

## Monitoring Changes and Impact

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The Project aimed to develop a participatory monitoring and evaluation system that would continue beyond the Project period. If the stakeholders took ownership of this system by participating in identifying and developing a simple viable system generating reliable information then this was expected to sustain and to facilitate learning and collective action.

To achieve this goal, the following steps were planned:

- through consultation with stakeholders, generate a minimum number of cost-effective and reliable indicators;
- with participation of stakeholders develop a system to evaluate the performance of the project; and
- institutionalize the system.

### Starting Assumptions and Subsequent Adaptation

Analysis of secondary data all five PAs (Bari, A. and Dutta 2003 and 2004; Mollah and Nath 2003; NACOM 2003a and b) identified the following major threats that might be monitored by communities: illegal felling, collection of fuel wood, and plantation of fast growing exotic species. These three can be considered process indicators, so an outcome or output level indicator was proposed – one that would show impact on wildlife since the cumulative effects of these three activities is damage of wildlife habitat and subsequent declining wildlife populations. To guide this a literature survey was made for a range of mammal, bird, amphibian, and reptile species. Indicators to measure change in socio-economic condition and participation were also proposed, including: increase in income of poor stakeholders, level and scale of participation, and legal base for participation.

To expedite the process, a set of potential indicators was presented to the Forest Department (being a key stakeholder) during early 2004. Forest Department participants were asked to give their views on the practicability of indicators based on relevance, responsiveness, linkage, ease of data collection, ease of assessment and cost, but there was hardly any response. This was most likely because effective monitoring of biodiversity and forest health were new concepts for the Forest Department which did not expect that such monitoring would work due to lack of manpower, capacity and budget. Moreover, illegal felling is a sensitive issue and fuelwood extraction is very widespread. There was less expertise in managing natural forest relevant to PAs than in managing plantations (often of exotic species), and monitoring of participation had not been adopted before.

The project team made field visits to evaluate the feasibility of potential indicators and revised them to: illegal felling, basal area estimation, photo-monitoring (to capture illegal felling and increase in natural regeneration and to use photographs as a communication tool), selected bird species populations, and a community scorecard to measure socio-economic improvements and participation.

## Illegal Logging Data

The project decided to use the “Offence Registers” of Forest Department (FD) as the source for illegal felling data in order to strengthen the already established system and avoid introducing a new system. Under the Bangladesh Forest Manual (part 2), each management unit must register the number of offence cases and number of trees felled. The Chief Conservator of Forests then sends regular reports, including illegal felling data, to the relevant ministry. It would also bring transparency and accountability, and make such information more available to the public.

However, the field level Nishorgo staff raised questions about the reliability of this data as in some cases the project staff found tree stumps covered with soil by FD staff. Bureaucratic barriers were overcome to access such data. To overcome the reliability question, a basal area survey was planned (the method of data collection is comparatively easy and less time consuming).

The Project monitoring team members collected illegal logging data from the Offence Registers spending hours with FD officers to develop relationships, as well as in the field. Data were cross-checked by finding in the field the serial numbers that FD is required to hammer into tree stumps, and the FD was informed of the location of stumps which they had missed and later it was crosschecked if those were registered. The Project worked hard to improve the reliability of the data, but once the Project ends, will it remain at the level it is now? Most likely no, except where there are interested and well motivated Assistant Conservator of Forests and Range Beat Officers.

In practice some FD officials were found to have little interest in generating and acting upon reliable data on tree felling and habitat change in Protected Areas. For example, in Lawachara NP the Project team summarized illegal felling data for the financial year 2003-04 (baseline data) and the official record totaled 1,192 trees felled,. A loss of about 100 trees per month is clearly substantial, and the official figures showed 709 trees felled in 2002-03, yet the DFO stated that illegal felling had declined and was not a concern.



*Timber processing structure in Teknaf Wildlife Sanctuary*  
[Nishorgo Support Staff]

However, in some PAs, the FD attitude is still that only FD staff can go inside the forests. For example, in Teknaf Wildlife Sanctuary in April 2005 Project staff and some Forest Guards visited deep inside the PA and found a log processing site (see photo below). In order to ensure transparency it would be better if local stakeholders including members of Co-Management Councils and Community Patrol Groups are involved in field inspections and patrolling.

Since 2007, the FD staff holding the positions of Member-Secretary in the Co-

Management Committees (CMC) have reported the number of trees felled each month in the CMC meeting. This has succeeded in bringing the issue in front of the CMCs. Official actions were taken against FD officials found to be implicated in felling (one at Rema-Kalenga WS and the other at Teknaf Wildlife Sanctuary) and some members of community patrolling groups were changed (at Lawachara NP) due to alleged involvement in illegal felling. But still there is a contest of laying blame on each other between the Department and the community.

The terminology and focus of FD is still on high timber value trees not on the total habitat. During winter 2004 members of the NSP monitoring team were hiking towards Rema-Kalenga WS. They spotted in the distance someone processing a felled tree who ran away, leaving behind a teak tree from a plantation in the Reserved Forest adjacent to the WS. The team noted the location, sent a local person to inform the FD and carried on. After 10 minutes, they saw a young man coming out of the PA with a log on his shoulder. He did not seem to be worried. When stopped and asked what this tree was, his verbatim reply was “D-class”, and when asked again he gave the same reply. “D-class” is a FD term for low value timber, but the answer was unexpected from a local person and this revealed that local people are allowed in practice to fell any “D-class” tree within the PA. The implication is that local FD staff are not concerned about loss of trees of low timber value when in fact they are vital wildlife habitat.

Other practices having serious negative implications for habitat restoration include burning of vegetation on hills for ash as fertilizer for the adjacent agricultural land, and cutting of saplings of lower class timber as either fuelwood or for binding/carrying materials/tools. Changes are necessary not only in policy but in its application and practice. The Project did demonstrate how the mindset of local inhabitants can be systematically changed. The Banskhal CMC of Chunati WS members discussed the use of naturally regenerating saplings (locally called bari) as sticks to carry sungrass. Sungrass grows profusely in these hills as a result of repeated burning, and hundreds of local people harvest sungrass. The CMC raised local awareness of the negative impact of using saplings and burning by disseminating leaflets, public announcements (through loudspeaker), help of Imams, and visiting local markets where sungrass is sold. Eventually use of saplings as carrying tools fell.

Burning is still widespread in Teknaf GR and Rema-Kalenga WS. It is not only done by local people, but also practiced by FD as part of its traditional clear felling and re-planting cycle of forestry operations in plantation, which local people use as a justification. Burning to clear undergrowth is cheap and takes less time. FD guidelines recommend burning twice areas earmarked for plantations before planting. This is designed to stop natural regeneration and is clearly contradictory to biodiversity conservation and should be ended.

Monitoring also revealed that existing financial rules have a major part in current practices adopted by FD where replanting is needed in PAs (and in other forest lands). Under the current Public Procurement Act (2006) and Public Procurement Rules (2008), FD has to call for quotation or tender for plantation activities costing any amount from Tk. 15,000 to Tk. 2,000,000. Although the Public Works Department’s construction rates include an allowance for the contractor’s profit and taxes (VAT and income tax), there is no such provision in the FD’s plantation cost schedules. Moreover, unlike construction works, the contractors do not employ technical persons for execution of plantation activities. With a lack of formal provision for contractors to make a profit, and with low allocations from the government revenue budget

for the proper operation and management costs of FD field units, it should not be surprising that corners are cut to manage funds.

## Basal Area Estimation

The Project team selected some young people (Class eight +) from the local communities and trained them to record data using wedge prism (a wedge-shaped piece of glass) to minimize survey time. They were oriented on the concept of probability and various sampling designs. After consulting with them it was decided to do non-random sampling - systematic sampling for Lawachara NP and selective sampling for the other four PAs. They took measurements in parallel with the project team and proved they could complete baseline basal area estimation. However, this did not become an annual event and at the end of the project, the Project team had to alone as most of the volunteers were busy with their enterprises, especially eco-guiding.

## Photo Monitoring

This method was used for the first time in Bangladesh. The approach was adapted from Hall (2001a and b), Reynolds (1998) and Edelen and Crowder (1996). At the start and end of the project 156 photos were taken distributed over 99 photo points in the five PAs to capture illegal felling as well as changes in natural regeneration. However, during the planning and baseline stage it was a struggle to locate representative photo points as Project activities concentrated more on the wider landscape area to mobilize people and less on specific activities (other than some tree planting) within the actual PAs. The team consulted with local volunteers and eco-guides and decided to take photos along the boundary of the PAs as most pressure occurs there. GPS were used to record photo point locations, the direction (angle from north) photographed was noted, and a digital camera was used.

Some photo sites were chosen for specific groups of trees that might be vulnerable to illegal felling. However, this focus sometimes missed the opportunity to measure undergrowth recovery, while in other cases by chance it measured substantial changes. The photo site illustrated below is at Dalubari in Lawachara NP in a Eucalyptus and Acacia plantation of 1988, although no Acacia trees were left in 2005, all had been cut. The site was chosen to see if the Eucalyptus trees would remain. As of April 2008 the Eucalyptus trees remained (E) but



*Example of photo-monitoring results from the southern part of Lawachara NP (adjacent to Dalubari)*

the most notable difference is the undergrowth (G – ground and R – regeneration). Due to rapid recovery of undergrowth reaching the height of the photographer, the 2008 picture could not even be taken from the same angle or spot as in 2005 (note the position of the walking trail (R) in the two photos).

## **Community Scorecard**

The Project attempted to develop community scorecards based on consultations with focus groups of 30-40 local stakeholders (living adjacent to PAs) whom the project had just started to organize (for example as forest user groups). In the discussions it was suggested that local people have the right to influence project activities based on their own monitoring since the project was designed to benefit local people as well as the PAs. However, the Project team focused on changes in socio-economic condition offering quantitative (income) and later qualitative indicators (pictorial categories such as happy to sad face) (Aziz 2004). Moreover, participants were asked to share experiences in taking loans in the groups. This process failed to develop a set of indicators because it focused on sensitive individual financial issues and met with a mixture of local stakeholders together where rich and poor are reluctant to discuss such matters in front of their opposites. In addition local people had no expectation of influencing forest management and were suspicious about the Forest Department. Therefore the Project decided to assess livelihood impacts using a formal survey covering changes in incomes and other livelihood indicators for a sample of individual beneficiaries under different livelihood support activities.

It was then decided that community scorecards would be used to cover: co-management policies and model, institutional capacities of local people to carry out co-management, improvement in economic status of local people, and improved practices that help to restore biodiversity or health of the PAs. Changes in these four aspects would be measured by several indicators for each aspect on a predetermined scale of 1 to 4, where 1 represents the minimum and 4 represents optimal conditions. Initially the Project included too many issues in the scorecards, without thinking about the time required - one to one and half hours is too long for people who already spend time on the CMC main activities as voluntary service.

## **Bird Monitoring**

With regard to choice of bird species to monitor, locally experienced birdwatchers (e.g. Enam ul Haque, Paul Thompson) were consulted and finally eight species were selected based on their: expected responsiveness to interventions within five years, ease of identification and familiarity to local people, and communication value (although one of the species chosen does not occur in the northern PAs). The data collection method was to be simple enough to engage local partners in monitoring at any stage.

An independent wildlife expert (Dr. M. Monirul H. Khan) from Jahangirnagar University was given the task to lead the survey team comprised of participants from Bangladesh Bird Club and the local communities living around or close to the project sites, including local eco-guides and Co-management Council members. The team members were trained so that they could play a significant role in the survey (Khan, 2005).

## Lessons Learned

### Lessons with Respect to Monitoring

***Voluntary monitoring is unlikely to be sustainable.*** Most of the monitors also became eco-guides, training as monitors strengthened their knowledge base for use in guiding visitors. However, in winter there are more visitors. As a result, eco-guides preferred to spend time where they would earn more money. Even when the Project paid Taka 300-500 per day for bird or vegetation monitoring, they preferred guiding which is physically less straining (walking on the trail compared to entering into forest and climbing hills). In most cases, the local volunteers did not find it relevant to them to collect vegetation data (illegal felling or basal area estimation) or monitor birds, rather they were more interested to provide information on visitors which is more relevant to them. Although eco-guides were trained in data collection techniques and methodology, they were not provided them with bird books (information sheets were provided) nor with binoculars.

Eco-guides may not be the most appropriate local monitors. For example, other local people knowledgeable about birds irrespective of age or education level could have been selected which would have broadened community involvement and might have enhanced long term community based monitoring.

***Linkage between volunteers and CMCs.*** Representatives of the trained eco-guides were expected to be included in the CMCs, but this did not happen. As a result there was a gap in the flow of information from them to the CMCs. Also the project did not try hard to find a way of making this connection.

***For photo-based monitoring, take many photos systematically along well documented routes and without pre-planning what they are expected to cover.*** There were insufficient photo sites to measure impacts. Routes that could have had photo sites were not covered. Also at photo sites 360o coverage was not made. As a result, at the end of the project, it was often found that illegal felling, natural regeneration, burning or other changes had occurred on the other side to the one covered by photos. Digital systems have potential to make much more extensive photo coverage. Eco-guides took the team to places they deemed would be of interest, and it was expected those sites would remain accessible. As a result, despite instructions in the photo monitoring manuals, insufficiently detailed location notes were made for a new monitor three years later to find the routes used, even when GPS coordinates were also taken.

***Birds can be used as a tool to monitor forest health.*** Several of the species selected showed increases in numbers consistent with recovery of their preferred forest micro-habitats (Khan 2008). More species might be monitored to strengthen sensitivity of the method, since it was found that such monitoring requires specialist inputs and is not easily undertaken by local people.

***Demonstrate rather than describing your method.*** The team explained the monitoring methods on several occasions to the Co-management Committees and sought their advice for improvements or selection of indicators. However, non-visual methods were used and they did not understand the scorecard system. Lastly, the Project decided to demonstrate the method and



scoring with each CMC separately. The CMC members then understood the method clearly and found it interesting. However, the opportunity was lost to make improvements and build capacity to carry out the scoring without external facilitation.

***Participatory monitoring needs to be participatory at all stages and should be seen as an important tool for learning and communication.*** Although, several training programs related to co-management were held for CMC members, the process of scoring participation enhanced their understanding. It helped CMC members understand better that although the FD takes up activities in core areas of PAs they as CMC members have the right to be consulted or even take decisions and make recommendations, depending on the topic. Again, many CMC members thought that their participation had no legal basis or that it was only for the project period. Gradually it become clear to them that their role has a strong legal base and is not limited to the project period.

## Conclusion

Monitoring needs to follow the same principles as co-management in general. Consciously or unconsciously, the Project used local people to collect data. The Project selected indicators and decided how to collect and analyze data, who would collect and analyze data, and its subsequent use. Effective participatory monitoring could be enhanced by the following steps:

- As part of participatory planning the diverse stakeholders should identify and agree targets and indicators of their success and failure along with management priorities.
- Communities need to be consulted about the detail of monitoring (for example local communities might have proposed bird species of value and interest to them, and people with traditional knowledge to take part in monitoring).
- Data on impacts revealed by monitoring need to be used by the co-managers, where appropriate positive impacts can be used to raise awareness of the general public (for example restoration of ground and undergrowth dependent birds could be publicized by the CMCs to raise the importance of conservation in local communities).
- Monitoring should be a collaborative shared responsibility not the responsibility of a small team specialized in this function which means that information is not shared or used to guide management interventions.

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