US-based training

Unit of Measure: number of persons

Disaggregated by: Gender; and type of training

Justification/Management Utility: Track training provided by the project and identify potential direct economic beneficiaries

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

- Certificate Programs in applied conservation biology, carbon financing and related topics –offered through public/private university partnerships
- Diploma-level programs in protected area management: forestry and wetlands co-management in place years three through five
- Courses for GOB officials in protected areas management with the Fisheries and Forest Academies
- Courses conducted by visiting scholars and experts
- Training and orientation for local stakeholders in PA co-management and natural resource management
- Practical training in enterprises and livelihood support activities that are linked with sustainable use and conservation of natural resources
- Short courses in proposal writing for NGOs
- Sub-regional cross-visits and study tours to observe co-management
- Short courses in the US for senior officials and professionals to enrich skills and knowledge

Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected on number of persons trained, and training topics. Performance monitoring team, cluster performance monitoring specialists, field implementing partners, and collaborating CMOs/RMOs will collect data.

Data Source(s): Project training plan, training completion reports and site level monthly reports, with information on number and gender of persons trained

Frequency/Timing of Data Acquisition: Quarterly

Survey Instrument for the data: Review of training completion reports

Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP\; and training registrars at Site Offices

OTHER NOTES

Relevant Reference Sources: MACH and NSP training plans and reports; GOB agency training plans and requirements.

Notes on Baselines: Total persons trained – **32, 203.** A total of 7,312 persons were trained under NSP and for MACH 24,891 persons.

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**5000**	228	Training includes, Bamboo value chain assessment, home gardening, bamboo product development, cross site visits among forest or wetland protected areas and exposure visits to India and Nepal to observe co-management.
2010	**10,000**	8,932	Persons trained in different AIGAs and conservation enterprises

2011	**15,000**		
2012	**18,000**		
2013	**20,000**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA ()			

8. Common Indicator- 8: Increased adaptive capacity to cope with impacts of climate variability and change as a result of USG assistance

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.2 – Clean Human Environment

Indicator: Number of people with increased adaptive capacity to cope with impacts of climate variability and change as a result of USG assistance.

DESCRIPTION

OP Definition: Number of people with increased capability to adapt to or better cope with the impacts of climate variability and change as a result of: communication of weather and climate forecasts, increased availability of weather and climate information including long-term climate projections, understanding of potential impacts of climate variability and change on development, creation and dissemination of tools to incorporate climate variability and change in development projects, consideration of future climate change in project planning and implementation, greater economic opportunities.

Specific Definition: There are few, simple, off-the-shelf indicators for measuring "adaptive capacity". Smit et al (2001) identified six determinants of adaptive capacity in the context of climate change as a contribution to the third assessment report for the Inter-governmental Panel on Climate Change. These determinants are – economic resources (greater economic resources increase adaptive capacity), technology (lack of technology limits range of potential adaptation options), information and skills (lack of informed, skilled and trained personnel reduces adaptive capacity), infrastructure (greater variety of infrastructure can enhance adaptive capacity as well as characteristics and location of the infrastructure), institutions (well developed social institutions help to reduce impacts of climate related risks) and equity (equitable distribution of resources increases adaptive capacity as well as availability and entitlement to resources is also important). A simple measure is needed to reflect changes in adaptive capacity at the local level. Two measures are adopted: (1) number of people covered by awareness raising on climate change and adaptation, (2) number of people benefiting from local investments and enterprises (community-level through CMOs or individual) that are adapted to climate variability and change.
.

Unit of Measure: number of people

Disaggregated by: Measure (awareness or adaptation), gender and sector (infrastructure-agriculture)

Justification/Management Utility: As IPAC works to strengthen CMOs and to protect and manage PAs, safeguard ecosystem services, promote improved NRM, develop AIG, reduce poverty and develop human capital at the local level, the cumulative impact will be a reduction in vulnerability to climate change and an increase in adaptive capacity of local communities.

DATA ACQUISITION PROCESS IPAC

Management Notes:

- Awareness will be based on numbers attending training, meetings and events that discuss climate change and variability and those receiving communication materials on this subject.
- Community level adaptation will be based on all villages under CMOs making proposals for landscape development fund investments that demonstrate adaptation to climate variability and change and the respective CMOs ensure this and inform village conservation forums.
- Individual level adaptation will be based on enterprises and value chain activities that are designed to cope with climate variability or change.

Method of Data Acquisition: from training and communication reports, approved landscape development fund proposals and their completion reports, AIG matrix, monthly site progress report.

Data Source(s): field offices (see method).

Frequency/Timing of Data Acquisition: quarterly.

Survey Instrument for the data: reports noted above.
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP; Monthly MPPR, PMP Excel Sheets, AIG Matrix, Training Registrar, In-country training reports

OTHER NOTES

Relevant Reference Sources: None

Notes on Baselines/Targets: No baseline. Original targets are appropriate for awareness, which has been reported in 2009 and 2010. New targets for adaptation are shown based on two landscape development fund grants per CMO, 25 CMOs, and about 1,200 people per village giving 56,000 people. Landscape development fund will only start to be operational in 2010-11. Up to 5,000 households may adopt climate variability adapted enterprises, but some may be within villages covered by community adaptation.

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**50,000 aware** **0 adapted**	450 aware 0 adapted	About 450 people were informed about the variability of climate
2010	**75,000 aware** **0 adapted**	129,597 aware 0 adapted	129,597 people covered by various awareness raising events, including heads of direct beneficiary households who were oriented on these issues.

IPAC Indicator Reference Sheet			
Program Area: Environment **Element: EG 8.2 – Clean Human Environment** **Indicator:** Number of people with increased adaptive capacity to cope with impacts of climate variability and change as a result of USG assistance.			
2011	**100,000 aware 10,000 adapted**		
2012	**150,000 aware 40,000 adapted**		
2013	**200,000 aware 70,000 adapted**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (none)			

Smit, B., Pilifosova, O., Burton I., Challenger B., Huq S., Klein R.J.T. and Yohe, G. (2001): Adaptation to climate change in the context of sustainable development and equity; in Climate Change 2001: Impacts, Adaptation and Vulnerability, (ed.) J.J. McCarthy, O.F. Canziani, N.A. Contribution of Working Group III to the 3rd Assessment Report of the Intergovernmental Panel on Climate Change.

9. Common Indicator – 9: Greenhouse gas emissions, measured in metric tons CO_2 equivalent, reduced or sequestered as a result of USG assistance

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.1 – Natural Resources and Biodiversity

Indicator: Quantity of greenhouse gas emissions, measured in metric tons CO_2 equivalent, reduced or sequestered as a result of USG assistance

DESCRIPTION

OP Definition: The amount of emissions, in metric tons of carbon dioxide equivalent (CO2e), which is reduced or sequestered as a result of USG programs in energy, industry, urban and transport sectors. Relevant greenhouse gases are: CO_2, methane, perfluorocarbons, hydrofluorocarbons, sulphur hexafluoride, and nitrous oxide. Calculating carbon dioxide equivalent (CO2e) is a way of converting quantities of other greenhouse gases into a common, comparable measure that has a well-defined global warming potential effect. For this indicator, reductions in gases like methane, perfluorocarbons and nitrous oxide should be expressed as CO2e. Carbon sequestration refers to removing CO_2 from the atmosphere, either from enhancing natural sequestration (through carbon sinks such as oceans and plants) or artificially capturing and storing carbon. Reductions in CO2e emissions from USG programs would include promoting renewable energy alternatives to conventional power generation, improved energy efficiency, enhanced air quality controls, transfer of advanced technology, support for mass transit, etc.

Specific Definition: This indicator reflects the amount of CO_2 sequestered by afforestation and reforestation in forests and wetlands (coastal and inland) and from agro-production systems in the surrounding landscape areas of the five project clusters;

Unit of Measure: Metric tons of CO_2 equivalent

Disaggregated by: Forest, wetland, and agro production areas

Justification/Management Utility: The indicator will measure the project's contribution to avoidance and/or reduction of greenhouse gas emissions and climate change vulnerability reduction. Newly reforested and sustainably managed agricultural areas will serve as carbon sinks

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

- This area includes IPAC forest PA areas of biological significance brought under improved management and inclusive of biological significant areas improved under NSP.
- Sequestration of CO_2 in natural forests is based on the area of forests with high biodiversity value under improved local management over the project life multiplied by 1.1 tons per year per hectare.
- 1.1 tons per hectare per year is the average additional sequestration of CO_2 from improved protection an conservation of natural forests, based on literature review including FAO and IPCC sources.
- To acknowledge the possible leakages (such as residual cutting of trees), only 75% of the average sequestration is counted, this represents a conservative estimate of sequestration.
- Where denuded land or heavily degraded forest lands (PA cores) is brought under tree cover through plantations and forest restoration the additional sequestration of CO_2 is taken to be 3.6 tons/ha/year based on a study by NSP/IPAC in Chunoti WS.
- In landscape lands that are brought under agroforestry and social forestry through IPAC and co-management additional sequestration of CO_2 is taken to be 4.4 tons/ha/year.

Method of Data Acquisition: Will require baseline of dry land and wetland perennial vegetative cover; assessment of vegetative cover changes (+/-) over the project life

Data Source(s): Project monitoring information

Frequency/Timing of Data Acquisition: Annually

Survey Instrument for the data: NRM program monitoring data, data on areas of afforestation and reforestation and satellite imagery;

Location of supporting information:

OTHER NOTES

Relevant Reference Sources: National Adaptation Program of Action for Climate Change and IPCC Documents

Notes on Baselines: There is no baseline estimate relevant for this indicator as it represents an annual benefit from co-management protection and forest restoration.

Other Notes: During the project an attempt will also be made to quantify emission reductions from using improved cooking stoves and biogas plants, but this has not been included in targets. The targets are greatly reduced from those shown in the original PMP after a review of the methology and calculation of realistic rates of forest regeneration and carbon sequestration, and reflect the area targets in indicator 2.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**3,000 t**	2,710 t	Sequestered in 5 NSP PAs being maintained in IPAC project

2010	**30,000 t**	29,875 t	Includes those areas of biological significance brought under improved management considered to have enhanced carbon sequestration as a result of improved protection (about 36,200 ha).
2011	**150,000 t**		
2012	**200,000 t**		
2013	**540,000 t**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

10. Common Indicator – 10: People in target areas with access to improved drinking water supply as a result of USG assistance

IPAC Indicator Reference Sheet

Program Area: Environment

Element: E.G. 3.1.8 - Water Supply and Sanitation Element

Indicator: Number of people in target areas with access to improved drinking water supply as a result of USG assistance

DESCRIPTION

OP Definition
Specific Definition: Improved of drinking water supply include household water connections, public standpipes, hand tubewells, boreholes, protected dug wells, protected springs, and rainwater collection. Examples of unimproved drinking water sources include unprotected wells; unprotected spring, rivers or ponds; vendor-provided water or tanker truck water. Improved drinking water supplies as a result of direct investment by IPAC are included, as well as the results of training and communication activities and leveraged project support by other organizations in the areas targeted by IPAC.

Unit of Measure: number of people

Disaggregated by: none

Justification/Management Utility: NSP found a lack of access to safe drinking water in communities around Teknaf GR, Rema-Kalenga WS, Lawachara NP and Satchari NP. The IPAC sites including Sundarbans, Chittagong Hill Tracts, Cox's Bazar region, and wetlands also have limited sources of safe drinking water. Lack of convenient water supply access has severe gender implications, as the time-intensive pursuit of water collection often prevents women from taking up income-generating opportunities or girls from attending school especially in the hilly regions. Similarly, the impacts of water-related disease are often borne by women and this affects their role as primary caretakers of children and the ill.

DATA ACQUISITION PROCESS OF IPAC

Management Notes: Applications should include small-scale infrastructure that increases access to improved water supply services in target communities. This can include both surface water and groundwater-fed systems, as well as the full range of appropriate, affordable, and approved technologies and approaches for water supply infrastructure (e.g., boreholes, spring boxes, gravity-fed conveyance mechanisms, rainwater harvesting, etc.). Development of new infrastructure as well as rehabilitation of existing systems may be proposed.

Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected on number of households with access to safe drinking water using new project-supported or leveraged infrastructure, converted to number of people by average family size. Performance monitoring team, cluster performance monitoring specialists, field implementing partners, and collaborating CMOs/RMOs will collect data.

Data Source(s): field offices.

Frequency/Timing of Data Acquisition: quarterly and yearly

Survey Instrument for the data: sample survey.
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP; and LDF support records at Site offices

OTHER NOTES

Relevant Reference Sources:

Notes on Baselines: baseline figure is considered as zero as only people who did not have access earlier to safe drinking water are counted so the number already with safe drinking water need not be assessed and would divert resources from implementation.

Other Notes: Performance partly depend on leveraged support.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**5,000**	0	
2010	**10,000**	6,694	Beneficiaries with access to improved drinking water facilities developed under IPAC.
2011	**20,000**		
2012	**25,000**		
2013	**30,000**		

THIS SHEET LAST UPDATED ON: 11 October 2010

ADDITIONAL RELAVANT DATA (None)

11. Common Indicator – 11: Number of people receiving USG supported training in environmental law, enforcement, public participation, and cleaner production policies, strategies, skills, and techniques

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.2 – Clean Human Environment

Indicator: Number of people receiving USG supported training in environmental law, enforcement, public participation, and cleaner production policies, strategies, skills, and techniques

DESCRIPTION

OP Definition: Number of people trained in environmental law, enforcement, public participation, and cleaner production policies, strategies, skills, and techniques
Specific Definition: Training tailored to Co-Management Organizations (CMOs including Co-management Committee members, Community Based Organization members (CBOs) including Resource Management Organization members (RMOs), local level leaders, Nishorgo Shahayaks (facilitators), local to divisional-level GOB officials engaged directly in co-management activities.

Unit of Measure: Number of people

Disaggregated by: Gender; and type of training

Justification/Management Utility: To enable self-selected, dynamic local leaders and innovators to master training techniques needed to effectively transfer skills through peer to peer training; to enable them to become local support service providers; to enable CMO members and interested stakeholders to understand policies, laws and regulations with regard to forest PAs, wetland management and ECAs, available technologies, strategies etc.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

- Training of trainers – for community based extension agents including local leaders, CMO/RMO leaders, and innovators ready to serve as trainers, for community level peer to peer practical training sessions.
- Training by local extension agents, Nishorgo Shahayaks, CMO and RMO members and villagers engaged in implementation of PA co-management activities.
- Sub-regional cross-site visits to observe PA co-management: CMO leaders; local to Divisional GOB Officers directly involved in co-management activities.

Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected on number of persons trained, and training topics – on a quarterly basis using training reports. Performance monitoring team, cluster performance monitoring specialists, field implementing partners, and collaborating CMOs/RMOs will collect data.

Data Source(s): Project training plan, training reports, with information on number and gender of persons trained

Frequency/Timing of Data Acquisition: Quarterly

Survey Instrument for the data: Review of training evaluations and completion reports; interviews with training participants
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP \; In-country Training reports and training registrars at Site Offices

OTHER NOTES

Relevant Reference Sources: MACH and NSP training plans and reports; GOB agency training plans and requirements.

Notes on Baselines:

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**150**	35	1 day orientation training on environmental law in June 2009 and additional cluster level training.
2010	**300**	453	Training imparted by Bangladesh Environmental Lawyers Association (BELA) - 281 persons and orientation of GOB and CMO representatives (172 persons)
2011	**450**		
2012	**600**		
2013	**750**		

THIS SHEET LAST UPDATED ON: 12 October 2010

ADDITIONAL RELAVANT DATA (none)

12. Common Indicator – 12: Number of people receiving USG supported training in global climate change including framework convention on climate change, greenhouse gas inventories, mitigation, and adoption analysis

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.2 – Clean Human Environment

Indicator: Number of people receiving USG supported training in global climate change including framework convention on climate change, greenhouse gas inventories, mitigation, and adoption analysis

DESCRIPTION

OP Definition: The number of people trained in global climate change, including the U.N. Framework Convention on Climate Change (UNFCCC); national greenhouse gas inventories, national programs or policies to mitigate or adapt to global climate change; promotion of technologies to reduce greenhouse gas emissions; promotion of public awareness efforts; activities to reduce vulnerability to climate change impacts, activities to reduce net greenhouse gas emissions from the land use sector; activities to reduce net greenhouse gas emissions from the energy sector.
Specific Definition: The number of GOB officials, NGO members and private consultants trained in replicating carbon project modeling exercise.

Unit of Measure: Number of people

Disaggregated by: Gender; and type of training

Justification/Management Utility: To provide orientation and transfer of information needed to develop and prepare successful projects that are designed to sequester carbon and mobilize financial resources from the sale of carbon credits; to include information and techniques needed to assure accountability and reporting of the sue of project funding.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

- Certificate course in Preparation of Carbon projects (up to 3 weeks)

Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected on number of persons trained, and training topics – on a quarterly basis using training reports. Performance monitoring team, cluster performance monitoring specialists, field implementing partners, and collaborating CMOs/RMOs will collect information and data.

Data Source(s): Project training plan, training evaluations and completion reports, with information on number and gender of persons trained

Frequency/Timing of Data Acquisition: Quarterly

Survey Instrument for the data: Review of training reports; interviews with training participants
Location of supporting information: (Monitoring PC):\D:\IPAC\IPAC PMP \; In-country Training reports and training registrars at Site Offices

OTHER NOTES

Relevant Reference Sources: MACH and NSP training plans and reports; GOB agency training plans and requirements.

Notes on Baselines:

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**-**	-	
2010	**25**	378	Includes a workshop on carbon financing attended by 100 expatriates, GOB officials and academicians. The rest are IPAC partner staff, GOB/NGO personnel and CMO representatives.
2011	**50**		
2012	**75**		
2013	**100**		

THIS SHEET LAST UPDATED ON: 11 October 2010

ADDITIONAL RELAVANT DATA (None)

13. Custom Indicator - 13: Number of individuals benefiting from improved stove and biogas plants.

IPAC Indicator Reference Sheet			
Program Area: Environment			
Element: E.G. 8.2 ─ Clean Human Environment			
Custom Indicator: Number of individuals benefiting from improved stove and biogas plants.			
DESCRIPTION			
Specific Definition: Institutions may range from educational or governmental, or even brickfields.			
Unit of Measure: number persons (based on number of households and institutions)			
Disaggregated by: n/a			
Justification/Management Utility: One of the causes of deforestation and degradation of forest PAs is unsustainable harvesting of fuel wood, especially for commercial sales to urban centers and brickfields. Dissemination of fuel efficient wood stoves for cooking or biogas technologies can reduce deforestation and carbon dioxide emissions. In addition to planting trees, and to increased patrolling and reduction of commercial extraction of fuelwood for brickfields and urban centers, IPAC will promote the expanded use of improved cooking stoves and biogas plants. These technologies have been effective in: reducing local demand for fuel wood, reducing the felling of trees and carbon emissions from deforestation, reducing expenditures for fuel wood, and contribute to improved hygiene and health and generate useful by-products (composted waste).			
DATA ACQUISITION PROCESS OF IPAC			
Management Notes:			
Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected on number of households and institutions have installed fuel efficient technology. Performance monitoring team, cluster performance monitoring specialists, field implementing partners, Nishorgo Shahayaks and collaborating CMOs/RMOs will collect information and data from improved stove makers.			
Data Source(s): field offices.			
Frequency/Timing of Data Acquisition: quarterly and yearly			
Survey Instrument for the data: lists of customers/buyers of improved stoves and biogas plants			
OTHER NOTES			
Relevant Reference Sources:			
Notes on Baselines: During NSP 4,115 households adopted these stoves and two institutions built biogas plants, total number of individuals benefiting from improved stove is 25,167 (from households 23,867 and from institutions 1,300).			
Other Notes:			
PERFORMANCE INDICATOR VALUES			
Year	**Planned / Targeted**	**Actual**	**Notes**
2009	**5,600**	2,800	500 households installed improved cooking stoves (ICS) at Satchuri NP, Rema Kalenga WS and Lawachara NP.
2010	**19,600**	6,281	1,032 households installed ICS. Progress depends on developing improved stove makers in new PA sites through leveraged support which is expected to be available soon.
2011	**28,000**		
2012	**36,400**		
2013	**44,800**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (none)			

14. Custom Indicator – 14: Market and non-market revenue generated from Protected Areas

IPAC Indicator Reference Sheet

Program Area: Environment

Element: E.G. 8.2 –

Custom Indicator: Market and non-market revenue generated from Protected Areas.

DESCRIPTION

Specific Definition: This indicator includes the market value of outputs produced by the IPAC beneficiaries listed in indicator 6. It also includes direct revenue generated through value chain interventions and the non-market values that are generated from conservation of the core zones of forest and wetland areas.

Unit of Measure: USD ($) per year

Disaggregated by: Marketed revenues generated from AIG support, enterprise generation, employment, entry fees, value of increased productivity from wetlands; non-marketed revenue includes improved health due to improved stoves, carbon sink value.

Justification/Management Utility: This is a comprehensive indicator that would show the major economic benefits of the investment.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

Five categories of beneficiaries are identified in indicator 6, for each the value of economic benefits will be estimated:
(1) Direct beneficiaries in new PAs – their additional income from activities such as homestead gardening, cow /goat/pig fattening, bee keeping, nursery, handicrafts, ethnic cloth production, sustainable agriculture, social forestry, eco-tourism and other value-chain development.
(2) For direct beneficiaries in PAs covered by previous projects (NSP and MACH) the difference in economic benefits compared with the end of the previous project derived through sample surveys.
(3) For improved stoves average reductions in fuel use and prices for biomass fuel will be used, secondary sources on the value and number of days of ill-health saved by improved stoves will be sought.
(4) In wetlands (including Sundarbans) the key revenue change is calculated from the difference in estimated fish catch (last project yar compared with baseline) based on per hectare catches and average fish price.
(5) Increased incomes of those involved in the tourism industry and services for the project sites including those employed in hotels, transport, etc.
In addition the total amount of entry fees collected from co-management sites including PAs from the CMO/RMO and Forest Department records (linked with indicator 21).
The value of additional carbon sequestration will derive from indicator 9 and international literature on traded values for carbon.
Existing literature will be reviewed for transferable methods and estimates that can be applied for other eco-system related services (for example, soil and watershed conservation) from improved management of PAs and landscapes.

Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected from AIG matrix, monthly progress report, CMO and FD records, fish catch monitoring, and sample surveys. Performance monitoring team, cluster performance monitoring specialists, field implementing partners, and collaborating CMOs/RMOs will collect information and data.

Data Source(s): field offices, see above.

Frequency/Timing of Data Acquisition: entry fees quarterly, yearly for direct beneficiaries of new PAs, other components mid-term and end of project. For example, wetland-fishery revenue will be estimated in the final project year to compare with 2010-11 baseline (Sundarbans and ex-MACH wetlands) and MACH end of project data.

Survey Instrument for the data: various (AIG monitoring, questionnaires, official records, catch monitoring)

OTHER NOTES

Relevant Reference Sources: NSP and MACH reports.

Notes on Baselines/Targets: Earlier baselines exist for previous projects for direct beneficiaries and fish catches. Others to be based on initial IPAC data.

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**$250,000**	$ 156,933	Revenue generated from eco-cottages, tourist shops, eco-guides, tree nursery, weaving, improved stove making, community based fishing (TGR), tourist kiosque etc.
2010	**$800,000**	$ 724,236	Estimated earnings of value chain beneficiaries and from eco-tourism. The full market and non-market benefits are assumed to be substantially higher, but their estimation depends on surveys to be conducted and outputs from monitoring presently underway.
2011	**$1,200,000**		

2012	**$1,600,000**		
2013	**$2,000,000**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

15. Custom Indicator – 15: Increase in density of indicator bird species in wetlands and forested landscapes

IPAC Indicator Reference Sheet			
Program Area: Environment			
Element: E.G. 8.2 –			
Custom Indicator: Increase in density of indicator bird species in wetlands and forested landscapes			
DESCRIPTION			
Specific Definition: 8-10 indicator bird species have been selected as indicators of biological diversity and forest health to be monitored in a total of 10 PAs including five pilot PAs from the Nishorgo Support Project (NSP) where they were monitored for four years. These species have been selected to represent three strata (ground-understorey, mid-storey and canopy) of the forest. Out of eight species considered in NSP some occurred at low density and were considered unlikely to respond to possible changes in the habitat within 4-5 years. The choice of species has been revised for the additional PAs monitored in the present project. In addition counts of wintering waterbirds will be used to track change in the health of the wetlands. **Unit of Measure:** Forest: % change in average density of indicator birds per km^2 and number of species increasing or decreasing; wetland: % change in number of waterbird species and in total count of waterbirds of all species. **Disaggregated by:** Forest birds and Wetland birds **Justification/Management Utility:** This indicator is to be measured year by year. It provides a useful and easily comprehensible measure of forest and wetland habitat change, useful both to policy makers and to the local inhabitants, for building awareness. This indicator serves as proxy indicator of biodiversity.			
DATA ACQUISITION PROCESS OF IPAC			
Management Notes: Reliable changes/trends are unlikely to be discernable year-to-year. **Method of Data Acquisition by Project Monitoring Unit:** Forests: annual bird surveys in the breeding season following pre-established transects in 10 PAs conducted by ornithologists, students and local eco guides. Wetands: annual midwinter waterbird counts, as part of the Asian Waterbird Census each January, by experienced birdwatchers (these would cover Hail Haor (Baikka Beel), Hakaluki Haor and Tanguar Haor. Performance monitoring team will collect information and data and share findings with CMOs/RMOs. **Data Source(s):** community members, volunteers, experienced birdwatchers, field offices. **Frequency/Timing of Data Acquisition:** yearly **Survey Instrument for the data:** forests: line transect survey, wetlands: complete count.			
OTHER NOTES			
Relevant Reference Sources: NSP bird survey reports, MACH completion report and Baikka Beel bird list. **Notes on Baselines/Targets:** Because different species are considered in different sites, percentage changes over the baseline are the main measure. Baseline in 5 forest PAs is 2008 (the last survey under NSP). Change in density will indicate ecosystem health. Detailed information on the baselines and past trends is given in an annex. **Other Notes:** Changes are likely to be small between years, and may fluctuate for other environmental factors, so only a final target is indicated although actual data on populations will be available each year.			
PERFORMANCE INDICATOR VALUES			
Year	**Planned / Targeted**	**Actual**	**Notes**
2009	NA		
2010			Data from 5 forest PAs being processed Data from Hail Haor available, 2 other wetlands to be collected from AWC coordinator
2011			
2012			
2013	Forest >10% increase for all species Wetland >30% increase total count		
THIS SHEET LAST UPDATED ON: 13 October 2010			
ADDITIONAL RELAVANT DATA (see annex)			

16. Custom Indicator - 16: Amount of leveraged financing for conservation

IPAC Indicator Reference Sheet			
Program Area: Environment			
Element: E.G. 8.2 –			
Custom Indicator: Amount of leveraged financing for conservation.			
DESCRIPTION			
Specific Definition: This indicator will measure the ability of the PA (forest and wetland) system to raise funds for protected area management. Funds raised would be used to support protected area activities after project completion or for activities outside the pilot areas to initiate co-management activities in other sites. This includes carbon projects, public-private partnership and donor funding.			
Unit of Measure: million USD			
Disaggregated by: n/a			
Justification/Management Utility: This indicator will measure yet another aspect of improved institutional capacity, that of civil society capacity. The ability of national government, local governments, NGOs and other local organizations to effectively mobilize conservation finance to support co-management of PAs and other NRM programs is a fundamental aspect of effective co-management.			
DATA ACQUISITION PROCESS OF IPAC			
Management Notes:			
Method of Data Acquisition by Project Monitoring Unit: Project documents, donor, NGO and government records, agreements and announcements.			
Data Source(s): Dhaka office, supported by cluster offices for locally leveraged funding.			
Frequency/Timing of Data Acquisition: yearly			
Survey Instrument for the data: none			
OTHER NOTES			
Relevant Reference Sources:			
Notes on Baselines/Targets:			
Other Notes:			
PERFORMANCE INDICATOR VALUES			
Year	**Planned / Targeted**	**Actual**	**Notes**
2009	**$4,300,000**	$ 12,727,362	European Union funded Sundarbans Environmental And Livelihood Security (SEALS) Project (USD **12,575,933 -** EUR 10 million). IPAC participated and contributed in design of SEALS project, and there is an MOU between EC and USAID. The project was scheduled to start end of 2009. 1 EUR = 1.25759 USD 1,100 households were provided with ring-slab latrine, cost of each is Taka 1,000, total value BDT 1,100,000 (equivalent to **USD 15,714**. RDRS provided funds from its own sources for AIGAs totalling US$ 64,286 at LNP and US$ 71429 at SNP (total **– US$ 1,35,714**).
2010	**$8,600,000**	$ 17,257, 956	GTZ support for project on reforestation in Chunoti WS (EUR 4.2 million)
2011	**$12,900,000**		
2012	**$17,200,000**		
2013	**$21,500,000**		
THIS SHEET LAST UPDATED ON: 11 October 2010			
ADDITIONAL RELAVANT DATA (none)			

17. Custom Indicator - 17: Number of individuals that are aware of a national protected area network.

IPAC Indicator Reference Sheet

Program Area: Environment

Element: E.G. 8.2 –

Custom Indicator: Number of individuals that are aware of a national protected area network – Nishorgo Network.

DESCRIPTION

Specific Definition: This process indicator will record the number of people who are reached by (attend, see, read, etc.) communication initiatives that explain the concept and practice of the national protected area network, and therefore can be expected to recognize the PA network objective and its items, brands or logos.

Unit of Measure: number of people

Disaggregated by: n/a

Justification/Management Utility: This process indicator will capture the coverage of awareness generation activities in order to build a constituency for conservation and to raise awareness among the public of the biological richness of the country and its protected areas, the Nishorgo Network.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

People are expected to become aware of the Nishorgo Network through:

- Mass events in the IPAC PA landscapes;
- National level events including observation of international or national days, fairs, etc.;
- Mass communication through electronic and print media, etc.

Method of Data Acquisition by Project Monitoring Unit: Data collection and assessment will be organized by Asiatic Communication Team, IPAC communication team and Performance monitoring team.

Data Source(s): Asiatic Communication Team and IPAC communication team records of attendance at events and verification of secondary information on the audience/readership/viewing figures for mass media.

Frequency/Timing of Data Acquisition: yearly

Survey Instrument for the data: The project communication strategy will finalize data collection methods, but these will include event attendance records and viewership/readership data.

OTHER NOTES

Relevant Reference Sources:

Notes on Baselines: baseline figure for forested PAs is around **20,000**. This figure includes CMO members, forest user groups, patrol groups, Nishorgo club members, scouts members, number of PA Guide books sold, number of leaflets distributed. MACH reported reaching over 300,000 people through awareness raising activities on wetland conservation and management.

Other Notes: It is estimated that a maximum population of about 500,000 people could be reached around the intervention PAs, with the remainder of the target at national level, the main national-level media campaigns are scheduled for 2011-2013.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**50,000**	16,722	Events include inception workshops, different days and small gatherings.
2010	**500,000**	182,978	IPAC orientations, trainings, spot based awareness events, local level meetings, international day observation at national as well as local level. However, the main national campaigns are now scheduled for 2011 onwards.
2011	**1,000,000**		
2012	**2,000,000**		
2013	**2,500,000**		

THIS SHEET LAST UPDATED ON: 11 October 2010

ADDITIONAL RELAVANT DATA (none)

18. Custom Indicator – 18: More active and decisive support for PA co-management from Forest Department, DOE, DOF and local government

IPAC Indicator Reference Sheet

Program Area: Environment

Element: E.G. 8.2 –

Custom Indicator: More active and decisive support for PA co-management from Forest Department (FD), Department of Environment (DOE), Department of Fisheries (DOF), and local government.

DESCRIPTION

Specific Definition: This indicator will measure improvements in the institutional support provided by FD, DOE and DOF and shifts in their operating paradigm in favor of co-management and integrated conservation issues and climate change.

Unit of Measure: Percentage of PA sites where substantive active support is achieved..

Disaggregated by: n/a

Justification/Management Utility: Centrally and in the field staff of the Wildlife and Nature Conservation Circle of the FD, the Ecologically Critical Area Cell and Climate Change Cell within the DOE and the newly formed Inland Capture Fisheries Management Wing at the DOF are all critical to implementation of the PA co-management strategy and will receive specific attention and training, as will local government officials (Upazila level) and representatives (Union Parishads).

DATA ACQUISITION PROCESS OF IPAC

Management Notes: To measure changes against this indicator and custom indicator 22, and to guide IPAC facilitation and strengthening of co-management, annual or half yearly assessments of the co-management arrangement (covering both CMO/RMO and government sides of co-management) will be made. This will be based on modification of the institutional and CBO assessment systems earlier used in NSP and MACH. One of the measures here will be the number of definable actions taken by each agency in support of and obstructing effective co-management and the effectiveness of those actions in each period.

Method of Data Acquisition by Project Monitoring Unit: Periodic assessment of co-management arrangements and stakeholder actions; reporting on the progress of agreed to changes.

Data Source(s): Assessments of CMO/RMO and official support for co-management at site level, supported by IPAC project documents, data and information from the Ministry of Environment and Forests, Department of the Environment, Forest Department, Fisheries Department.

Frequency/Timing of Data Acquisition: yearly (may be made half yearly if found to be helpful for project implementation)

Survey Instrument for the data: short co-management assessment checklist/format conducted by performance monitoring team.

OTHER NOTES

Relevant Reference Sources: Survey instruments in reports of NSP and MACH.

Notes on Baselines/Targets: Although active support was achieved in past projects, no baseline is relevant as the indicator measures active support within each year.

Other Notes: Assessment will cover the previous 12 months and has been planned to start once a critical mass of CMOs are established.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**none**		Assessments of support were not made in 2009-10 while capacity was built and co-management arrangements were introduced in new sites.
2010	**none**		
2011	**60%**		
2012	**80%**		
2013	**100%**		

THIS SHEET LAST UPDATED ON: 13 October 2010

ADDITIONAL RELAVANT DATA (none)

19. Custom Indicator - 19: Number of communities with co-management agreement.

IPAC Indicator Reference Sheet

Program Area: Environment

Element: E.G. 8.2 –

Custom Indicator: Number of communities with co-management agreement.

DESCRIPTION

Specific Definition: This indicator will capture active local participation in the management of protected areas as well as acceptance of government on devolution of power at the local level for sustainable resource management. Local participation is key to the long-term sustainability of protected areas. Communities must identify with the protected area and see it as a resource worth protecting because the protected area is viewed as an asset that provides the community with goods and services. Local participation is defined as communities incorporated in planning for, identifying local resource priority needs, defining uses of and managing a protected area. Communities can participate in co-management of protected areas by taking responsibility for protection and wise use – for example patrolling, offering services for tourists (guides, food, souvenirs), providing wetland, forest and resource maintenance services, among other activities. Community and local resource management group participation will be established through co-management agreements.

Unit of Measure: Number of villages that are covered by co-management agreements (represented in CMOs/RMOs that have agreed management plans). The concept of a village is a traditional one which has some flexibility, in general settlements locally considered to be villages will be counted and neighborhoods known as para within a village would not be counted as separate villages.

Disaggregated by: forested lands and wetlands.

Justification/Management Utility: By definition co-management requires the participation of local groups and communities. As such this indicator will measure progress toward attaining greater local participation. If procedures developed for co-management are functioning, this indicator will provide proof that local communities are participating and benefiting from the implementation of the procedure.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

Method of Data Acquisition by Project Monitoring Unit: Performance monitoring team, cluster performance monitoring specialists, field implementing partners, and collaborating CMOs/RMOs will collect data listing villages formally participating in co-management as part of quarterly progress reporting.

Data Source(s): IPAC project documents, records of CMOs and RMOs.

Frequency/Timing of Data Acquisition: quarterly

Survey Instrument for the data:.

OTHER NOTES

Relevant Reference Sources: MACH completion report Vol 2 Indictor 6.3b; NSP reports

Notes on Baselines/Targets: Baseline figures: NSP (five forest PAs) – 210 villages (covered by CMOs in four PAs). MACH sites (three wetlands) – 127 villages (covered by 16 RMOs plus some chhara committees).

Initial planning for co-management indicates the villages to be invited to participate, and therefore the targets, achievement will depend also on the interest of villagers, and may differ if for example other forest-wetland user villages are subsequently identified and agree to participate in co-management. Target values are based on detailed assessment of user villages through RRA/PRA and from inputs from DOF and FD.

Other Notes:

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**20**	0	No new CMOs formed in this year
2010	**100**	142	Villages covered by CMOs in Khadimnagar NP (22), Fasiakhali WS (30), Medha Kachapia NP (16), Kaptai NP (2 CMCs)(21), Sundarbans East (2 CMCs)(45), and Aura Baura RMO (8)
2011	**250**		
2012	**400**		
2013	**400**		

THIS SHEET LAST UPDATED ON: 13 October 2010

ADDITIONAL RELAVANT DATA (see annex)

20. Custom Indicator – 20: Number of training curriculums and modules designed and taught

IPAC Indicator Reference Sheet
Program Area: Environment
Element: EG 8.1 – Natural Resources and Biodiversity
Indicator: Number of training curriculums and modules designed and taught
DESCRIPTION
Specific Definition: Training module or curriculums of short-term, medium term (certificate and diploma) on biodiversity, climate change, wildlife management, Protected Area management, community based eco-tourism, climate change adoption, vulnerability assessment, value chain development, etc.
Unit of Measure: number of training modules
Disaggregated by: n/a
Justification/Management Utility: development of appropriate training modules or curriculums is vital to developing capacity and building constituency, and to generating economic benefits.
DATA ACQUISITION PROCESS OF IPAC
Management Notes:
Method of Data Acquisition by Project Monitoring Unit: performance monitoring data collected on training topics – on a quarterly basis using training reports. Performance monitoring team, cluster performance monitoring specialists, field implementing partners will collect data.
Data Source(s): Project training plan, training designs and course outlines/curricula documents, training reports.
Frequency/Timing of Data Acquisition: Quarterly
Survey Instrument for the data: Review of training materials and reports
OTHER NOTES
Relevant Reference Sources: MACH and NSP training plans and reports; GOB agency training plans and requirements
Notes on Baselines: Only new curriculums and modules will be counted so the baseline figure is 0.
Other Notes:
PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**4**	1	Module on Bamboo Value Chain developed and taught.
2010	**6**	10	9 comprehensive training modules and 11 more shorter versions of training kits (further development in progress) were developed and exercised at field level
2011	**10**		
2012	**15**		
2013	**20**		

THIS SHEET LAST UPDATED ON: 11 October 2010
ADDITIONAL RELAVANT DATA (shown below)

21. Custom Indicator – 21: Number of recorded visitors to targeted PAs.

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.1 – Natural Resources and Biodiversity

Indicator: Number of recorded visitors to targeted PAs.

DESCRIPTION

Specific Definition: This indicator will measure the increased interest of the general public to visit protected areas (forests and wetlands) and their willingness to pay an entrance fee. It is an input into measuring the increase in revenues made available to finance PA management, given the government commitment to financing of PA co-management through the retention / return of forest PA entry fees to CMOs (indicator 14).

Unit of Measure: Annual numbers of visitors

Disaggregated by: number of visitors paying fees (supporting information will include the total value of fees, and % of entry fees retained / returned to CMOs/RMOs)

Justification/Management Utility: This indicator will provide evidence of increased civil society awareness and active use of PAs, and government acceptance and interest in natural areas. The planned communications campaigns should provide some of the stimulus for the increased visitation. Although under NSP, visitor number increased tenfold (from 5,000 to 50,000 in Lawachara NP), as entry fees were not then approved, the number of paying visitors in NSP PAs was 0, modest numbers visited Baikka Beel (where the RMO does collect fees) and significant numbers of paying visitors already visited Bhawal NP and Sundarbans.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

Method of Data Acquisition by Project Monitoring Unit: visitor register of respective PAs.

Data Source(s): Visitor registers of respective PA. Paying visitors receive a ticket and the stub of the ticket along with a register are kept by the concerned CMO/RMO. Where visitors do not pay, either they are requested to collect a "ticket" with serial number or an estimate of visitor numbers will be made by the CMO/RMO supported by the performance evaluation team and implementation partners.

Frequency/Timing of Data Acquisition: monthly, quarterly and yearly.

Survey Instrument for the data: Visitor registers and receipt books

OTHER NOTES

Relevant Reference Sources:

Notes on Baselines: Number of registered visitors in Lawachara NP, Satchari NP and Teknaf GR in 2007 (January to December) was 45,605, and in 2008 (January to May) was 55,428.

Other Notes: Reliable visitor records only become available when a PA is authorized to collect entry fees, which depends not only on forming CMOs but also in forest PAs on Government approval.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	**50,000**	70,000	**Work in progress**: Government has approved entry fee, ticket design and sharing of 50% revenue by the CMOs. After training of the CMOs to manage visitors the system became operational.
2010	**250,000**	252,525	Since November 2009 entry fees were introduced at Lawachara, Satchari, Chunati and Teknaf PAs; visitor fees and records already existed in Baikka Beel (Hail Haor), and, visitor records are maintained at Sundarbans and Khadimnagar without entry fee collection. Data is not yet available from other PAs.
2011	**500,000**		
2012	**750,000**		
2013	**1,000,000**		

THIS SHEET LAST UPDATED ON: 11 October 2010

ADDITIONAL RELAVANT DATA (see annex)

22. Custom Indicator – 22: Number of protected area management units with improved performance and capacity for co-management

IPAC Indicator Reference Sheet

Program Area: Environment

Element: EG 8.1 – Natural Resources and Biodiversity

Indicator: Number of protected area management units with improved performance and capacity for co-management.

DESCRIPTION

Specific Definition: a score based assessment of performance will be developed and standardized into a percentage of maximum possible score for any PA (this is necessary as the diversity of forest and wetland PAs means that not al of the various detailed indicators contributing to the score will be valid for all PAs). Then the number of PAs achieving better than a target performance will be considered the overall achievement. Based on past assessments a target of 70% of the potential maximum score will indicate a well performing co-managed unit.

Several similar systems of assessing and scoring have been used in Bangladesh in the past. In NSP institutional performance was assessed in a study by Khan et al. (2008), but this placed les emphasis on areas such as resource management, finances, and equity. In MACH a system of assessing CBOs (RMOs and FRUGs) was developed based on six-monthly assessments by a mix of project staff and DOF officials using a short assessment format and small group meetings with CBO leaders and with other community stakeholders, covering a number of indicators (each scored on a 0 to 2 scale) grouped into seven themes: resource management, pro-poor, women's role, organization, governance, finances, and linkages (Bhuiyan and Thompson (2008).
NSP also developed a PA management performance scoring system based on WWF's "Rapid Assessment and Prioritization of Protected Area Management Methodology (Ervin 2003) and Site Consolidation Scorecard developed by The Nature Conservancy (1999). Adjustments were made to match local condition or reality to the extent possible.

A revised scorecard method will be developed to reflect changes in: resource management (management plans, institutions (rules) effectiveness of protection, interventions to restore ecosystems, etc.), community participation and stakeholder representation (particularly of the poor, minorities, and women), governance and functioning of co-management and the organizations assessed, economic benefits generated, financial management and operating budgets, visitor arrangements and infrastructure use, and the participation of government stakeholders. This will be applied to forest and wetland PAs to track improvements in performance and the capacity for co-management of the integrated PA system for the entire country.

Unit of Measure: score

Disaggregated by: forested PA and wetland PA

Justification/Management Utility: The management performance scorecard can give ecological, social, economic and legal context of each PAs and assessment of management capacity to better decision making. This scorecard method is an important source of feedback to CMOs/RMOs and local officials; will be helpful in communication, advocacy, constituency building, leveraged financing, resource allocation by the policy makers; and will also help in formal recognition and institutionalization of the IPAC system in Bangladesh.

DATA ACQUISITION PROCESS OF IPAC

Management Notes:

Method of Data Acquisition by Project Monitoring Unit: assessments (see below) supplemented by reports of and interviews with FD, DOE and DOF.

Data Source(s): assessments conducted by performance monitoring team in cooperation with CMOs/RMOs and FD, DOE and DOF in respective PAs/sites.

Frequency/Timing of Data Acquisition: yearly.

Survey Instrument for the data: assessment format that scores a mix of qualitative and quantitative indicators.(this will be the same assessment that also generates indicator 18)

OTHER NOTES

Relevant Reference Sources:

Notes on Baselines/Targets: baseline for all forest PAs and CMOs has already been done under NSP and for all MACH wetland RMOs. But the details differ between past assessments. Co-management entities in all sites (all 16 RMOs and all 8 CMOs) showed improved performance during the previous projects.

Other Notes: It is anticipated that IPAC will directly have a role in facilitating 45 CMOs and 16 RMOs, and indirectly in an as yet unknown number of co-management bodies in indirect sites.

PERFORMANCE INDICATOR VALUES

Year	Planned / Targeted	Actual	Notes
2009	5	Not assessed	The targets and indicator have been revised to form a feasible and useful method.
2010	20		Assessment in late 2010-early 2011 will cover previous 12 months.
2011	25		
2012	30		

2013	45		
THIS SHEET LAST UPDATED ON: 13 October 2010			
ADDITIONAL RELAVANT DATA (none)			

Bhuiyan, D. and Thompson, P. (2008) Sustainability and status of Community Based Organizations formed under MACH. MACH Technical Paper 11. Management of Aquatic ecosystems through Community Husbandry, Winrock International, Dhaka.

Ervin (2003)

Khan, N.A.; Dutta, U.; Ahsan, M.; Mrong, M.; Sultana, R.; and Rahman, A. 2008. An Exploratory Study on Performance and Capacity of NSP-Co-management Committees: Collation and Overview. Nishorgo Support Project, Forest Department, Dhaka.

The Nature Conservancy (1999)