

## Architectural Design and Infrastructure

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Within the Nishorgo Support Project, Taka 646.972 Lakh (USD 1.1 million) was allocated for construction within the five pilot sites. Construction activities were to include complete buildings and other infrastructure. Facilities planned for construction included: five visitor interpretation centers; five student dormitories; five Protected Area (PA) offices and Assistant Conservator of Forests residences; four staff quarters; six staff dormitories/barracks; and a variety of trail improvements, parking areas, small bridges, and toilets.

These activities were designed to improve the ability of the Forest Department to deliver services in the PA and also to enhance visitor experiences. By mid-2008, the final of three rounds of construction contracting was underway, each round was linked to the Government fiscal year.

### Starting Assumptions and Subsequent Adaptations

Neither the USAID nor Forest Department (FD) Nishorgo Project documents included an emphasis on or special attention to architectural design. While construction was to take place, the assumption was that it would follow standard procedures used within the Forest Department. The Nishorgo Team recognized soon after startup, however, that an enhanced emphasis on architecture might be a way of contributing to the following objectives:

- Heightening the awareness of history and pride within the Department;
- Emphasizing the concept of preservation not only of nature (as in the conservation activities of the Nishorgo initiative, but also of man-made elements in the PA landscape;
- Attempting to use natural materials in design and construction as a way of complementing the broader environmental focus of the Nishorgo effort;
- Providing facilities better suited to visitor needs.

Accordingly, a number of adaptations were made to the way the overall construction process was managed.

### Contracting Process and Construction Oversight

In the Government of Bangladesh Development Project Proforma (DPP), construction targets were set by the FD following standard Government Public Works Department (PWD) design standards and associated cost levels. Normally within the Government, a consulting company is selected for the design and costing work, and then these costs are used as a guide in the bidding process whereby contractors are selected by tender. The process is managed and implemented by the Divisional Forest Officer (DFO), who releases tenders and selects both the contractor to implement and the monitoring consultant to oversee and check on construction work.

Under the Nishorgo experiment, the first deviation concerned design. The FD and Technical Assistance (TA) Team recognized that a number of key changes could be made to the normal process. First, the TA Team would support the design work, thus allowing for design approaches that might be different and perhaps more refined than the designs conducted under typical FD contracts. Second, at the request of the FD, the monitoring consultant would be provided by the TA Team, and not from direct Government funding. This was done because in the past collusion between monitoring consultants and engineering contractors has been a regular feature of Government contracting. Finally, the monitoring consultant would report directly to the Project Director and Chief of Party, as a check on the work being implemented under the DFO.

## Architectural Design: Forest Department Buildings and Student Dormitories

It was agreed that the TA Team would prepare new design concepts for large scale construction works (buildings) through a dialogue with senior staff of the FD on what such buildings should look like. During one of these planning sessions, four senior FD staff traveled with the TA Team architect to the Moulavibazar area and, on the way, passed an old tea bungalow style building. The then-Chief Conservator of Forests stated that this was the type of building and “look” that he would hope to see within the Protected Area system. Other senior members of the FD echoed his request.



*The Moulavibazar Tea Bungalow, a source of inspiration for the subsequent “look” of the Forest Department’s buildings in the PAs.*  
[Abu Syed Samiul Islam]

Accordingly, the TA Team architect designed a series of buildings that would echo this architectural and historical context. The general “look” called for sloping roofs (even on permanent structures), rough exposed brick, covered entries and wrap-around porches: all accents associated with the historic bungalow look. The first round of construction using this new design was widely vetted within the Department and approved for the first and subsequent years of construction.

Over the subsequent two years of completed construction works, a number of important issues arose relating to the design process. Generally, many DFOs and their selected engineering firms have not accepted the design proposals of the architects. In fact, they have tried to replace the rough exterior brick with pointing and painting of the bricks, changing the overall concept and execution. Generally, while the senior staff of the Department recognized the value of

architectural innovation, many field level staff (including both DFOs and Range Officers in particular), have neither understood nor supported the new look. While it has nevertheless been executed on the ground (see photos in color section), it has only been done so after constant monitoring and modifications. Generally, the whole concept of thematic architecture based on historical looks associated with either the Department or the rural areas in which it works have not been supported by staff below senior level. Indeed, judging from the architectural approaches used in new construction in many areas of the country, and at most Government facilities, architectural innovation is not yet an accepted part of the construction process.

## Architectural Design: Visitor Interpretation Centers

Design work for the proposed Visitor Interpretation Centers proceeded in a different fashion from that of the other buildings. Recognizing the even greater importance of these centers for the overall image and impression of the Nishorgo approach (compared to other FD buildings), the TA Team proposed conducting a national architectural competition among the leading architects of the country. Accordingly, a well publicized competition was organized in association with the Institute of Architects of Bangladesh, and financed by three leading companies from the construction sector (for more information on this competition see Chapter 24 on public-private partnerships).

Getting senior Government staff to accept that external expertise might be helpful in designing Visitor Interpretation Centers was not easy. One Secretary (highest civil servant in a ministry) blithely stated after being briefed about the Project's architectural work that "we have no need for architects – give me a few hours and I can design a Visitor Center for you in the shape of a banyan tree – everyone will love it." Generally, within the Government, there is only begrudging respect given to the expertise of architects in general, and a persistent confidence that the Government officials themselves have sufficient architectural and engineering know-how to do the work themselves.



*Computer generated view of Visitor Interpretation Center designed by Vitti Sthapathi Brindo Ltd. that won the national architectural competition organized by Nishorgo Support Project in association with the Institute of Architects of Bangladesh*

With the winning design by Vitti Sthapathi Brindo Ltd. selected for the Lawachara National Park site, the FD recognized that it could adapt this building concept for use at other sites where Centers were to be built. Although due to constraints of PWD costing the buildings would need

to be smaller, the adaptations could nevertheless be executed. Today, the adapted Centers have been constructed at Mochoni within Teknaf Wildlife Sanctuary and at Satchuri National Park, while construction is beginning for Centers at Chunati but constructing of the full original design at Lawachara National Park awaits sufficient sponsorship from the private sector.

## Monitoring Construction

The process of monitoring construction activities financed under the Nishorgo effort has evolved for the better over time, but not without some important modifications. Initially, the TA Team monitoring consultant visited field construction sites and reported on lapses or observations to the TA Chief of Party, who then forwarded these to the FD Project Director (PD). Not surprising, by the time a lapse was reported to the field level of the FD, construction deviations required greater cost to rectify, and thus were more problematic. Subsequently, the monitoring consultants began to send observations directly to the DFO upon having observed them, and only later to the PD and TA Chief of Party.

Other serious issues arose in the construction process, together suggesting serious lapses in the way the construction process is handled at the DFO and Range Officer levels of the FD. These issues include the following:

- Contractors bidding on construction projects place bids which are within only tiny deviations from the ceiling estimates in the design documents. It appears extremely likely in some or many cases that field FD staff share cost estimates with bidding contractors.
- In a number of cases, field FD staff (and particularly Range Officers) in effect become construction contractors themselves. They appear to inform the bidding consultants (either before or after the bidding process) that they will oversee the work themselves, and after a side deal with the winning contractor the staff actually implement the works. This happened in the case of the Student Dormitory at Teknaf GR and also for the Staff Quarters of Mochoni. In both cases, the Range Officer (who was to have been ensuring quality construction) thus became both judge and jury for the construction work. Not surprising, the construction at these two buildings was not of the standard of places executed elsewhere.
- Dramatic price increases (for example, in steel rods) have made it extremely difficult for contractors to complete works as designed. Because price estimates are fixed in Taka by the Government in the Development Project Proforma in year one of a project and not adjusted subsequently, unforeseen sharp increases in costs forced contractors (especially in the 2007/2008 season) to either cut costs and quality elsewhere in the buildings or halt work and complain to the FD.
- It is so commonly assumed that deviations will be allowed in construction, that it has required enormous effort to reiterate the necessity of strictly adhering to building requirements set by the architects. This gulf in understanding applies as much to the DFOs and Range Officers as it does to the construction contractors. On repeated occasions, DFOs and Range Officers would defend the deviations that contractors had made, assuming it was “okay” to do so. All have gradually learned through trial and error, but this basic view of contracting by FD staff and local contractors has been difficult to change.
- On too many occasions, there was only one bidder or two bidders for construction projects.

DFOs generally tender their projects only at Divisional level. This lack of sufficient competing bidders suggests that the FD has not opened up the bidding process sufficiently to attract a wide range of bidders.

## Architectural Restoration

In addition to the new construction funded under the Nishorgo initiative, a number of efforts were undertaken to restore old buildings. This was done in the same general spirit of highlighting the long and proud history of the Forest Department in these areas, and the complementary idea that forest conservation can be consistent with conservation and restoration of man-made facilities. Accordingly, a number of pilot efforts were undertaken to restore existing structures, especially the following: the 1928 Beat Officer's quarters in the center of Lawachara National Park; the 1934 Teknaf Rest House; and the decayed and decrepit toilets and sitting area at Satchuri National Park. The first two buildings were restored as much as possible adhering to the same architectural elements as had been there previously, including use of bamboo where appropriate, protection or restoration of wooden windows and similar measures. The Satchuri rest area was refurbished as a visitor arrival point and kiosk for selling tourist items, in addition to providing a toilet for visitors. In all three cases, the restored buildings were destined for use by the Co-Management Organizations to enhance livelihoods and improve management within the PA.



*The Co-Management Organization office at the Lawachara National Park looks like a newly constructed building in comparison to its previous condition where it had broken windows, discolored walls and dirt all around. [Abu Syed Samiul Islam]*

## Small-scale Construction Guidelines

For the wide range of small-scale infrastructure to be built under Nishorgo, it was assumed initially that all this would be designed, contracted and then overseen by the relevant DFO. However, after a few very inappropriate proposals were made by one or two DFOs in the first year (e.g., for an ornate Venetian concrete walking bridge over a creek in Lawachara NP; a huge ornate concrete entry way to Satchuri NP, and large concrete arrows to show directions in the forests), the Project Director and TA Team discussed how to introduce standards and guidelines into small-scale infrastructure works based on experience elsewhere (Gouvernement du Québec 1984) and other guidelines that had been prepared for Bangladesh but never used (Forestry Sector Project 2001). It became increasingly clear that just as DFOs

and Range Officers were not familiar with architectural concepts, so they were not familiar with appropriate infrastructure to support sound nature tourism.

Accordingly, the Project worked with a leading architectural firm to develop a comprehensive package of guidelines for all small-scale construction activities that might be undertaken in the PAs. These Guidelines (Vitti Sthapati Brindo Ltd 2007) include 30 different items ranging from picnic tables to signboards, toilets and more. After the Guidelines that had been thoroughly vetted by senior FD staff, the PD directed that all small scale construction activities should follow the Guidelines.



*The old bridge which was built without following proper guidelines was unstable and dangerous for visitors.*  
[Quamrul Ahsan]



*Following the Vitti guidelines, the newly constructed bridge proved to be more stable and safer.*  
[Md. Modinul Ahsan]

In the event, adherence to this order was not as complete as it might have been. In spite of having a well-conceived set of guidelines, it appears that many DFOs were of the deep opinion that their ideas about tourist interventions were better conceived than those of the Guidelines. So achieving adherence to sound small scale construction guidelines remains a challenge even at the end of the Nishorgo effort.

## Lessons Learned

FD staff and visitors have appreciated the emphasis on architectural design and construction improvements, and especially the idea of harkening back to images and “looks” of the past, including restoration. The look of the Visitor Interpretation Center adaptation at Mochoni (the same basic look is scheduled for Lawachara NP) has been favorably received. It is generally agreed that the quality of construction has been enhanced by the approaches followed under Nishorgo.

However, a number of broad lessons can be drawn from the construction process as it has unfolded.

*Accountability and ownership by Forest Department DFOs and Range Officers need to be improved.* Historically, DFOs have near total authority within the FD over the construction process as it is executed following standard Government processes. Range Officers are the responsible “Disbursing Officers”, and so have considerable influence within their ranges,

including over such construction works. In general, however, these officers are not – in the current environment of the Department – sufficiently accountable for their actions. If the local FD staff are not accountable, then no matter how many “consultant monitoring engineers” are hired, the process will never work. Too often, the DFOs and Range Officers acted as though problems in construction were the problems of others (other staff; the monitoring engineers; project staff; the Co-Management Organizations, etc.). Steps need to be taken to fundamentally change this accountability problem, without which the very process of FD construction under local currency is unlikely to significantly improve.

*The construction process would benefit from greater transparency, particularly concerning the Co-Management Organizations (CMOs).* Construction works are managed almost entirely internally to the Forest Department, from design through bidding through implementation. Although the major construction works were included in general terms in the Annual Development Plans (ADP) prepared by the CMOs for the Protected Areas, details were vague concerning the construction works. From local FD staff perspective, the CMOs are perceived to have little role in the construction activity. It would be beneficial for the CMOs to understand earlier in the process what construction is being planned and where. Such transparency would be of assistance both in improving the quality of construction and in reducing fraud.

*Government construction budgeting rules and time delays severely constrain the construction process.* Under standard management of a Government project such as Nishorgo, budgets and specifications for construction are included in an approved Development Project Proforma (DPP) document and then do not change until or unless the DPP is revised. This absolute fixing of construction budgets makes it extremely difficult to execute planned works when prices rise. In Bangladesh in 2008, this has been exactly the case. Although Nishorgo’s DPP was revised and approved in late 2007, the iron rod prices increased by so much in a few months that contractors in some cases refused to bid. Because of the onerous punishments that may be meted out to PDs for any deviation from project design, there is an enormous reluctance to start executing if there will be any budget shortfalls later. The DPP, in fact, fixes prices and design elements for virtually everything to be constructed before a project is under way. Construction needs are typically set by FD staff in the absence of a clear site development plan or landscape plan. When the construction needs are only for FD staff quarters or offices, this ad hoc approach may be acceptable. But now as the FD is expected to provide carefully planned facilities to serve the many thousands of visitors going to the PAs, this approach is no longer appropriate. Inflexibility in DPP revision and the lack of an adaptive management processes makes any deviation personally risky to the PD.

*The design and construction process requires greater centralized control if it is to meet the standards required for Protected Areas.* Historically, FD field officers have had to oversee a wide range of construction and contracting interventions throughout the country’s forest areas. Generally these were remote forest areas where few members of the general public would ever visit. Now, when a DFO proposes a new construction within a PA, the only external review of that design is whatever time and effort can be allocated by a single person at the central Dhaka level: in this case the Project Director. With nearly USD 2 million (Taka 13.6 Crore) of construction being designed and executed across 22,000 hectares of five Nishorgo pilot Protected Areas, it was unreasonable to think that a single person could ensure quality control. While the PD may provide guidance and suggestions, the concept of what types of

infrastructure are needed, and the design of those interventions, emerges from the DFOs, not from a centralized palate of options or experts.

Institutional reorganization for Protected Area management at the Forest Department needs to include specific personnel and responsibility to oversee and control architectural and infrastructure planning, design and construction processes of all kinds. Liaising with expert architects as well as tourism sector and nature conservation expertise should be done at the central level in Dhaka, where the expertise exists, and not at Divisional level. Within the proposed Wildlife Wing, a Conservator of Forests level officer should play this role, so as to ensure seniority over all DFOs.

Central oversight and approval of PA infrastructure could be provided by a committee constituted by the Department. In view of the need for a range of expertise this committee should include, in addition to FD members, other experts (e.g., in wildlife, in interpretative facilities, and in environmental architecture). The experts might be asked to volunteer their time for this review process. In the case of tour operators, one can assume that they would be pleased with a role in infrastructure planning within the PA system, in light of their own benefits from high quality construction.

*Training levels of FD field officers are not sufficient or appropriate for managing infrastructure design and construction associated with nature tourism.* DFOs and Range Officers have only the most rudimentary orientation or training on the construction process. They receive virtually no training at all in the concepts of architectural design, and certainly not in environmentally-friendly architectural design or people-oriented design. These FD staff need to be trained in a consistent approach to appropriate construction interventions throughout the PA system. They need to be briefed in detail on the concept and execution of small-scale interventions such as trail placement and construction, signboard installation, provision of water facilities, site planning and related issues. In addition, they need a more consistent and thorough orientation on the people-focused issues relating to facilities and construction for nature tourism.

*Co-Management Organizations can play an important role in both benefiting from and maintaining PA infrastructure.* Construction came first under Nishorgo, just as in most Government projects, but maintenance is a critical constraint. The FD is unlikely to allocate scarce maintenance funds for visitor facilities. The most viable option is for the CMOs to operate visitor centers and student dormitories on the basis that the CMOs will have the right to earn an income from these facilities and the responsibility to maintain them from part of this income. Greater involvement of the CMOs in all aspects of visitor infrastructure and associated services will offer a direct incentive for CMOs based on the main legitimate use of PAs. At Nishorgo sites, the FD has constructed Visitor Centers and student dormitories, both established to serve the public as they visit the PAs. FD staff may be reluctant to invest limited maintenance resources for these public buildings when their own quarters or offices are in dire need of maintenance.

The operation of student dormitories, requiring as it does the collection of fees to offset maintenance costs, will be particularly problematic for Government. For this reason, the CMOs under Nishorgo have begun to discuss requesting the FD to transfer management and



maintenance of these two public facilities to the hands of the CMO itself. Services provided in both buildings can generate service delivery fees for the CMOs that both engage them in the PA and help in ways to maintain them.

*A more optimal construction process would include direct oversight by a single body.* Under Nishorgo, the PD of the Department's project allocated funds to DFOs, who tendered and managed construction contracts. Architectural design and construction monitoring were managed by the Technical Assistance team, with the Chief of Party reporting to the PD. In the end, this brought too many actors into the process, rendering the construction process significantly more complicated than it need have been. While the Nishorgo process did indeed lead to better quality construction, a well informed single management oversight process would have been more efficient. Had some of the key lessons noted above been incorporated (e.g., accountability, centralized quality control panel, capacity of the FD, etc.) then central line oversight by the PD would have been optimal.

## References

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