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# NATURAL RESOURCE CONFLICTS AND COMMUNITY ORGANIZATIONS IN BANGLADESH

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**ABSTRACT**

With a population density of over 1,000 persons per km2, pressure on common property wetlands and forests in Bangladesh is intense. Community based co-management has been introduced in wetlands and fisheries since the early 1990s and in a forest protected areas since the mid-2000s. This analysis assesses community based organization (CBO) performance including conflict management over three years among about 150 floodplain CBOs and reviews experience in the five forest protected areas with co-management.

The Department of Fisheries and local communities have collaborated for devolved fisheries responsibilities. The incentives for collective action among fishers to restore habitat and conserve fish are more secure access and the benefit of higher fish catches. Local conflicts with elites and fishers over access are rare where CBOs are well established compared with waterbodies lacking community management. Networking among CBOs has strengthened cooperation and collective ability to resist threats and resolve conflicts. Adaptive learning between CBOs has diversified natural resource management based on common ground between fishers and farmers, and encouraged CBOs to be more inclusive.

There is a fundamental lack of trust between local people and the Forest Department arising from a history of authoritarian management and conflicts over illegal logging. Co-management has been taken up on a limited scale in forest protected areas, but community patrol groups have few incentives to protect forests. The lack of overlapping institutions and formalized CBOs comprised of poor forest users limits scope to resolve conflicts particularly when there are highly organized and influential forest exploiters.

The findings indicate that devolution of management to local communities can improve conflict management, as well as natural resource productivity, livelihoods, and social standing. But this process takes time, depends on government commitment, and the potential for positive outcomes differs between types of commons.

**Keywords:** Bangladesh, co-management, conflict, fisheries, forest

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# NATURAL RESOURCE CONFLICTS AND COMMUNITY ORGANIZATIONS IN BANGLADESH

Parvin Sultana[1] and Paul M. Thompson

## 1. INTRODUCTION AND CONTEXT

With a total population of over 150 million and population density of over 1,000 persons per km2, pressure and competition for use of common property resources in Bangladesh is intense. The most extensive commons are freshwater wetlands and waterbodies, but areas of forests are also important, including coastal systems of mangroves and estuarine waters. Flood control and drainage have already changed the nature and production systems in over half of floodplains. Most waterbodies are overfished, and although officially designated forest lands cover 17 percent of the country, the actual forest cover is much less. Here we review the context and factors associated with conflict in wetlands and fisheries.

Based on action research and performance assessments of community-based organizations managing floodplains, we present evidence on the extent that devolution of management authority under local community based co-management systems has successfully reduced conflict and enhanced cooperation. This is contrasted with qualitative information on forest management based on literature review and key informant interviews, where co-management started more recently in protected areas but the opportunities for and extent of devolution to local communities is less. Factors influencing outcomes include the extent to which public authorities see commons users as legitimate, the replenishment rate of renewable common pool resources, the history of administrative arrangements and authorities over these resources, and the extent to which multiple government agencies have a stake. The findings have more general applicability as they indicate that devolution of management to local communities can improve conflict management, as well as natural resource productivity, livelihoods, and social standing. But the study also highlights that this takes time and that even within one country the potential for positive outcomes differs between types of commons.

### Wetland and Inland Fisheries Resources

About two-thirds of Bangladesh may be classified as wetlands according to the Ramsar Convention definition. About 6–7 percent of Bangladesh is always under water, and in the monsoon 21 percent is deeply (>90 cm) flooded and around 35 percent experiences shallow inundation (FAO 1988). Wetlands in Bangladesh encompass a wide variety of ecosystems including mangrove forests, natural lakes, freshwater marshes, reservoirs, baors (oxbow lakes), haors (deep depressions in the northeast that coalesce to form a vast inland sea in the monsoon / rainy season), beels (floodplain depressions that usually hold permanent freshwater part or most of their area—that is, shallow lakes), fish ponds and tanks, estuarine waters, and extensive seasonally inundated floodplains.

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**Table 1. Distribution of wetlands in Bangladesh**

| Type | Area (hectares) |
|---|---|
| Rivers and estuaries | 854,000 |
| Mangrove swamps | 178,000 |
| Shallow lakes and marshes (beels and baors) | 120,000 |
| Large water storage reservoirs | 90,000 |
| Small tanks and fish ponds | 305,000 |
| Shrimp ponds | 218,000 |
| Seasonally flooded floodplains | 4,000,000 |
| **Total** | **5,765,000** |

Main source: Department of Fisheries (2008). Estimates of floodplain extent vary widely from 2.8 million hectares (DOF) to 4 million hectares (Ali 1997).

Wetland-floodplain systems are complex: permanent waters such as beels and rivers are public lands for which the land administration leases out fishing rights, but the more extensive floodplains are private land cultivated for part or most of the year that traditionally become a seasonal commons when flooded (typically for four to six months every year). Here local people collect a multitude of wild natural resources, all interlinked in an ecosystem connected through water. Floodplain wetlands in Bangladesh provide local people, especially the poor, with:

- fish, over 70 percent of households in the floodplains catch fish either for income or food (Minkin et al. 1997; Thompson et al. 2002)
- plants for human food, animal fodder, and building materials; and
- other goods and services including snails (collected for sale to duck and shrimp farmers), water for livestock, and transportation

A survey of 125,000 households found that 82 percent of households fishing for income were poor (CBFM 2003). In Bangladesh poor fishers have experienced:

- economic exclusion from high value water bodies
- social marginalization
- class exploitation by moneylenders and leaseholders, and
- political disempowerment from decisions affecting fisher livelihoods

Bangladesh wetlands have ample water in the wet season, but the limited amount of surface water in the dry season is the main factor determining productivity. Overwintering fish depend on this dwindling resource and then repopulate the floodplain to spawn and grow during the wet season, but irrigated cultivation of the main rice crop during the dry season takes water away from fish and other aquatic life. Past agricultural development focused on rice production, abstracting water to irrigate crops in the dry season, and draining wetlands to expand agriculture and protect crops from floods in the monsoon. In addition, "floodplain aquaculture" has rapidly expanded in the last decade at the expense of natural fisheries used by poor people. This is done by landowners themselves or by groups of investors who rent private floodplain land from a number of farmers and then physically enclose this seasonally flooded private land with bunds and manage

it by stocking carps and harvesting all fish, excluding traditional small scale fishing (Sultana 2012). Aquatic common-pool resources, such as fisheries, have been declining as a result of these pressures. Out of Bangladesh's 260 freshwater fish species, more than 40 percent are now threatened with national extinction (IUCN Bangladesh 2000).

### Forest Resources

According to the Forest Department about 17 percent of Bangladesh is classed as forest lands, of which 10.5 percent is directly managed by the Forest Department on behalf of the state and people of Bangladesh (Table 2). However, as the department's own figures show, the area with tree cover is much less: 1.1 million ha or about 7.5 percent of the country. Much of this is concentrated in the Sundarbans mangrove forests and coastal mangrove plantations. Private village groves also contribute much of the tree cover. The annual deforestation rate is estimated to be 3.3 percent (Khan et al. 2004); although experts believe that the rate has gone down in the last five years. Forest degradation and deforestation are the result of population pressure, resulting in land clearing for agriculture, grazing, fire, uncontrolled logging, felling for plantations, and fire wood collection for domestic use and for brick production.

**Table 2. Total areas of forest and land under the Forest Department in Bangladesh**

| Type of forest | Area (m ha) | Area under tree cover (m ha) | Percentage of country |
|---|---|---|---|
| Forest Department managed | 1.53 | | 10.5 |
| Hill forest | 0.67 | 0.16* | 4.7 |
| Sal forest | 0.12 | 0.05 | 0.8 |
| Natural mangrove forest | 0.60 | 0.46 | 4.1 |
| Mangrove plantation | 0.14 | | 1.0 |
| Unclassified State Forests | 0.73 | | 5.1 |
| Hill forest | 0.73 | 0.17* | 5.1 |
| Village forest | 0.27 | 0.27 | 1.9 |
| **Total** | **2.53** | **1.11** | **17.5** |

Source: Nishorgo Support Project (2005)
*Not separated in source, table here assumes same percentage tree cover in each sub-category

The numbers of people making use of these forest resources are large. For example, about 2.5 million people inhabit over 1,300 villages around the borders of the Sundarbans (the largest block of mangrove forest in the world), most of whom are heavily dependent on collecting nontimber forest products including palms, honey, crabs, and fish (as well as illegally felling trees) and travel on average over 30 km to exploit these resources (Islam 2010). In Chunati Wildlife Sanctuary an estimated 15,000 people have encroached on and live within the protected area cultivating rice and betel leaves there (DeCosse et al. 2012). Combined with villages fringing the area, estimates put the number of people who are heavily dependent on this forest land at over 40,000, of whom 60 percent are very poor.

People felled most of the trees in the 1980s and 1990s, but still collect bamboo, firewood, and sun grass.

Out of this modest area of forests, the formal protected area network of Bangladesh comprises only Forest Department lands and in 2009 covered 251,100 ha in 24 protected areas, or 16 percent of Forest Department lands. These are divided between national parks and wildlife sanctuaries, with one "game reserve", several new "eco-parks", and a safari park, these latter categories being primarily for recreational use. Fifteen of the protected areas were designated after 1990. These protected areas are of note because co-management is being tested in them.

## 2. INSTITUTIONS, ACCESS AND TENURE

### Fisheries

Although the Ministry of Fisheries and Livestock and Department of Fisheries (DOF) are responsible for conserving and enhancing fisheries and fish production, and have set policies, strategies, and rules, these agencies do not directly control the use of water bodies. There are about 12,000 public water bodies (jalmohals) under the control of the Ministry of Land, which leases out fishing rights on a competitive basis for the purpose of collecting revenue, all of which goes to the national exchequer rather than to local administration (although by now this source makes a minuscule contribution to the national budget). For most lakes and beels or "closed waters" fishing rights are leased out for three years to the highest bidder, but in rivers or "open waters" there has been no leasing since 1995 and they are now open-access. This system creates a significant number of management-related barriers affecting fisheries (see below).

The Protection and Conservation of Fish Act (1950) and related Protection and Conservation of Fish Regulations (1985) prohibit fishing by harmful methods, pollution, and other activities detrimental to fisheries, and enable the declaration of closed seasons. However, DOF has limited powers to enforce fishing restrictions, being dependent more on the will of fishers and leaseholders, with support from magistrates.

The National Fisheries Policy approved in 1998 focused on fish production and poverty reduction. In theory it was superseded by the National Fisheries Strategy (DOF 2006), which in inland fisheries aims to support sustainability based on community participation, leading to a more equitable distribution of benefits. It proposed gradually reserving jalmohal leases for Community-Based Organizations (CBOs) to be supervised by DOF, against nominal lease payments. These CBOs would be required to develop management plans with DOF advice that ensure conservation of the environment and biodiversity of fisheries through restoration of wetlands and fisheries. This proposal was based on experience generated through community based co-management since the mid-1990s. However, the effort to implement this strategy has been limited since the power to change policy and practice in inland fisheries rests ultimately with the Ministry of Land and not the Ministry of Fisheries and Livestock.

According to government records, the Ministry of Land has handed over responsibility for around 300 jalmohals for 10 years to the Ministry of Fisheries and Livestock, for them to be managed by CBOs formed through various projects since the mid-1990s and advised by DOF. The combination of longer security of access,

facilitation of collective action, and technical advice enabled CBOs to manage fisheries in ways that have generally helped to restore and in some cases even double productivity and fish diversity from past degraded conditions, through measures such as re-excavation, fish sanctuaries, and closed seasons (MACH 2007). In most cases these CBOs are still functioning and many have strengthened their management adding or expanding sanctuaries and thereby restoring fishery productivity (Sultana and Thompson 2010).

By comparison, jalmohals leased under the traditional system commonly experience overexploitation, declining catches, and lack conservation measures—there are no cases of competitive leaseholders creating long-term sanctuaries. Consequently national fish consumption fell by 11 percent between 1995 and 2000 (but by 38 percent for the poorest households), and inland capture fisheries catches fell by an estimated 38 percent between 1995 and 2002 (Muir 2003). Since fishers are usually poor and leases have to be paid at the start of the year, access for fishers is compromised. Even with a preference in the system for leasing to fisher cooperatives, middlemen pay the lease and take effective control using lists of their "fishers". In 2009 the Ministry of Land unilaterally introduced its latest Jalmohal Management Policy, which on paper may encourage conservation-based management by CBOs and end competitive leasing. Instead, a registered CBO would receive a three-year lease against payment of 5 percent more than the average of the last three years' payments. However, the new policy is open to potential manipulation over which group (CBO) gains access, including potential political interference from Members of Parliament, who have been given a role in advising on which CBO will get a lease.

**Forests**

Unlike fisheries, the Forest Department is the sole agency with powers in forest lands. Since the Forest Act of 1927 it has held considerable power to determine use of forest lands and to gazette forest as reserves. While allowing for designating use rights in forest for villages, the department has generally not given a role for neighboring communities in any decisionmaking, including minority communities who often had use rights and had settled in forest areas, or for civil society in general. Moreover, forest conservation and management provided no framework for community participation.

More recently, a social forestry framework developed in 2004 is appropriate for allowing communities to participate in protecting trees and sharing the income when trees are felled but not for long-term conservation. Social forestry plantations within Forest Department lands, where settlers can live and manage trees, are the main way that the Forest Department interacts with local people and addresses government priorities of poverty reduction. However, Castro and Nielsen (2001) paint a grim picture of benefit-sharing agreements for "social forestry" plantations being used by the Forest Department as a means of controlling the land uses of forest land encroachers and reestablishing its control over these lands, and a lack of serious commitment on the part of the Forest Department to sharing of powers with local communities.

A ban on tree felling in 1989 (primarily for natural and plantation forests) was expected to help forests recover. However, the Ministry of Finance continues to put pressure on the Forest Department to deliver revenue from tree production,

even though the current and past level of forestry revenue are insignificant compared with government's total revenue. The demands on the Forest Department to generate revenue from forestry creates a perverse incentive for deforestation since revenue has to come from seizures of illegally cut timber and thus encourages illegal logging and corruption. The Forest Department had also made little distinction in management plans or practices between formally protected areas and other reserved forests. Up to 2003, other than sporadic patrolling and arresting of suspects of timber theft, the Forest Department had no strategy for managing protected areas.

In 2003 the Forest Department engaged in piloting co-management in five Protected Areas through the USAID supported Nishorgo Support Project, as a response to continued loss of forest cover and biodiversity in these forests and adapting ideas from earlier successes in wetlands. These efforts have been based on sharing some decisionmaking responsibilities with a range of local stakeholders rather than devolving all management to local communities as has been the case in fisheries CBOs. On the basis of this pilot, co-management was subsequently adopted as the general framework for forest protected areas, but has not been adopted in other forest areas.

## 3. CONFLICT AND CO-MANAGEMENT

### Conflict

As Ratner et al. (2013) state: "While researchers have made advances in assessing the role of environmental resources as a causal factor in civil conflict, analysis of the positive potential of collective natural resource management efforts to reduce broader conflict is less developed." Past studies on natural resource conflict have most often focused on site-specific violent conflicts related to resource allocation. But in fisheries, competition and conflicts over gear use, landing site rules, or market behavior are not primarily about resource allocation but are rooted in more complex institutional issues such as cultural differences and political power struggles. Such competition less often results in violence, but nevertheless is an important aspect of conflict. Conflict may not always be a bad thing; it can be part of a dynamic process of change in institutions or production systems that brings benefits as well as costs.

A study on fisheries conflict (Bennett et al. 2001; CEMARE 2003) found institutional failure was a key factor in fisheries conflicts, and that the consequences adversely affected the poor more as support mechanisms (such as courts and police) failed to support communities. The study identified a wide range of conflicts relating to access (to waterbodies for fishing and to water for crops or fish), poor enforcement of existing regulations, regulations that bring users into conflict with authority, and more general problems of violence associated with weak governance (Bennett et al. 2001). Conflicts over leases and between fishing communities and lessees are common. That study concluded that conflict is very often a result of institutional failure to mediate conflicting needs and perceptions, and also resulted from a lack of clarity of duties and responsibilities between Ministry of Land and the Ministry and Department of Fisheries. It also considered that poverty and conflict are linked: the higher the level of poverty, the greater the

potential for conflict as fishers compete to capture scarce resources to meet growing financial difficulties.

Although many traditional fishers are from minority Hindu communities and do feel pressured by increasing numbers of new fishers from the Muslim majority, conflicts are not usually related to minority interests. More often, fishers have common interests in the sustainability of the resource base irrespective of religion. In the case of forests, issues of ethnicity and conflicts affecting tribal minorities are much greater. Some of the most intense conflicts occur in tribal areas, most notably in the so-called unclassified state forest lands of the southeastern hill tracts where land tenure is unclear since traditional use rights overlap and are inconsistent with an imposed state ownership system, and where there has been an ongoing violent conflict between Bengali settlers and ethnic minorities over land rights. In the past the Forest Department has generally responded to the presence of so-called encroachers with police action, legal cases, and fines and imprisonment for local people, but not for the higher tiers in a complex web of illicit enterprise based on logging in which the department's own staff are widely known to be implicated (DeCosse and Huda 2006). This was confirmed in 2007 when the Chief Conservator of Forests was imprisoned for massive corrupt exploitation of forests. Testing of participatory-oriented strategies (social forestry) as a response to longstanding conflicts over state forest has had mixed results. In central Bangladesh, for example, the Garo or Mandi community in Modhupur Forest faced a mix of settlement by Bengalis in forest areas and conversion of forest to rubber and short-duration plantations, reducing the forest available for their use and leading to harassment, legal cases and violence from the Forest Department for livelihood activities they see as traditional (Gain 1998; Rahman 2009).

## Co-management and community-based management

Co-management is often summarized as collaborative management where a range of stakeholders, particularly government and local resource users, share power, responsibilities, and management functions (Borrini-Feyerabend et al. 2000; Berkes et al. 1991). Carlsson and Berkes (2005) argue that co-management is a logical way of solving resource management problems through partnerships. But they emphasize the complexity of co-management arrangements and the fact that power sharing is a consequence of a process of interactions and linkages between stakeholders that may or may not empower local resource users. Co-management is often justified as a more efficient and equitable arrangement resulting from increased stakeholder participation compared with more top-down governance systems.

Natural resource conflicts seem to be intertwined with co-management. Castro and Nielsen (2001) consider that conflict over natural resources has often prompted the establishment of co-management institutions, but if these institutions and other initiatives do not help to reduce those conflicts they may not endure. Ostrom (1990) argues that conflicts need to be reduced if individuals are to have the incentives to invest in creating appropriate institutions, but this may be part of the institution building process rather than its precursor. Co-management systems may also function as a means of conflict resolution between communities of local resource users and the state (Pomeroy and Berkes, 1997). That is, the process of negotiating sharing of rights and responsibilities may itself reduce conflicts. Co-

management forums themselves can provide a space for seeking compromises among participating stakeholders or for generating wider support against external threats. As noted in Section 2, in Bangladesh in response to resource management pressure and conflicts, community based co-management has been tested quite widely in wetlands and fisheries since the early 1990s and in forest protected areas since the mid-2000s. In section 4, we report changes in cooperation and conflict in floodplain fisheries associated with collective action along with action research undertaken to improve learning between community-based organizations. This case of fisheries management contrasts with a case study on issues of conflict in forests and a co-management initiative in forest protected areas. Differences between the two highlight the influence of administrative governance and environmental context within a country.

## 4. FISHERIES: COLLECTIVE ACTION, ADAPTIVE LEARNING, AND CONFLICT

### CBO context

By now there are several hundred CBOs managing waterbodies and areas of floodplain that are recognized by government, have long-term use rights, and have adopted good resource management practices. These were formed through various projects working to improve fishery management (some emphasizing empowerment and equity, others production, and others biodiversity and ecological conservation and restoration), or water management (emphasizing increasing rice production). The institutional arrangements could be termed community based co-management. Government has devolved responsibilities for a waterbody or floodplain area to a CBO where that CBO sets local management rules such as closed seasons and protects sanctuaries to maintain fish stocks, diversity, and catches, and the CBO obtains advice from government agencies if needed. Many of these CBOs have access to jalmohals that have been reserved for 10 years for community management by agreements between the Ministry of Land (which represents the state interest in public waterbodies) and the Ministry of Fisheries and Livestock, under which the Department of Fisheries (DOF) is responsible for overseeing the CBOs (which were formed through projects under DOF). The main enabling factor for communities to manage and conserve these fisheries is that the CBO holds access rights over the jalmohal through these 10-year agreements. Other CBOs manage common fisheries in seasonal floodplains composed largely of private land, without needing recourse to government authority although having been formed through projects under DOF. In both types of situation the incentive for collective action is that simple conservation measures can result in increases in fish catches enjoyed by professional fishers and by other poorer households that fish for food in the seasonal floodplain.

We have been undertaking action research since 2007 with about 150 floodplain and wetland CBOs, expanding to 250 in 2008. The CBOs had been formed by earlier projects, but those projects have ended and the CBOs had "graduated" and were continuing to function in isolation from one another. Each CBO manages on average over 300 ha of waterbody-floodplain system, where it sets rules and takes actions to improve fishery and water management to the

benefit of on average seven villages (Table 3). Some CBOs are membership based, such as those in closed beels, where all or most of those fishing for an income are members and share the costs (lease and other investments) and benefits of managing a well-defined waterbody. Many other CBOs, particularly in open beels, represent the user community and take actions to benefit not just members but all who catch fish for food or income, or who farm land in their command area.

**Table 3. Average characteristics of sites and communities of participating CBOs**

| Indicator | Closed Beel | Open Beel/ Floodplain | River | Total |
|---|---|---|---|---|
| No. of CBOs | 26 | 91 | 36 | 153 |
| No. of villages per site | 7 | 7 | 9 | 7 |
| No. of households per site | 2,247 | 1,884 | 2,024 | 1,979 |
| No. of households fish for income | 201 | 232 | 355 | 256 |
| No. subsistence fishing households | 219 | 413 | 365 | 368 |
| Percentage of community fish | 19 | 34 | 36 | 32 |
| Water area (ha) max | 77.3 | 418.2 | 261.6 | 323.4 |
| Water area (ha) min | 49.7 | 41.3 | 99.8 | 56.5 |
| Percentage CBOs manage a jalmohal | 100 | 42 | 94 | 64 |
| Jalmohal area (ha) if any | 65.3 | 82.8 | 158.3 | 104.3 |
| Percentage CBOs pay waterbody lease | 96 | 25 | 8 | 33 |
| Lease in current year (Tk) for those paying | 83,409 | 61,727 | 60,449 | 72,281 |
| Percentage CBOs with sanctuary in 2007 | 58 | 55 | 97 | 66 |
| Percentage CBOs with sanctuary in 2009 | 89 | 58 | 94 | 72 |

Source: Sultana et al. (2010)

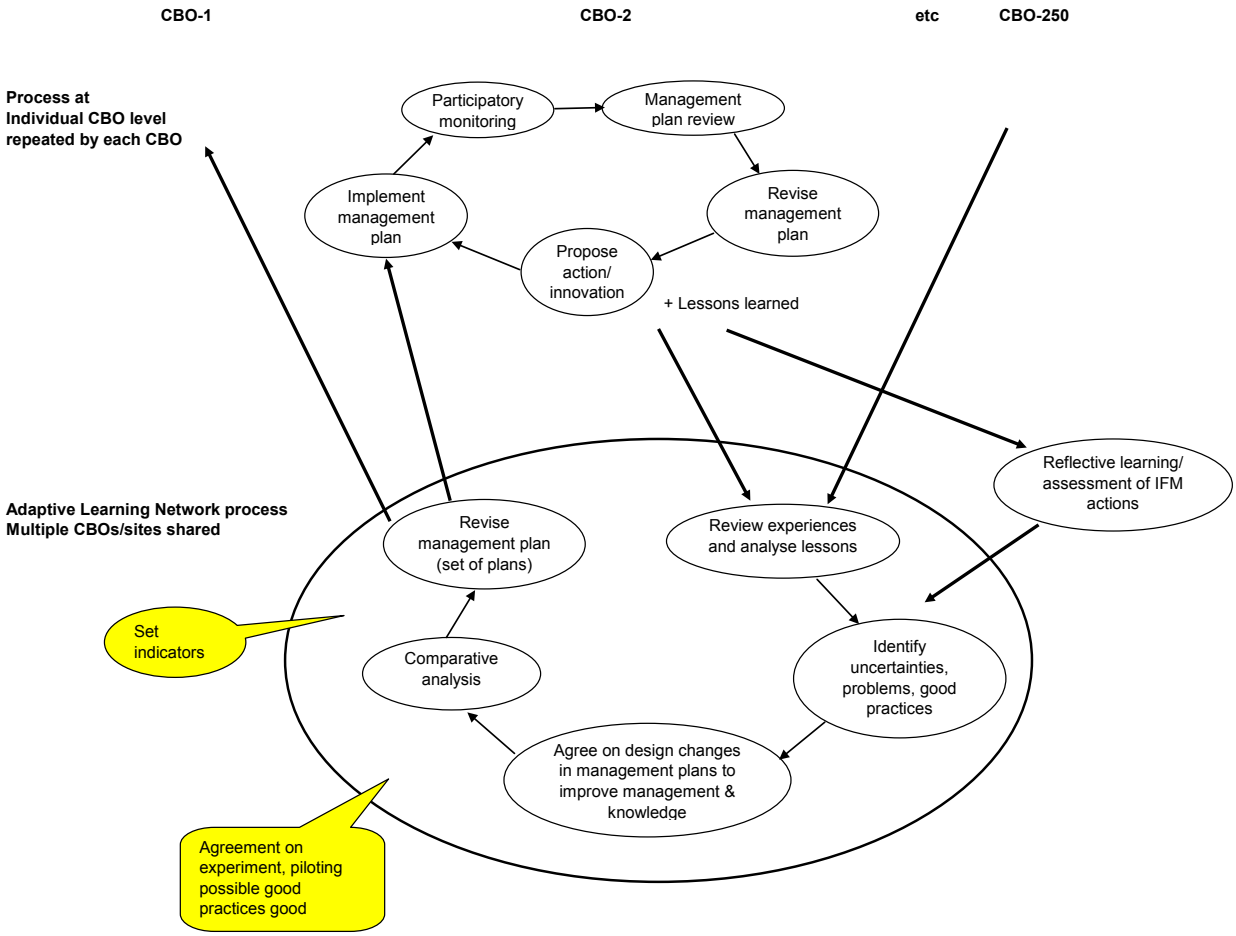
## Adaptive learning network

In Bangladesh the uniqueness and isolation of each of the locally managed floodplain areas limited the CBOs' scope for adaptive management and collective learning. Action research was based around the concept of an adaptive learning network among the CBOs. The aim was to test how these once-isolated organizations could share experiences and lessons, promote good practices in both resource management and governance, and in a coordinated way test and learn from innovations in natural resource management (Sultana and Thompson 2009). Activities were facilitated around issues identified by the CBOs, in the expectation that this would eventually also build capacity and strengthen their ability to interact with state agencies on issues related to rights. This learning is termed here a "multiplier effect," where the benefits and lessons generated among a network of similar units or CBOs is greater than the scope for learning separately by each individual CBO. This work focused on a horizontal learning process between CBOs that are comparable in status and environment and also share threats to access but have diverse experiences, rather than vertical linkages and learning between co-management stakeholders and tiers of government. Peer-to-peer learning was seen as a necessary first step in building trust and cooperation among CBOs to help

them towards their aim of strengthening their voice in interactions with administration and policy processes at regional and national levels.

Figure 1 shows the adaptive learning network process that evolved. In each of three regions each CBO sends a representative to two larger workshops in a year covering the cycle of activities in the bottom circle. The CBOs identify common issues and uncertainties, solutions already proven by some CBOs, potential changes in their draft management plans, and other aspects of their decisionmaking and operations that they want to improve or experiment with. The individual CBOs thereby start to make more systematic management plans and are able to see room for changing their decisions on the basis of their own experience and that of the other CBOs trying different innovations. Options are fed back by CBO leaders to their members and changes to plans and actions finalized by the executive committees of each individual CBO (top circle). But these plans are coordinated by the network of CBOs so that alternative views can be tested in the form of experimental designs where appropriate. In the workshops the CBOs also develop common indicators for each initiative tested. This process has allowed CBOs trying the same types of initiatives to compare and assess impacts using their own monitoring and analysis and through reflective learning meetings where they meet and explore why and how options worked or did not work (right hand circle).

**Figure 1. The adaptive learning process among a network of CBOs**




The focus of the adaptive learning process has been on improving overall productivity by considering waterbody-floodplain systems and the scope to make better use of water through what is termed "integrated floodplain management" (for example CBOs have tested cultivating crops with low water demand in the dry season so that more surface water is available and conserved for fish to survive in), as well as improving CBO governance. As part of this research a team of research assistants conducted annual assessments of the performance of the CBOs by consulting with CBO leaders, general community members, and record books, following a fixed format that covered a range of themes: resource management, the extent the CBOs are pro-poor, the role of women, organizational operations, governance, financial management, and linkages with other institutions. These assessments included indicators for conflict and conflict management.

## Outcomes for local compliance and conflict

The CBOs have adopted a wide range of measures to sustain fisheries, and this has increased through the adaptive learning process. Not only have the number of rules and actions planned by CBOs increased between 2007 and 2009, but in fishery management the average number of rules/actions in place per CBO in 2009 was

higher than those planned in 2007 in all of the environments (Table 4). Notably, the proportion of CBOs with fish sanctuaries increased, particularly among the closed beels (where the CBOs before concentrated just on stocking carp each year). Sanctuaries and measures such as bans on dewatering and hunting have spread among the CBOs as a result of participating in the adaptive learning network as CBOs that heard of successful practices were encouraged to adopt them. Some measures require no resources, while for others such as sanctuaries small grants have been made available to the CBOs. By bringing together CBOs that manage similar environments but that had different focuses (water for agriculture compared with fisheries), and by considering opportunities and gaps in understanding, CBOs have also been encouraged to promote measures such as growing crops with lower water demand.

**Table 4. Natural resource management rules planned and implemented by CBOs (some rare rules not shown in table)**

| Rule | Closed Beel | | | Open Beel/ Floodplain | | | River | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 07 | 09 | | 07 | 09 | | 07 | 09 | | 07 | 09 | |
| | Plan | Plan | Implement | Plan | Plan | Implement | Plan | Plan | Implement | Plan | Plan | Implement |
| No. of CBOs | 26 | 26 | 26 | 87 | 91 | 91 | 36 | 36 | 36 | 149 | 153 | 153 |
| **Fishery rules and actions** | | | | | | | | | | | | |
| Fish sanctuary | 62 | 92 | 89 | 57 | 63 | 58 | 100 | 97 | 94 | 68 | 76 | 72 |
| Closed season | 85 | 96 | 69 | 61 | 67 | 63 | 100 | 100 | 89 | 74 | 80 | 70 |
| Ban on harmful gears | 54 | 88 | 69 | 55 | 70 | 68 | 83 | 100 | 86 | 62 | 80 | 73 |
| Ban on dewatering | 0 | 58 | 35 | 3 | 49 | 45 | 3 | 64 | 50 | 3 | 54 | 44 |
| Ban on hunting | 0 | 54 | 35 | 2 | 34 | 31 | 0 | 53 | 42 | 1 | 42 | 34 |
| Fees for fishing | 2 | 13 | 4 | 5 | 12 | 8 | 8 | 21 | 17 | 5 | 14 | 9 |
| Fair harvesting plan | 8 | 58 | 58 | 17 | 38 | 35 | 19 | 53 | 47 | 16 | 45 | 42 |
| Reintroduce rare indigenous fish | 4 | 0 | 0 | 0 | 29 | 11 | 0 | 28 | 8 | 1 | 24 | 8 |
| Average no. of rules per CBO | 2.15 | 5.50 | 4.15 | 2.13 | 4.33 | 3.52 | 3.22 | 5.67 | 4.44 | 2.40 | 4.84 | 3.84 |
| **Water and agriculture rules and actions** | | | | | | | | | | | | |
| Limit on pumping water | 27 | 23 | 23 | 20 | 25 | 24 | 25 | 39 | 36 | 22 | 28 | 27 |
| Sluice operating plan enables fish migration | 23 | 27 | 27 | 39 | 34 | 32 | 6 | 22 | 14 | 28 | 30 | 27 |
| Promote alternative crops needing less irrigation | 0 | 35 | 35 | 0 | 33 | 30 | 0 | 47 | 44 | 0 | 37 | 34 |
| Promote shorter duration rice crops | 0 | 35 | 31 | 6 | 34 | 34 | 0 | 42 | 36 | 3 | 36 | 34 |
| Pesticide restriction or Integrated Pest Management promoted | 0 | 27 | 23 | 2 | 36 | 32 | 0 | 44 | 39 | 1 | 37 | 32 |
| Less polluting jute retting promoted | 0 | 8 | 8 | 0 | 15 | 13 | 0 | 14 | 11 | 0 | 14 | 12 |
| Sustainable snail harvest | 0 | 4 | 4 | 3 | 20 | 15 | 0 | 22 | 14 | 2 | 18 | 13 |

| Rule | Closed Beel | | | Open Beel/ Floodplain | | | River | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 07 | 09 | | 07 | 09 | | 07 | 09 | | 07 | 09 | |
| | Plan | Plan | Implement | Plan | Plan | Implement | Plan | Plan | Implement | Plan | Plan | Implement |
| rules | | | | | | | | | | | | |
| Tree planting | 0 | 8 | 4 | 1 | 14 | 7 | 0 | 10 | 4 | 0 | 12 | 6 |
| Sustain or restore aquatic plants | 0 | 4 | 4 | 2 | 7 | 4 | 0 | 6 | 0 | 1 | 6 | 3 |
| Average no. of rules per CBO | 0.50 | 2.00 | 1.81 | 0.75 | 2.80 | 2.10 | 0.33 | 3.11 | 2.17 | 0.60 | 2.74 | 2.07 |

Source: FHRC unpublished data

The addition of more rules and more complex rules and management measures might be expected to increase problems of compliance and conflict among resource users. However, the evidence is that natural resource related rule-breaking and conflict was already at a relatively low level where these CBOs were functioning and has fallen during just over two years (Table 5). These conflicts are not usually violent, although several of the CBOs have in the past experienced physical violence usually related to outsider attempts to grab waterbodies. Other types of conflict include ones over water use and the opening of sluices. With the CBO management systems widely perceived as having enhanced production systems and positively affected fishers and landless, voluntary compliance is high even though closed seasons (to enable fish to spawn) result in hardship and inevitably some fishers are tempted to break the rules.

**Table 5. Compliance with rules, conflicts and their resolution (percentage of CBOs)**

| Issue | Closed Beel | | Open Beel/Floodplain | | River | | Total | |
|---|---|---|---|---|---|---|---|---|
| | 2007 | 2009 | 2007 | 2009 | 2007 | 2009 | 2007 | 2009 |
| No. of CBOs | 26 | 26 | 87 | 91 | 36 | 36 | 149 | 153 |
| **Compliance with rules** | | | | | | | | |
| CBOs where >25% of members reportedly broke rules (%) | 12 | 4 | 5 | 5 | 6 | 6 | 7 | 5 |
| CBOs report no rule breaking by outsiders (%) | 73 | 77 | 72 | 77 | 64 | 72 | 70 | 75 |
| CBOs report any rule broken (%) | 42 | 23 | 43 | 35 | 61 | 53 | 49 | 37 |
| CBOs report resolving rule breaking (% of those facing rule breaking) | 31 | 12 | 26 | 26 | 36 | 33 | 31 | 24 |
| **Conflicts** | | | | | | | | |
| Outsider captured water resources (part) (%) | 31 | 12 | 15 | 11 | 6 | 11 | 15 | 11 |
| CBOs report some traditional users excluded (%) | 31 | 12 | 15 | 11 | 6 | 11 | 17 | 11 |
| CBOs report no conflict | 85 | 89 | 81 | 80 | 89 | 86 | 83 | 83 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| within community on NRM in last year (%) | | | | | | | | |
| CBOs report no conflict on NRM with outsiders in last year (%) | 89 | 92 | 83 | 95 | 72 | 89 | 81 | 93 |
| No. of meetings in last year held between CBO and government (Mean) | 9.9 | 3.2 | 6.2 | 2.7 | 3.6 | 2.4 | 6.6 | 2.7 |
| CBOs received government officer's support regarding problems (%) | 2 | 1 | 3 | 2 | 5 | 2 | 3 | 2 |
| CBOs had UP support in enforcing rules etc. (%) | 31 | 8 | 43 | 22 | 64 | 39 | 46 | 24 |
| **Impacts** | | | | | | | | |
| CBOs had positive impact on landless livelihoods (%) | 92.3 | 88.5 | 90.7 | 82.4 | 83.3 | 86.1 | 89.2 | 84.3 |
| CBOs had positive impact on fisher livelihoods (%) | 96.2 | 84.6 | 86.2 | 79.1 | 83.3 | 86.1 | 87.2 | 81.7 |

Source: FHRC unpublished data

While the CBOs are largely able to manage fishery and floodplain resources by themselves, conflicts and competing pressures on resources are an important area where co-management is brought into play. To address rule-breaking particularly by other people from outside the immediate community/ CBO, local sanctions (fines, for example) are applied and enforced with the help of local government councils (Union Parishads) and/or village courts known as Salish. That CBOs are able to successfully receive support from these forums, even against locally-powerful people, is an indication of the accepted legitimacy of the local resource management institutions established through the CBOs.

By comparison a similar survey of waterbodies not managed by CBOs was conducted in Pabna District in northwest Bangladesh (just over half are leased either to individuals or to traditional cooperatives, with the rest open access). Although these waterbodies are on average smaller, which might lead one to expect them to have more tightly knit user communities, the incidence of conflict reported within the villages using waterbodies and with outsiders were both higher than for the sites managed by CBOs (Table 6), although the extent that conflicts were resolved was not very different. It is notable that the trend in access and hence benefits from these waterbodies for the poor has been at best constant and in many cases the poor have lost recognized access (unlike where CBOs manage waterbodies), raising the likelihood of poaching, and resentment of loss of an important subsistence resource.

**Table 6. Summary of inventory of waterbodies in three subdistricts of Pabna District**

| Indicator | Measure |
|---|---|
| Number of waterbodies (all are *jalmohals*) | 62.0 |
| Mean dry season water area (ha) | 10.9 |
| Mean wet season water area (ha) | 40.8 |

| | |
|---|---|
| Mean jalmohal area (ha) | 18.2 |
| Number leased | 37.0 |
| Mean number of villages using waterbody | 3.7 |
| Mean number of households | 1377.5 |
| Mean number of households fishing for income | 207.0 |
| Mean number of households fishing for food | 110.6 |
| percent waterbodies with conflict with outsiders | 17.7 |
| Mean no. of conflicts with outsiders (from other villages) | 0.4 |
| percent waterbodies with conflict within villages | 30.6 |
| Mean no. of conflicts within villages using waterbody | 2.2 |
| Mean percent of conflicts resolved (among those sites with conflict) | 39.8 |
| Recent trend in access of poor to wetland resources (fish, plants) percent of waterbodies | |
| No access for poor | 9.7 |
| Worse | 33.9 |
| Same | 50.0 |
| Improved | 6.5 |

Source: FHRC unpublished data

Previous research on seasonal floodplains has shown that greater women's involvement in CBOs is associated with higher compliance with CBO rules on resource use (Sultana and Thompson 2008). At the start of the Adaptive Learning Networks project many CBOs had few women members or did not take their views into account, but by the end of 2009, 21 percent of CBO members were women, 92 percent of CBOs reported consulting with women, and in over 60 percent of CBOs women reportedly spoke out regularly in meetings. A third of CBOs reported having women office bearers, although they are still in a minority. Overall networking has encouraged some CBOs to increase women's membership and more to listen to women's views in taking decisions.

## Outcomes for governance and interaction with government

The CBOs have formalized their network by registering it as the "Society for Water Resources Management" organized through four regional committees and a central committee. The network has helped CBOs strengthen their capacity through peer pressure and encouraging good practices, not only in resource management but also in governance, for example in holding elections for office bearers, holding consultations with the wider community, and adopting more transparent management of funds. Networking has given individual CBOs greater confidence to contact local officials and extension workers for advice and services. It has also resulted in CBOs directly advising one another, and the federation has taken initiatives to resolve conflicts faced by member CBOs. For example, in Dhalna Beel in southwest Bangladesh, the CBO leaders sold all the fish from the sanctuary. The general members complained about this to two neighboring CBOs, which mobilized seven other CBOs from the area who together called and facilitated a meeting where the Dhalna community decided to expel those leaders and form a new

committee. The nine other CBOs helped this CBO to reform their committee and restart conservation work.

Networking has also strengthened CBO ability to respond to outside threats and pressures, enabling poor fishing communities to engage in conflict with more powerful outsiders who threatened their livelihoods. In 2009 a politically backed group tried to usurp the well-established right of a CBO to manage and use a waterbody, Beel Gawha in northwest Bangladesh. The CBO consulted with the federation for advice, and then wrote to the district administration. When there was no response it and other CBOs in that region mobilized their members (comprising over a thousand people) to hold a public demonstration and human chain against the illegal threat. Subsequently, the outside group offered to negotiate for a share of the benefits, but with its renewed strength the CBO held out for the political group only participating if it invested with them in the fishery and limiting its participation to the extent of any such investment. More generally, the CBO federation has raised the collective negotiating power of the CBOs; it has raised key problems with senior government officials, such as the need to maintain security of access to waterbodies in the face of recent policy changes, and the adverse impacts of pollution on wetlands and fisheries.

## 5. FOREST PROTECTED AREAS: CO-MANAGEMENT AND CONFLICT

Bangladesh forests present a very different situation from wetlands. In some areas social forestry has benefited individual households, but the approach has been top-down and lacking in collective action. The experience of co-management is limited to protected areas where from 2003 the Nishorgo Support Project (NSP) piloted co-management of five protected areas, which since 2008 the Forest Department has expanded to almost all of its protected areas. The model adopted has been through a government order to form councils and committees that bring together people of different categories (village representatives including ethnic minorities, forest exploiters, local elites, local councilors, and a range of government officials) to coordinate measures to conserve and protect existing formally protected areas. These measures have included patrol groups from local villages, complemented by enhancement of livelihoods through tourism-based enterprises and work to add value from existing skills.

This section is based on a review of experience in the five forest protected areas where co-management was first piloted, based on secondary sources, compiling a volume of lessons learned from NSP (DeCosse et al. 2012), a review by one of the authors of co-management impacts in protected areas (Thompson 2012), complemented by key informant interviews undertaken in 2010 for this study with stakeholders in two of those forests (Rema-Kalenga Wildlife Sanctuary and Lawacharra National Park).

### Forest Department attitudes

Over the years the enforcement role of Forest Department has brought it into conflict with local people, including ethnic minorities, in a selective way and attitudes on both sides have been slow to change. Many local communities distrust the Forest Department because of their history of uneven treatment and corruption

supporting illicit logging. For example, in a key informant interview for this study, a Range Officer responsible for one of the five protected areas reported that the main problem for managing the area was corruption and negative attitudes among Forest Department staff (below and above him), and that bringing local elites into the Co-Management Councils raised the same problem – some are not interested to address illegal logging as they have an interest in this.

Forest Department attitudes are still based on its long history of authoritarian control over forests whereby it has been able to take decisions and exploit them at its will, ignoring any local interests or the need for national biodiversity conservation. These attitudes will not change quickly, while co-management was piloted there were cases of the department ignoring co-management bodies, for example by bringing a legal case over logging against members of a community patrol group set up to involve local people in helping the department protect Lawacharra National Park. This raises a question over what powers of censure the different stakeholders in the co-management body have over one another if any party fails to comply with its responsibilities under the management plan and terms of the co-management body. In this co-management framework some attempts have also been made to involve women, but in practice women's representation and participation in decisionmaking remain severely limited. However, co-management in forests is still evolving and the co-management bodies involving Forest Department and a range of local stakeholders have started to act to resolve conflicts between community patrollers and Forest Department.

**Institutional complexity and limits of co-management**

Co-management in these forests has been superimposed on an existing system where the Forest Department acted as patron to a set of "Forest Villages" that were recognized in the colonial or semi-colonial (Pakistan) periods. Some of these are long-established villages of ethnic minorities that were using the forests for generations, others were more recently formed. We conducted a case study of three out of ten small Forest Villages in Rema Kalenga Wildlife Sanctuary (a 1,795 ha evergreen forest in northeast Bangladesh) and found that one is a longstanding village inhabited by the Tripura ethnic minority, one was newly formed when the Forest Department settled poor Muslims from southeast Bangladesh in the area in the 1940s, and the third is a combination of ethnic minority and an immigrant population. In each village each household has use rights to 3 acres of land (2 acres officially and one additional "unofficial" acre) and can graze cattle in the forest. In return they are required to work unpaid for the Forest Department planting trees and supporting it in protecting the forest. The co-management system is superimposed on this system with apparently little link between the two. The community patrols under the new co-management arrangement work on the border and fringe of the protected area, while the forest villagers work inside the forest.

Representatives of these villages and Forest Department staff reported during interviews in 2010 that human pressure on these forests has increased as trees are felled for timber and firewood and unwritten rights of forest villagers to enter the forest with Forest Department tokens to collect honey, tree bark, and firewood are lost due to strengthened protection. The main area of conflict reported in interviews in these three villages arises from forest villagers working with the Forest Department in enforcing protection and catching illegal loggers.

Apprehending illegal loggers carries the risk of violence and has even resulted in deaths. Subsequent encounters between the forest villagers and the relatives of those apprehended loggers in markets or villages are often hostile as well. Co-management was reported to have reduced the number of such incidents through awareness raising and livelihood development in the neighboring communities, but some changes were also a result of stricter law enforcement during the caretaker government period (2007–2008), which targeted corruption.

Overall the co-management bodies have limited power and are afraid to challenge the authority of the Forest Department. This situation also means that the NGOs that have been hired to facilitate co-management cannot become involved in enabling participatory resource management inside the forests because all control is with the Forest Department. The boundaries set by Forest Department limit co-management to Protected Areas (PAs), where only nonconsumptive uses are legal, and do nothing to enable natural resource management and establish sustainable use through co-management of the larger reserve forest areas adjacent to PAs. Consequently, the livelihood-related aspects of co-management in these pilot areas concentrates more on constructing infrastructure, developing tourism, and ensuring that a greater share of visitor fees go to co-management bodies.

**Conflict resolution**

One important function of a co-management system is to create a space and forum for dialogue and conflict resolution. In interviews with both villagers and officials it was reported that the co-management system has resulted in Forest Department officials meeting with stakeholders and villagers outside of the forest and forest villages, which represents a change in attitude, while use of project funds for local development work such as building bridges is widely appreciated and improves relations. But the way that members of co-management councils were chosen is not transparent to local villagers, who seem unaware of the details of how the new system functions and clearly lack feedback indicating that co-managers do not act as their representatives.

In the southeast in two protected areas there have been attempts to enforce limits on brickfields that illegally use wood from protected areas (deCosse 2012). In that area a wider problem of a large and longstanding population of Rohinga refugees from Myanmar is beyond the scope of local conflict resolution, and including these people in co-management efforts is difficult because the government policy is that they should all be repatriated.

Co-management has also not resulted in effective challenges to other development works which threaten the forest protected areas. For example, road construction has affected some protected areas, while in Lawacharra National Park a gas pipeline was laid, seismic testing conducted, and army exercises took place all during the co-management period (deCosse 2012). None of these activities were strongly challenged by the Forest Department even though NGOs, local people, and co-management bodies were opposed and raised concerns over the potential impacts.

### Incentives for cooperation

Under the previously prevailing Forest Department model theft of trees and illegal logging were rife, including unofficially permitted small-scale exploitation for firewood and bamboo, and organized illegal logging. These trends have continued under co-management. Community patrol groups have had some success in reducing forest exploitation, but it is a constant struggle since there are large populations living around these forests and many nearby businesses (such as sawmills and brickfields) that also depend on wood. The incentives for compliance with stricter protection of these forests are limited. Unlike fisheries, where more fish in protected sanctuaries results in more catchable fish in the rest of the waterbody, protected forests offer few spillover benefits. At best, local people participating in forest PA co-management may receive some recognition in public forums and access to payments for guarding, a share in visitor fees that can be used for community development works, or support for alternative livelihoods.

The benefits of protecting forests are not sufficiently direct or clear at present to make community participation in patrolling and guarding a sustainable prospect—during the NSP, guarding was paid or enabled by material incentives. This not only applies to community patrols but also to the members of the co-management bodies. Since about 2010 the co-management bodies have received half of visitor entrance fees in some of these protected areas, but decisions over the Forest Department budget for these same areas are not made in the co-management committees. It is financial powers and management that will ultimately determine their sustainability and accountability. In addition, there is an issue of whether further benefits from ecotourism should go to those providing services who may not be involved in protecting forest but who interact with visitors, or those who previously depended on extraction of trees. Moreover, if the protected area is to be co-managed effectively and powers devolved to the local co-management body, then the total budget would come under the control of this co-management body. This means that government budgets for the area ought to be under the control of the co-management body and not the Forest Department, which would just provide staff. This would require further policy level decisions and is unlikely to be popular in the Forest Department.

Ultimately, trust between local communities and the Forest Department is low due to past conflicts and the Forest Department's authoritarian attitude, and co-management will take a long time to overcome this state of relations. Community capacity and organization (such as CBOs) has also lacked the strength to negotiate effectively with government. Overcoming these challenges will require the Forest Department to make significant changes in practice to follow its stated change in policy, comparable to the switch of waterbodies to Department of Fisheries and CBOs, or the switch of water management infrastructure ownership to CBOs through government policy shift.

## 6. CONCLUSIONS

Comparison of experience in wetlands and fisheries with that in forest protected areas indicates that in both ecosystems there exist competing demands on natural resources and a lack of coordination between departments that lead to conflicting

interests. In forests examples have already been given of development for natural gas, roads, and brickfields. In fisheries and wetlands aquaculture is rapidly spreading in seasonal floodplains resulting in the exclusion of the poor and declines in natural fisheries (Sultana 2012). There are also examples of poor interagency coordination, for example in Bangali River in northwest Bangladesh investments by communities and the Department of Fisheries in fish conservation are threatened by another government project that will abstract water for irrigation.

Differences in the effectiveness of CBOs and co-management in overcoming conflicts and empowering poor resource users are mainly a result of differences in government authority over the resource. These Bangladesh cases support the importance of polycentric governance involving multiple overlapping authorities and in commons nested tiers of governance that complement one another (Ostrom 2005, 2008). In the case of fisheries, the Department of Fisheries does not own the resource and has a minimal policing role, while sharing a common interest with fishing communities in reserving waterbodies out of the land administration's leasing system. Accordingly, the Department of Fisheries has recognized community organizations' prerogative to manage local waterbodies and has gained trust. This arrangement is consistent with the wider leasing system which confers wide-ranging management rights and responsibilities on whatever entity holds a lease (in these cases CBOs). By comparison, the Forest Department still owns and holds all real authority over forests, is traditionally top-down, and engages in a limited sharing of powers with little scope for local rule-setting. Although NGOs have facilitated the process in both sectors, in general they fear to challenge too far the power of elites and those with political influence. NGOs have generally not challenged the authority of the Forest Department because the Department controls the land on which they work, whereas they have been free to challenge the Ministry of Land by siding with the Department of Fisheries to advocate in favor of CBOs accessing fisheries.

The new institutional arrangements for co-management do not exist in isolation, but are embedded in the larger government institutions with shorter and longer term implications. In the wetlands and fisheries the transfer of responsibility for waterbodies from Ministry of Land to Ministry of Fisheries and Livestock resulted in a ten-year period during which CBOs linked with the Department of Fisheries were able to assume some control and responsibilities over waterbodies leading to an effective system of co-management. However, the Ministry of Land did not participate in this change in governance and as the period of waterbody handovers reaches its end is instead returning to a system of competitive bidding for leases. In 2012 this situation brought CBOs and Department of Fisheries into conflict with Ministry of Land. The Department of Fisheries has so far been unable to convince the Ministry of Land of the benefits from allowing co-management to continue, but a number of CBOs have jointly taken the issue to the courts and obtained injunctions staying the Ministry of Land from ending their management of waterbodies.

There has been no such opportunity for changing management responsibilities for forest protected areas, which remain firmly under the Forest Department. This means that policy changes within the Forest Department to adopt co-management do not raise any conflict or challenge from other parts of the government. However, the co-management model that has been adopted in the

initial five pilot sites has allowed little scope for local adaptation in the ways that community groups could participate in a hierarchy of decisionmaking. Moreover, in the field the Forest Department has no clear recognition of there being a different management system in these areas (since staff is responsible for both protected areas and other adjacent forest lands). Co-management has so far been adopted in protected areas where the Forest Department has no scope to undertake its traditional forestry operations, and the area covered by devolved responsibilities is limited to a fraction of the overall forest area.

The evidence supports a continued and expanded strategy of promoting co-management based on empowering local communities that depend on common pool resources. Devolution of authority is a means of developing local co-management institutions that can set resource access and extraction rules that consider the interest of local people and have wider acceptance than those set from above by government. The experience in Bangladesh indicates that community based co-management also brings the benefit of reduced conflict and opportunities to resolve local conflicts. The Government of Bangladesh has already moved towards devolution of decisionmaking in wetlands and forests, but a more comprehensive framework is needed for community-based co-management that ensures long-term secure roles for local communities in managing and benefiting from public natural resources. At the same time that framework should be more comprehensive and offer greater flexibility by covering all fisheries, water management, and all forests. As the forest examples show, this also needs to be supported by strengthening the voice and capacity of local communities, particularly the poor and disadvantaged, in dealing with government.

Donors and NGOs tend to focus on establishing CBOs and/or co-management bodies, and then projects end, leaving these organizations and institutional arrangements isolated and questions over their sustainability. The evidence is that these CBOs do continue but have weaknesses. The adaptive learning network has demonstrated that a modest longer term approach that brings strength in numbers among CBOs and helps them to share and learn among themselves brings additional benefits, not only in resource management but also in enhancing good governance within CBOs and in overcoming local conflicts. Through networking, the voice of poor resource users is becoming stronger over conflicting policies and practices of administration and elites.

We believe these findings have general relevance. They reflect the Bangladesh situation of intense population pressure, a willingness to test alternative approaches through projects, but unwillingness to then codify new institutional arrangements for general applicability. Some of the large numbers of NGOs active in Bangladesh have been mobilized to support these approaches, but establishing self-sustaining independent CBOs or facilitating co-management bodies are outside of their comfort zone. Moreover the resulting CBOs and co-management bodies do not fit into the existing system: there is a lack of funding sources and higher level recognition from either government or donors for genuine community organizations and civil society.

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