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Natural resource conflicts and community organizations in Bangladesh

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With a population density of over 1,000 persons per km², there is intense pressure on common property wetlands and forests in Bangladesh. Flood control and drainage affect over half of floodplains, most waterbodies are over fished, and although forest lands cover 15% of the country actual forest cover is much less. 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. Community based organization (CBO) performance including conflict management was assessed over three years among about 150 floodplain CBOs, and experience was reviewed in the five forest protected areas with co-management.

The incentives for CBOs to manage and conserve fisheries are more secure access and the benefit of higher fish catches driven by restoring habitat and conserving fish. However, local elites pose a threat to access, other conflicts arise over mass fishing known as baut, poaching, pollution from industries, water use between farmers and fishers, and power struggles within CBOs.

In forests there are fewer incentives, control remains with the Forest Department and community patrol groups and co-management councils lack rights to exploit protected areas other than limited ecotourism. There is a fundamental lack of trust between local people and the Forest Department resulting from conflicts over illegal felling of trees, and extraction of payments for collecting forest products. Community involvement in protecting forest brings local people into conflict with one another.

There is evidence that under co-management community representatives and officials can negotiate more effectively to reduce some practices that adversely affect shared interests. This includes limiting brickfield operations that extract fuelwood from protected forests. However, the lack of formalized CBOs comprised of poor forest users appears to limit scope for negotiation and has yet to empower the poor to put pressure on government and highly organized and influential exploiters.

Networking among floodplain CBOs appears to have helped overcome internal conflicts, particularly through more transparent governance (over 40% of CBOs reported conflict in 2007-8 but none in 2009). About twice as many CBOs that manage fisheries, particularly public waterbodies leased from government, reported obtaining support from government officers and local councils to enforce their management plans and overcome conflicts, compared with CBOs formed to manage water resources. This reflects pressures on valuable fisheries, and the effectiveness of co-management linking and legitimizing CBOs with government.

1. CONTEXT

With a total population of over 150 million and population density of over 1,000 persons per km², there is intense pressure on common property wetlands and forests in Bangladesh. Flood control and drainage affect over half of floodplains, most waterbodies are over fished, and although forest lands cover 17% of the country actual forest cover is much less.

WETLAND AND INLAND FISHERIES RESOURCES

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

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).

Floodplain wetlands are complex systems where private land becomes a seasonal commons when flooded, and where people make use of a multitude of natural resources, all interlinked in an ecosystem connected through water. Floodplain wetlands in Bangladesh provide local people, especially the poor, with:

- Fish, over 70% 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,
- Other goods and services including snails (collected for sale to duck and shrimp farmers), water for livestock, transport, etc.

A survey of 125,000 households found that 82% 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 drives productivity. 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. "Floodplain aquaculture" based on better off people enclosing seasonally flooded private land with bunds and stocking carps has rapidly expanded in the last decade at the expense of natural fisheries used by poor people (Sultana 2010). Aquatic common pool resources, such as fisheries, have been declining as a result. Out of Bangladesh's 260 freshwater fish species, more than 40% are now threatened with national extinction (IUCN Bangladesh 2000).

FOREST RESOURCES

According to the Forest Department about 17% of Bangladesh is classed as forest lands, of which 10.5% 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% 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% (Khan et al. 2004), although based on experts perceptions it is believed that the deforestation trend in the last five years has gone down. 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.

Type of forest	Area (m ha)	Area under tree cover	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		17.5

Out of this modest area of forests, the formal protected area network of Bangladesh comprises only of Forest Department lands and covers 251,100 ha in 24 protected areas, or 16% of Forest Department lands. These are divided between national parks and wildlife sanctuaries, with one “game reserve”, and 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.

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) which are under the control of the Ministry of Land, which leases out fishing rights on a competitive basis for the purpose of collecting revenue (although by now this makes a minuscule contribution to the national budget). Essentially fishing rights are leased out for three years in beels or “closed waters”, 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 barrier affecting fisheries.

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 supervised Community-Based Organizations (CBOs) against nominal lease payments and conserving the environment and biodiversity of fisheries through restoration of wetlands and fisheries. However, there has been only a limited effort to implement this strategy.

According to government records, the responsibility for around 300 jalmohals has been handed over for 10 years to CBOs formed through various projects since the mid 1990s. In most cases these CBOs are still functioning and many have established sanctuaries and closed seasons thereby restoring fishery productivity. By comparison, the majority of jalmohals leased under the traditional system have experienced over exploitation, declining catches, and a lack of conservation measures. 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 introduced its latest Jalmohal Management Policy which may encourage conservation based management by CBOs and end competitive leasing. Instead, a registered CBO would receive a three-year lease, increasing by 5% in each round. However, it 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, it does not give a role for neighboring communities in any decision making, including minority communities which often had use rights and had settled in forest areas, or for civil society in general. Moreover there was no framework for community participation in forest conservation and management. Much more recently a social forestry framework was developed in 2004 which is appropriate for participation where trees will be 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 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 re-establishing its control over these lands, and a lack of serious commitment with the Forest Department to sharing of powers with local communities.

A ban on tree felling in 1989 (primarily it 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, yet the current and past level of forestry revenue are insignificant compared with government’s total revenue. The requirement on the Forest Department to generate revenue from forestry is now a perverse incentive to deforestation since revenue has to come from seizures of illegally cut timber and thus encourages illegal logging and corruption. There had also been little distinction made in management plans or practices of the Forest Department 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.

3. CONFLICT AND CO-MANAGEMENT

CONFLICT

Past studies on natural resource conflict have most often focused on site-specific violent conflicts related to resource allocation. But for example in fisheries, 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 conflicts may rarely result in violence. Conflict may not always be a bad thing – it could 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 that this was impacting the poor more as support mechanisms for dealing with conflict are eroded and found a wide range of conflicts, particularly over 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 have been identified (Bennett et al. 2001). Conflicts over leases and between fishing communities and lessees are common. It 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, in 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 south-eastern hilltracts 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 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 by the imprisonment of the then Chief Conservator of Forests for massive corrupt exploitation of forests. Testing of participatory-oriented strategies (social forestry) as a response to long-standing conflicts over state forest has had mixed results. Issues faced by the Garo or Mandi community in Modhupur Forest in central Bangladesh have been widely documented (Gain 1998; Rahman 2009) where a mix of settlement by Bengalis in forest areas, and conversion of forest to rubber and short duration plantations has reduced the forest available for use by the long standing minority group residents, who face regular harassment, legal cases and violence from the Forest Department for livelihood activities they would see as traditional.

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) argued

that co-management is a logical way of solving resource management problems through partnerships. But they emphasized the complexity of co-management arrangements and 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 Ostrom (1990) argued that conflicts need to be reduced if individuals are to have the incentives to invest in creating appropriate institutions. 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), the process of negotiating sharing of rights and responsibilities may reduce conflicts. Co-management forums themselves can provide a space for seeking compromises among participating stakeholders or for generating wider support against external threats.

In Bangladesh community based co-management has been introduced in wetlands and fisheries since the early 1990s and in forest protected areas since the mid 2000s.

4. FISHERIES – CBOS AND CONFLICT

By now there are several hundred Community Based Organizations (CBOs) managing waterbodies and areas of floodplain that are recognized by government, have long term use rights, and are considered to 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). In most cases the arrangement is at the community based end of the co-management continuum, with CBOs having devolved responsibilities for a waterbody or floodplain area where they set local management rules such as closed seasons and protect sanctuaries to maintain fish stocks, diversity and catches, and access advice from government agencies if needed. Yet these CBOs remain responsible for payment of leases to the land administration, even if those leases have been reserved or 10 years by agreement between the Ministry of Land and Ministry of Fisheries and Livestock.

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. A process of adaptive learning networking among the CBOs has been developed whereby these once isolated organizations can share experiences and lessons, promote good practices, and in a coordinated way test innovations in natural resource management (Sultana and Thompson 2009). The focus 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 the governance of the CBOs. As part of this research annual assessments of the performance of the CBOs were conducted by a team of research assistants consulting with the CBO leaders, general community members and their record books, covering a range of themes: resource management, the extent they are pro-poor, the role of women, organizational operations, governance, financial management and linkages with others. This included indicators for conflict and conflict management.

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
Number of villages per site	7	7	9	7
Number 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
% of community fishes	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
% CBOs manage a jalmohal	100	42	94	64
Jalmohal area (ha) if any	65.3	82.8	158.3	104.3
% CBOs pay waterbody lease	96	25	8	33
Lease in current year (Tk) for those paying	83,409	61,727	60,449	72,281
% CBOs with sanctuary in 2007	58	55	97	66
% CBOs with sanctuary in 2009	89	58	94	72

However, the major incentives for communities to manage and conserve fisheries are that the CBO holds access rights over the waterbody (jalmohal) through 10 year agreements made between the Ministry of Fisheries and Livestock and Ministry of Land, and the potential increases in fish catches that can result from simple conservation measures. In some cases CBOs work to manage fisheries on private land that is a seasonal wetland, and here the incentive is the potential for fish catch increases for many members of the community who catch fish for food or income in the seasonal floodplain.

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	Imple ment	Plan	Plan	Imple ment	Plan	Plan	Imple ment	Plan	Plan	Imple ment
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 rules	0	4	4	3	20	15	0	22	14	2	18	13
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

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 carps 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 – CBOs that heard of successful practices have been 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.

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 rarely 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 impacted 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
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 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 conflicts (% of those facing rule breaking)	31	12	26	26	36	33	31	24
CBOs report no conflict within community on NRM in last year (%)	85	89	81	80	89	86	83	83
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
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

While the CBOs are largely able to manage 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 and enforcement – are usually applied and these are imposed 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 was conducted in Pabna District in north-west Bangladesh of waterbodies that are not managed by CBOs (just over half are leased either to individuals or to traditional cooperatives, with the rest open access). Although these on average are smaller waterbodies that might be expected 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 of these waterbodies 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

Number of waterbodies (all are jalmohals)	62
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
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
% waterbodies with conflict with outsiders	17.7
Mean no. of conflicts with outsiders (from other villages)	0.4
% waterbodies with conflict within villages	30.6
Mean no. of conflicts within villages using waterbody	2.2
Mean % of conflicts resolved (among those sites with conflict)	39.8
Recent trend in access of poor to wetland resources (fish, plants, etc)	
No access for poor	9.7
Worse	33.9
Same	50.0
Improved	6.5

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

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. The adaptive learning network has given individual CBOs greater confidence to contact local officials and extension workers for advice and services. But 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 start working again.

Networking has also strengthened 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 grab 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 to the extent of any such investment. More generally the CBO federation has raised the collective negotiating power of the CBOs, it has raised with senior government officials key problems such as the need to maintain their security of access to waterbodies in the face of recent policy changes, and the adverse impacts of pollution on wetland and fisheries.

5. FOREST PROTECTED AREAS - CO-MANAGEMENT AND CONFLICT

The forests are a very different situation from wetlands. In some areas social forestry has benefited individual households, but has been top-down and lacks any effective collective action. The experience of co-management is limited to protected areas where since 2003 the Nishorgo Support Project (NSP) piloted co-management of five protected areas, which has since 2008 been expanded to almost all of the 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 such as patrol groups from local villages, complemented by measures to enhance livelihoods through tourism based enterprises and work to add value from existing skills.

This section is based on reviewing experience in the five forest protected areas where co-management was first piloted. As noted earlier under the previous prevailing Forest Department model theft of trees and illegal logging were rife, this included unofficially permitted small scale exploitation for firewood and bamboo, and organized illegal logging. These trends have remained 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. However, the incentives for compliance with stricter protection of these forests are limited – unlike fisheries there is no spill-over of more fish from a sanctuary into the rest of the waterbody, at best there may be 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.

New institutions have not been created in isolation; they are superimposed on existing society and government systems. In the wetlands and fisheries the transfer of responsibility for waterbodies from Ministry of Land to Ministry of Fisheries and Livestock (even if time bound) created a break linked with passing on those responsibilities to CBOs linked with the Department of Fisheries and some common interest between these parties. There has been no such break in the forest protected areas which remain firmly under a Forest Department which in the field has no clear recognition of there being a different management system in these areas (since staff are responsible for both protected areas and other adjacent forest lands). The enforcement role of Forest Department has brought it into conflict with local people, including ethnic minorities, in a selective way and has not reportedly changed attitudes. Hence there is an existing mistrust of the Forest Department among local communities, arising to a considerable extent from knowledge of uneven treatment and corruption supporting illicit logging. For example, one 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. Overall the co-management bodies have limited power in any case and fear to challenge the authority of the Forest Department. This situation also means that the NGOs that have been hired to facilitate co-management also cannot become involved in enabling participatory resource management inside the forests because all control is with the Forest Department.

Considering the boundaries set by Forest Department, NSP in its development work has concentrated more on constructing infrastructure and developing tourism rather than on natural resource management and establishing sustainable uses in parts of the wider protected area-reserve forest system.

Co-management in these forests has also 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. For example, in Rema Kalenga Wildlife Sanctuary (a 1,795 ha evergreen forest in north-east Bangladesh) there are 10 small Forest Villages, in a case study of three of them one is a long standing Tripura village, one was newly formed when the Forest Department settled poor Muslims from south-east Bangladesh in the area in the 1940s and one is a combination of ethnic minority with a superimposed immigrant population that dominates. In each case 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 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.

It was reported that human pressure has increased with trees felled for timber and firewood, and that previous unwritten rights of forest villagers to enter the forest with Forest Department tokens to collect honey, tree bark, and firewood had been lost with strengthened protection. The main area of conflict reported arises from forest villagers working with the Forest Department in enforcing protection and catching illegal loggers. In itself there is the risk of violence when illegal loggers are apprehended, and this has resulted in deaths. Also later when the forest villagers encounter the relatives of those loggers in markets or villages they of course experience hostility. Co-management was reported to have reduced to some extent the number of such incidents through work with the neighboring communities, but changes are also a result of stricter law enforcement during the caretaker government period (2007-8) which targeted corruption.

This raises a question of how well the co-management system is functioning and whether it creates a space for conflict resolution or the big issues are overlooked. 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 is to some extent changing attitudes, 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 south-east in two protected areas there have been attempts to enforce limits on adjacent brickfields which illegally use wood from protected areas. But a wider problem of a large and by now long-standing population of Rohingya refugees from Myanmar is beyond the scope of local conflict resolution when 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. Development work is not well coordinated, road construction affects 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. None were strongly challenged by the Forest Department even though NGOs, local people and co-management bodies were opposed to these activities and raised concerns over the potential impacts.

Forest Department attitudes are still based on its long history of authoritarian control over forests whereby it has been able to exploit them at its will, ignoring any local interests or the need for national biodiversity conservation. This seems to have continued into NSP where there are 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 decision making remain severely limited.

The benefits of protecting forests are not sufficiently direct or clear at present to make community participation in guarding a sustainable prospect – so far guarding has been paid/enabled by material incentives. This not only applies to guards but also to the members of the co-management bodies. It is not clear what budget these bodies have control over, but 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 eco-tourism should go to those providing services and who may not be involved in protecting forest but who are able to deal 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 was low due to the past conflicts and authoritarian attitude, and co-management will take a long time to overcome this. Strengthening of community capacity and organization (such as CBOs) to be better able to negotiate with government has also been lacking. This will require the Forest Department to make significant changes 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. IMPLICATIONS AND RECOMMENDATIONS

Comparison of experience in wetlands and fisheries with that in forest protected areas indicates that there exist competing demands on natural resources and a lack of coordination between departments that lead to conflicting interests, similar to the examples in forests (gas, roads, brickfields), in fisheries such as Bangali River in north-west 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. In fisheries the Department of Fisheries does not own the resource and has a minimal policing role, it has a common interest with fishing communities in reserving waterbodies out of the land administration's leasing system and therefore is more trusted, whereas the Forest Department still owns and holds all real authority over forests. 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 not challenged the authority of the Forest Department since they work on a Forest Department project whereas they have been free to side with the Department of Fisheries to advocate in favor of CBOs to access fisheries from the Ministry of Land.

The evidence supports a continued and expanded strategy of promoting co-management based on empowering local communities that depend on common pool resources, as a means of developing local 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 Government of Bangladesh is already moving in this direction but a more comprehensive framework is needed for community based co-management that at the same time offers greater flexibility covering fisheries, water management and all forests. As the forest examples show, this also need to be supported by strengthening the voice and capacity of local communities, particularly the poor and disadvantaged, in dealing with government.

However, 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. We have found that these CBOs do continue but have weaknesses. The adaptive learning network has demonstrated that a modest longer-term approach which brings strength in numbers among CBOs and a 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, but they do 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 number 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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