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Carbon Sink Projects as a Revenue Source

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In light of the rapid growth of carbon financing globally, combined with the high growth rates of forests in Bangladesh's climate, it appeared logical to the Project team to pursue pilots in carbon sink financing as an additional non-consumptive use of forests within the Protected Area system. Not only are Bangladesh forests fast-growing in general, but they also provide a variety of livelihood benefits to nearby poor populations. Pursuit of opportunities for carbon sink financing on one of the Nishorgo pilot Protected Areas thus offered an opportunity to generate financing from and for conservation, assist in poverty alleviation and assist in climate change mitigation and adaptation.

For the purposes of conducting such a pilot carbon sink project exercise, the Chunati Wildlife Sanctuary was selected. This 7,764 hectare Sanctuary was heavily deforested prior to 1990 in the wake of its being declared as a Sanctuary in 1986. In the intervening years, biomass extraction from the Sanctuary has continued leaving much of the Sanctuary as open grassland dominated by sun grass, with interspersed trees. Two Co-Management Committees assist in managing the Sanctuary, one on the western side of a central ridge and one on the east. In spite of habitat degradation, the Sanctuary remains home to an important migratory population of Asian Elephants. Evidence indicates that since adoption of the co-management approach, the health of the Sanctuary's ecosystem is returning.

Starting Assumptions and Subsequent Adaptation

Bangladesh experience on carbon projects is confined mainly to waste management industries, with no forest carbon projects prepared to date. In the absence of any previous experience on developing carbon projects in the natural resources sector of Bangladesh, it was initially contemplated to solicit technical help from an international organization interested in the packaging and sale of carbon credits. Many such organizations now list and advertise on the web. The costs to the Project of pursuing this approach, however, were generally extremely high, including relatively expensive foreign consultants and travel to and from Bangladesh.

Rather than pursuing this approach, the Project formed a team including staff members of the Forest Department (FD), staff of the Bangladesh Forest Research Institute (BFRI) and local project staff. From the Forest Department, one Assistant Conservator of Forests was allocated to take part in the process. From the BFRI, the heads of Heads of Forest Inventory Division and Soil Sciences Division were both engaged in conducting field work as required. The Soil Research Institute in Dhaka was earmarked to test the organic carbon content in the forest soils. A financial sector specialist was subsequently added to the team to explore financing opportunities under the voluntary carbon market. The team was led by the Protected Area Management Specialist of IRG's Nishorgo Support Project.

Given the cumbersome bureaucratic approval procedures applicable to Clean Development Mechanism (CDM) projects from the Designated National Authority (DNA) in Bangladesh, the Project decided initially to target the voluntary carbon markets (See Taiyab, 2006 for

The Chunati Sanctuary's deforested hills offer ample scope for carbon sequestration combined with improved elephant conservation and poverty reduction. [Md. Tarek Murshed]

details) for sale of the Chunati carbon. Nevertheless, so as to keep all future options open, most of the CDM-relevant guidelines for baseline, measurement and project description would be followed. It was envisaged that in addition to the Sanctuary's core zone (7,764 ha), nearly 3,000 ha of Reserve Forest in the surrounding landscape zone would be included in the inventory process so as to generate recommendations for wider participatory planting activities such as buffer plantations. As work on the carbon project got under way, the project team assumed that voluntary market financing would be obtained without great difficulty, albeit at a lower price than for CDM-approved projects.

An intensive search was made for collecting relevant literature, particularly on the development of forestry projects that meet the criteria as set under the CDM of the United Nations Framework Convention on Climate Change (UNFCC). Relevant guidelines for developing projects under the land use, land use change and forest sector as issued by the Inter-Governmental Panel on Climate Change (IPCC) and other international organizations including Winrock International were reviewed. A published paper from the Indian Institute of Sciences (on a forest carbon project for the Indian state of Andhra Pradesh) proved to be the most useful model and approach for adaptation to the Chunati case due to similarity of forestry issues. Additional information was obtained from the online resources of The Energy Research Institute (TERI) in India and from International Resources Group (IRG), in Washington, DC.

The project development began in early 2007 by field testing suitable tools and methods. The project was divided into four principle phases: design, field data collection, analysis and report writing. During the design phase, reconnaissance visits were made to the Sanctuary using existing management plan maps and other official records. Stakeholder consultations were held in and around the Chunati Wildlife Sanctuary to understand land status, physical location and boundary of the project activities. Based on the field assessments, it was decided not to include the Reserve Forest lands outside the core zone of the Sanctuary in the project design. While this buffer zone would have been helpful for complementary livelihood activities, it became clear that the lands were not physically available for planting due mainly to encroachment. As a result, buffer plantations as envisaged initially were not included in the recommended reforestation strategy.

Of the full Sanctuary area of 7,764 hectares, only 5,000 were targeted for project intervention. These were lands deforested prior to January 1, 1990, the cutoff date used under CDM. Within the defined project boundaries of the Sanctuary, carbon stock changes and other attributes

have been estimated and will in future be monitored. Within the geographical boundaries for proposed reforestation activities, as delineated on the maps, changes in Greenhouse Gas emissions and removal of CO_2 attributable to the proposed reforestation interventions were to be measured.

The nature of carbon pools (e.g. soil organic carbon, above-ground biomass, below-ground biomass, and on-ground biomass) was assessed and monitoring parameters were discussed with FD and the two relevant Co-management Committees (CMCs). Technical description of the proposed project including listing of existing land-use systems, land tenurial status, and potential mitigation options and their technical description were analyzed for different management categories. A cost effective monitoring strategy was worked out by focusing on possible roles of the existing CMCs. Possibilities for leakage and non-permanence of sequestered carbon were examined and suitable measures were suggested in order to reduce the ensuing risks.

An appropriate mechanism was suggested for monitoring the identified carbon pools during the implementation of the project interventions. Suitable methods for carbon inventory in baseline (without project situation) and mitigation (with project situation) scenario were reviewed and applied by following an inexpensive sampling strategy. The estimation of growing stock changes in volume, biomass and carbon contents was attempted both for the establishment of baseline and mitigation scenario for each of the identified mitigation options for reforestation

Field data collection was necessary to generate precise estimates of carbon pools. After due discussions and field validation, a field manual was prepared for the field inventory. Two field teams, each comprising four investigators from a mixture of the BFRI, FD and NSP were trained for forest inventory. Only one field team, by contrast, was considered necessary for collecting soil samples and analyzing soil profiles. Field formats for collecting field data were developed after field testing and validation. In-house project development capacity was targeted within FD and the two CMCs in order to ensure sustainability. On the job trainer's training was imparted to the Assistant Conservator of Forests, who was tasked to help coordinate the training of other FD staff and CMCs. Field training for forest inventory included how to lay out sample plots, and assess height, basal area, girth, species, etc.

Field inventory data was computerized for future use. Growing stocks were estimated for each of the nine land-use categories by using the field data and growing stock models as developed by the BFRI. Carbon sequestration rates were then estimated by following the methods as developed under CDM/IPCC procedures. Soil carbon analyses were done in the laboratory of the Soil Sciences Division of BFRI as such analyses were found costly if done in the Soil Research Institute (SRI), as planned initially. A generic project document was prepared in consultation with key stakeholders including the staff of FD, CMCs, BFRI and NSP. Formal presentations were made to senior FD and BFRI staff, and the CMCs at various stages of the project development and the final document incorporated their valid suggestions and comments.

One of the persistent issues of discussion during preparation of the pilot carbon project was the eventual role of the two relevant CMCs in managing and benefiting from the proposed emissions project. With formal recognition of the Chunati CMCs as "co-managers" of the

Sanctuary, their role has become central to any development project undertaken in the Sanctuary. However, the land itself remains under the legal jurisdiction of the Forest Department under the provisions of both the Wildlife (Amendment) Act 1974 and the Forest Act 1927. The Forest Department sits on the CMCs (as Member Secretary) thereby retaining a key role. The central issue of discussion was how to channel future carbon investment project resources. Should they be transferred directly to the CMC itself, directly to the FD, or allocated to the CMC but only through the FD?

During execution, the Project team decided to modify the designated roles of these two groups based upon the targeted financing body. When packaged for CDM approval, the FD has been designated as the primary recipient of investment resources required for reforestation, with an additional allocation going to the CMC for livelihood activities. This formulation was due to the perceived necessity when the CMCs were formulated for the Government to be an implementing partner. In addition to these two actors, oversight and capacity support roles were also given to a leading NGO working in the area of Chunati, with a proposed role also for the Arannayk Foundation, a private national foundation established to conserve tropical biodiversity in Bangladesh. The role of the NGO from the area would be to provide local oversight, while the national foundation would provide a higher level of oversight and quality control. The local NGO was chosen because of its own high level of transparency and established credentials, and also because it has worked for the past five years to build the capacity of these two CMCs.

The generic project document was proposed for funding to different multinationals and donors having their operations in Bangladesh. As the issue of certification was raised by some of the investors, as an after-thought it was decided to submit the document to possible certifiers who are active in the climate change sector. The two main types of applicable standards for this project include the Gold Standards (as developed by the Worldwide Fund for Nature (WWF)) and the Community, Conservation and Biodiversity Alliance (CCBA) standards. Since the Chunati project emphasized biodiversity conservation through local community participation and benefit-sharing, the CCBA standards were found more relevant and the generic project document was prepared using those standards and submitted for certification.

Though the document followed the CDM methodology, it did not originally follow the Project Development Document (PDD) format of the CDM. CCBA staff subsequently suggested that we reformulate the document by following PDD format as most of the certifiers find it easy to evaluate projects based on this format. Accordingly the project document was modified by including additional information as per the requirement of CDM PDD, particularly on monitoring for leakage and non-permanence.

The CDM-compliant project – now entitled "Mitigation of Greenhouse Gas Emissions Through Co-Management of Chunati Wildlife Sanctuary" – has now been formally submitted by the Forest Department to the Ministry of Environment and Forests (MoEF) with a request that it be considered for endorsement by the DNA, in this case a committee chaired by the Secretary of the MoEF.

With project design completed, multiple inquiries have been extended to organizations with an expressed interested in financing carbon offsets or listed as voluntary market traders. This

list included HSBC Bank, Standard Chartered Bank, Singapore Airlines, Emirates Airline, Japanese International Cooperation Agency, and some multinationals engaged in the country's energy sector. While interest was expressed by a number of them, the oft-repeated response was an unwillingness to invest in forest projects due to leakage and monitoring difficulties, as well as doubts about the scientific accuracy of the methods used to calculate the carbon offsets generated by such projects. In general the perception is that forestry projects are "controversial" and better avoided, especially when there appear to be other carbon offset projects available which are more certain and more easily quantified. It turned out to be more difficult to obtain interest from this voluntary market than had originally been assumed. However the effort to convince, and in a sense, educate potential investors about the Chunati project's potential as a source of sizeable carbon offsets continues.

Subsequently, some interest was expressed by bi-lateral and multilateral development agencies including the GTZ, and the World Bank's BioCarbon Fund. Preliminary discussions have been undertaken with these organizations. By the time of preparation of this chapter, no firm commitments had yet been obtained for financing the Chunati project.

Lessons Learned

A number of lessons have emerged from this pilot effort to develop a carbon project for Chunati Wildlife Sanctuary:

Although an increasing number of carbon market traders and consultants offer services to package a project, it is feasible, less costly and more sustainable to build in-house capacity within partner institutions. With the rapid increase in carbon project development and the expanded use of the web for disseminating documents and approaches, it proved relatively straightforward to identify methodologies that could be adapted to this pilot carbon project. Baseline and inventory work required technical expertise in forestry, to be sure, but the process once undertaken required less in terms of complex forestry expertise than it did the willingness to work through a new approach. Based on this first forest carbon project experience, training and extension materials can be prepared for replication of the approach within the Forest Department and the NGO and consultant stakeholders.

Although voluntary carbon market project design requirements are less stringent than CDM, it is most cost effective to include CDM requirements from the earliest stages of planning and writing. The avenues and probabilities for forest-based carbon project such as Chunati to be financed are changing daily. Although CDM-approval and financing for similar forest projects is now more complex than for many energy projects, this may change in the future. In addition, it became apparent to the team that a host of bi-lateral and multi-lateral programs were being announced on a regular basis (e.g., expansions to the Bio-Carbon Fund managed by the World Bank, increases to the Japanese Government Fund, and others), and most of these required some sort of CDM approval. Accordingly, it became clear that adhering to CDM requirements – while taking more time and effort than the simpler voluntary market requirements – would leave more options open for future funding.

Forest carbon offset projects in populous and poor areas such as Chunati can contribute simultaneously to multiple development objectives in addition to carbon. The Chunati project clearly delineates contributions to the following objectives: (a) quantified sequestration of CO2; (b) contributions to biodiversity conservation through restoration of the Chunati Wildlife Sanctuary and its elephant

habitat; (c) poverty reduction and livelihood improvements for local communities through buffer zone activities and revenue from offset; (d) empowerment through co-managed governance; and, (e) capacity enhancement of the government and non-government specialists involved in project design.

Management framework for carbon offset projects can include a range of both public and private partners: Deciding on the appropriate management structure for the carbon project became one of the more time-consuming aspects of the work. Standard CDM projects on government land are commonly implemented directly by the government itself. As a declared Wildlife Sanctuary under the authority of the national Forest Department, it is clear that the government needs to be a central actor. However, most potential donors have indicated that a partnership with non-government actors for implementation would contribute to increased likelihood of funding. Nishorgo's Co-Management Committees, which include both government and non-government members, should be more interesting and acceptable to potential financiers. Since the Committees themselves involve a range of fully private non-governmental organizations (Community Patrol Groups, Forest User Groups, Federations of Poor), these further enhance the acceptability of the Committee for financiers concerned about passing money to the government directly. In addition, most financing agencies or experts contacted made it clear that some third party at field level would be beneficial to ensure transparency in implementation. Accordingly, Nishorgo proposed involvement in an oversight and support role a leading regional NGO working in the area of the project as well as a national forest conservation foundation.

It proved much more difficult than expected to obtain financing from the private voluntary market, principally because forest sink projects are deemed too risky. A number of multinationals, approached for funding the project, showed initial interest in purchasing the carbon credits. However, on close scrutiny the forest carbon project was assessed by them as risky as it is characterized by high leakage and non-permanence.

Early involvement of certification organizations would be beneficial in the long-run. Because of the greater likelihood of leakage and non-permanence in forestry projects, it is useful to make initial contacts with the approved project certification agencies in order to avoid methodological issues that may not be clear to project developers in the beginning. The initial structuring and completed drafts of the 100-plus page design documents had been prepared without using certification criteria, and those documents had to be subsequently re-structured, with some new sections written. Roughly a month of working time was lost in this process.

Costs of monitoring the project can be reduced if local communities are gainfully associated with the monitoring process. Monitoring of forest carbon stocks and biodiversity within forest areas can form a significant portion of operational costs in carbon offset projects prepared from other countries. In the Chunati Project, monitoring activities are to be undertaken principally by the same Community Patrol Groups that are at the same time spending regular time in the forest areas. Such an approach would be expected to reduce monitoring costs significantly.

Conclusion

Although climate change is global in its causes and consequences, its adverse impacts are being borne inequitably in different regions and communities of Bangladesh - a riparian country very near to sea level. Climate change mitigation and adaptation opportunities in the degraded forests including Protected Areas have significant potential for the transfer of

investment funds and appropriate technology to Bangladesh, as demonstrated from this pilot carbon exercise. The Chunati carbon offset project development process has demonstrated the feasibility of preparing a CDM-compliant project for an important Wildlife Sanctuary. The cost of implementing the project is only US$ 2 million over five years against the project value of carbon credits of US$ 5.3 million (calculated at US$ 7/ton CO2). The project includes not only carbon sinks, but also restoration of degraded forest landscape through block and enrichment plantations of indigenous species, established out of the proceeds generated in carbon offset trading by gainfully associating local communities. By conserving forests through reforestation, biodiversity and water can be conserved in-situ, and rural poverty alleviated by gainfully utilizing surplus labor and land resources locally.

Future forest carbon project proposals should be developed in line with Bangladesh's national development goals as enshrined in the Poverty Reduction Strategy Paper (Planning Commission 2005) and Millennium Development Goals. Co-management of Chunati Wildlife Sanctuary offers an excellent opportunity for achieving global environmental goals by mitigating Greenhouse Gas emissions while conserving biodiversity and alleviating rural poverty locally.

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