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INTEGRATED PROTECTED AREA CO-MANAGEMENT (IPAC)

Report of the Study on
Lessons Learned from Wetland Resource
Co-management Projects in Bangladesh

August 18, 2009

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Lessons Learned from Wetland Resources Co-management
Projects in Bangladesh**

Report prepared by the
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Glossary of Acronyms

BCAS	Bangladesh Center for Advanced Studies
BIDS	Bangladesh Institute of Development Studies
BBC	<i>Beel</i> Management Committee
Caritas	An NGO. Partner of MACH and CBFM
CBFM	Community based Fisheries Management
CBO	Community Based Organization
CPR	Common Property Regime
CNRS	Center for Natural Resource Studies – partner NGO of MACH and CBFM
DoF	Department of Fisheries
FFP	Fourth Fisheries Project
FMC	Fisheries Management Committee – apex CBO at each water body under Fourth Fisheries Project (FFP).
FMP	Fisheries Management Plan
FRUG	Federation of Resource Users’ Groups – apex body of RUGs of MACH project.
IPAC	Integrated Protected Area Co-management Project
MACH	Management of Aquatic Ecosystems through Community Husbandry
NGO	Non-government Organization
PRSP	Poverty Reduction Strategy Paper
RMO	Resource Management Organization – apex CBO of wetland management under MACH project
RUG	Resource Users’ Group – village based group of wetland users organized under MACH project
LGED	Local Government Engineering Division
MoWR,	Ministry of Water Resources
BWDB	Bangladesh water Development Board
WARPO	Water Resources Planning Organization
CEGIS	Center for Environment and Geographic Information Services

Glossary of Bengali Terms

<i>beel</i>	Floodplain depression, often seasonally connected to the wider river system by <i>Khals</i> . Deeper parts may remain flooded throughout the year, acting as a dry season refuge for fish.
<i>current jal</i>	Inexpensive gill net; set in <i>beels</i> and floodplains but can be drifted in rivers. Illegal but widely used by poorer households.
<i>jalmohal katha</i>	Government owned water body leased out for fishing.
	Fish aggregation device (FAD) made of brushpiles set in deeper part of waterbody; usually set by influential/elites, with intermittent fishing contracted out to professional fishers.
<i>Bana</i>	Bamboo fence used across the narrow part of <i>beels</i> to facilitate fish aggregation.

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Executive summary

IPAC has started its five year journey in May 2008 under USAID funding and is being implemented by the Ministry of Environment and Forests (MoEF) and Ministry of Fisheries and Livestock (MoFL) involving directly the three line government agencies i.e. Forest Department (FD), Department of Fisheries (DoF) and the Department of Environment (DoE), through a consortium of partners led by International Resources Group.¹ The WorldFish Center is the core partner in IPAC dealing with matters related to wetland and fisheries and has been the point of contact with the DoF for integration of IPAC activities in the DoF programs and has been the focal institution carrying out this study in close association with DoF.

DoF has requested IPAC to conduct a study on post project and post-ante situations of some recently implemented co-management projects to see if the impact of large levels of interventions made through these projects to establish co-management institutions and institutionalize the good practices and good lessons have been sustained in the field or lost. It was logically put forward by the Director General DoF that since the objectives and goals of the three projects in particular i.e. MACH, CBFM and FFP are the same while there have been differences in the technical and institutional implementation procedure and all, it would be timely for IPAC as well for DoF to evaluate the lessons and issues to identify the way forwards for ensuring sustainable institutions.

Accordingly, IPAC has undertaken this study of lessons learned in inland capture fisheries co-management projects to carry these lessons forward in the development of the IPAC strategic framework and action plan. The study was designed into two parts; i) review of the relevant documents of the three co-management projects, ii) sites visit to assess the post-project performance of the CBO's and sustainability of the wetland resource management practices. Assessment tool used includes FGD, HH Interview, Key Informant Interview and RRA. The study was undertaken in through two field visits to selected sites between April and July 2009.

Lessons learned:

Some lessons are common to all the three projects (with differences in the degree of performances) which are:

- a. All the projects have established community based organizations (CBOs/RMOs/BMCs) in all the project waterbodies handed over to the community through DoF; sustainability however needs steady and intensive effort and takes time,
- b. All the CBOs have been able to establish and maintain their access rights in the waterbodies (*Jalmohals*),
- c. All the CBOs in all the waterbodies have established and maintained fish sanctuaries,
- d. All CBOs have rules and by-rules for fisheries management good practices but not effectively observed,

¹ In addition to IRG, the IPAC team partners include: WWF-US, dTS, East West Center, ELI, Epler-Wood International, WorldFish Center, CIPD, RDRS, CODEC, BELA, Asiatic Communications, Oasis Transformation, Module Architects, Independent University of Bangladesh and Jahangirnagar University.

- e. Fish production, fisheries productivity and biodiversity have substantially increased in all sites,
- f. Fishers' income from fishing has increased in all sites,
- g. Livelihoods diversifications have developed,
- h. More people have been involved in subsistence fishing and have achieved an increased family income,
- i. Common people have been benefited from the project interventions in terms of social developments,
- j. Co-management approaches have been well recognized and appreciated by all, from 'grassroots to the policy level',
- k. National fisheries strategy 2006 (special reference to Inland Capture Fisheries Sub-strategy) has given due consideration in co-management approaches with reference to the successes from all three projects and embedded in its action plan.

Project-specific lessons:

MACH project's focus has been not only on the fisheries but on the totality of the wetland as ecosystem and has been successful in achieving enhanced biodiversity and productivity of the ecosystem and all living resources therein. The sanctuaries are very well maintained and the benefit of the sanctuary is reaching over a large area far beyond the sanctuary to the common fishers and villagers. MACH project concept of developing UFC from the very beginning has contributed to empower the community in maintaining strong and functional linkages with local government bodies and local administration through DoF. Creating provision for endowment fund has been innovative in keeping the CBOs lively and functional that leverages the CBO operation for maintenance of sanctuaries, small scale habitat restoration etc. But adoption of good practices in fisheries management is yet to be fully established. Small-scale follow on activities are still ongoing and there are some issues to be concerned of and it needs to be seen what comes out when the project support is fully withdrawn but one should appreciate that CBO sustainability takes time.

CBOs are in place and operational in the FFP sites and the community have been so far able to maintain their access rights over the waterbodies. The performances of institutional activities are weak and the institutions are mostly under elite capture. The elites have already been in place as per implementation plan of the FFP and by now they have a better place in the institutions so there is a risk involved in losing access of the common people. DoF support and linkages to CBOs in the FFP sites seemed to be exceptionally weak. *DoF should take note of this issue and deal with this with the local administration, particularly at this point in time when the lease renewal time is knocking at the door which may provide a corridor for the ex-lease holders to re-enter. This is also an issue for IPAC.*

Technical interventions e.g. effort reduction, destructive gear control, establishing good practices based on action research results, in addition to sanctuary establishment and maintenance through CBOs, were major focus in CBFM. The livelihoods and AIGAs were comparatively better linked to resource management; but measuring the impact of this individual action was not possible and left to be seen. In general the CBOs in the CBFM sites have are in better shape than FFP and the good practices in management are seen to be better respected. Impact of the CBFM follow on

funds provided to NGOs to establish CBO network and empower the CBOs and sustainable institution was not visible in the field, probably because there was a lack of systemic operational procedure.

Fish sanctuary highly impacted fisheries productivity:

Fish sanctuaries have been established in maximum sites of all the projects and have been found to have substantial impact of Fisheries productivity that has generated benefits for not only fishers and CBO members but also to some extent for the villagers. The number of subsistence fishing household has generally increased and was an added benefit for increasing income and fish consumption at local levels. *This intervention has by now become popular to the villagers and received much appreciation from the grassroots to the policy level.*

Experts opined that it is worth exploring the scope for increase in size and or number of sanctuaries as it is a low cost intervention provided large-scale habitat restoration work is not needed. Sanctuaries have been seen by the study team as much more beneficial intervention than it is reflected in the project completion reports. The logic for this belief is that fisheries good practices are not yet functionally in place and there are overfishing in real terms. The present fisheries production benefit must have come after absorbing the shock of the negative impact of overfishing. So the sanctuaries may in this case be given double credit than it had received.

Good practices in resource management:

At all sites there are laws and by laws to manage the fisheries resources and establish good practices in fisheries management. The villagers are also aware of the benefits of observing the management of good practices e.g. maintaining closed season, gear ban, mesh size regulation to control destructive fishing. The CBOs claim that they supervise this and ensure that the management rules are obeyed, but the fact is that in most of the waterbodies this is in-effective; and particular mention may be made to the FFP sites. One should however appreciate that FFP had smaller time lag in organizing and institutionalizing the CBOs compared to CBFM and MACH. But one of the major objectives of the co-management is to embed the fisheries management rules and regulations in the community institutions in the name of ‘good practices’ set as by-laws of the CBOs. *DoF needs to look into this and IPAC needs to assist DoF in this regard.*

Sustainable institutions:

A sustainable institution takes time and intensive effort. CBO has been formed and are still functional but not equally effective after the project but all are not equally active in achieving the basic objectives. FFP was implemented at a faster speed possibly because of the time constraint and as a result the foundation was weak. On the other hand FFP implementation plan included selection of members from the elite groups which finally became more powerful than ideal and thus the common people’s voice was low and by now the elites are in the monopoly in most sites. MACH and CBFM had better foundation blocks as this was given time and patience.

CBO's structural development, its sustainability and skill on resource management depends on work force and logistics provided to the community during project and it needs time and intensive effort; and for the post project sustainable functioning it needs strong and structured linkage with the line GoB agency e.g. UFC system in MACH project, through which it receives support from the local administration and LG bodies. Particularly the MACH CBOs (RMO) was well connected by UFC and endowment fund that opened corridor for future sustenance. But with very little exceptions there are problems in leadership and transparency. A steady source of income is essential for the sustainability of CBOs and smooth functioning of management activities. This may be in the form of endowment fund as provided by MACH.

AIGA and micro-finance:

AIGAs supports have been provided by all the projects which made the successes in livelihoods diversification and poverty reduction. But this has apparently not been able to reduce fishing pressure; rather there are evidences of fishing effort increase. It has however helped in reducing dependency of the fisher community on fishing but since the AGAs have not been linked to resource management e.g. time based AIGAs to support livelihoods of the fishers to help them keep out of fishing during the closed season that would have been one of the ideal management measure to reduce fishing effort and at the same time allow the mass scale breeding and stock regeneration process have not been in place it was seen as an isolated intervention. In the future activities the AIGAs need to be carefully embedded in the resource management plan followed by the technical management advice to be developed by IPAC through WorldFish to keep the effort within the maximum sustainable yield (MSY) limit.

Governance:

Although prolonged efforts provided but the poor fishers and resource user groups are yet not capable to raise their voice in decision-making. Inclusion of elites in the CBOs to safeguard the interest of the poor fishers in accessing rights against the ex-leaseholders as champions have in several places worked well. This brought in good result in safe guarding beneficiaries in some ways but in the longer term it poses a risk of displacement of the real resource users from the waterbodies if not cautiously and democratically handled. This has more risks in the FFP waterbodies as the elites have been deep rooted and may cause an affect like '*exit the dragon and enter the tiger*'. The strong link of DoF and local administration is required to trouble shoot the problems and maintain the institution in a way that the common members find a platform to raise their voices. .

The present positive role of the champions may also not sustain over period on the other hand. Transparency in leadership has already become a big issue. The leaders would try to find out their own incentives for the services that they provided for people somehow (as they do now by setting *kathas*, and involving indirectly in poaching). This is not a surprise as one may try to sell his time for money that he needs for family or otherwise if there are scopes to do that. So it is imperative that some mechanisms needed to be developed whereby socially and logically acceptable and eco-friendly income generation is developed that would be used to provide transparent incentives can provided to the leaders for their services rendered to the society.

Benefit distribution and equity:

Legacy of project is that productivity increases (mainly through sanctuaries) but big problem remains in distribution of equity. Elite capture, poaching, *katha* setting by influential near the sanctuary has remained as a big issue. *Katha* setting must be beyond a certain limit of the sanctuary keeping a buffer zone. There are by-laws about buffer zones in some CBOs but not respected by the leaders in most of the areas visited and the members seemed to be helpless and disappointed. DoF needs to be helping the community to raise their voices by observing the by-laws and where necessary impose the fish act regulations to control illegal operations. There are however, examples of good evidence in transparent, democratic and equitable distribution of benefits in some CBOs, the best example found so far is the Chapandaha *beel* of the CBFM.

Issues:

Although CBOs have lease and established access rights they are anxious about continuation and there were some drives from ex leaseholders to take over the possession but CBOs had to struggle to maintain access rights and finally they have been successful, those with good connections with administration are less worried but a clear enforceable policy / regulations is needed to cover the risk, otherwise good practices in management and good motivation in technical interventions and benefit distribution will suffer. Most of the FFP waterbodies are under elite capture at varying degrees of concern. There is therefore every risk of losing access rights of the poor fishers which is a matter of concern. This crisis needs to be seriously managed by direct interference of DoF/MoFL in association of the local administration particularly at this point of time when the lease period for the CBOs are going to be over and need renew; there is a growing political pressure in disguise.

CBOs are strongly affected by political influences. The democratic operation and the changes brought in to this regard is sometimes worse in “*Exit the dragon, enter the tiger*”. Many people opined that good leaders should remain as long as necessary (so long they are committed to the society and serves as the spokesman of the poor resource users and their access rights and benefit distribution equity are respected). The team also considers that a good and sustainable CBO institution does not only mean an institution operates through democratic processes; but observance of the fisheries good practices and transparent technical operation of the waterbody and the natural resources to ensure enhancement of productivity and biodiversity that leads to public goods is more important be the operation of CBO follow the ‘democratic processes’ with secret ballot or by peoples consensus, so long people believe that they are their spokesman.

Transparency in leadership:

Transparency in the leadership also is a big issue. Here it has been found that elite in leadership can function well if they are transparent (but not in most cases), the community leaders (fisher leaders) can also perform well if maintain a good linkage with DoF and UZ Admn. An intensive interaction was made with local enlightened group who reacted that if the leaders are good then the commons are good too. And we have to find people from within those who have been involved in the process since the beginning. They are not bad people but they need some sort of

transparent incentive for their services to remain honest, manage the sanctuaries and the GPs and remain responsible to the society. When the study team interacted with the rural enlightened, they made some suggestions which they think can be of interest to the managers and decision makers to develop ideal and transparent leadership. Their views have been summarized and furnished in the main report in a box.

Internalizing the lessons into IPAC:

It is imperative that improvement of the aquatic ecosystems functions optimally with adequate environmental flow conditions in order to facilitate spawning and overwintering fish migration to complete lifecycle process for enhancement of fisheries productivity. For this to happen it is necessary to deal with the relevant government agencies and ministries (e.g. BWDB, WARPO/ MoWR) and work with partnership with advanced institutions (e.g. CEGIS, IWFM/ BUET). In order to establish fisheries management good practices in CBO IPAC needs to work with DoF local level staff as well as at HQ level to have the action plan for Inland capture Fisheries Sub-strategy under the National Fisheries strategy 2006 (DoF 2006, <http://www.fisheries.gov.bd/>) implemented. Wetland management involves many stakeholders. Coordination is essential and co-management arrangements should adjust to local needs, e.g. to address pollution linking with industry and DoE; or to address low flows in rivers and loss of navigability and connectivity linking with BWDB/ WARPO (MoWR).

Leadership transparency is an issue that IPAC would need to address along with DoF. A mechanism needs to be developed which would be innovative and socially acceptable. Capacity building of the leaders, skills development, awareness and motivation and “right people on the bus” supported by policy reforms, and development of committee like UFC in all UZs and all waterbodies to connect the CBOs with LG and local administration through DoF needs to be addressed based on the lessons learned. By now the CBO lessons / activities are more accepted in the society and there is reason to believe that more inclusion of champions may not be necessary any further. It is necessary to develop consensus through CBO networks and forums established to empower the CBOs to raise their voices at upper level. Adequate political and financial support, paralegal support in formalizing and empowering CBOs and gradually make a shift from elites to the real community leaders who have a sense of ownership as they rely for generations on the aquatic resources.

It may be too difficult for IPAC to address all the issues with small resources but IPAC would need to extend hands to DoF/ MoFL to explore funding possibility of the Inland capture Fisheries (ICF) concept proposal developed by DoF under the support of World Bank which is a complete proposal to be implemented and phased out over 15 years. This document takes care of the issues and constraints in the co-management of ICF those came out as lessons in this report.

The matters related to elite capture and lease renewal procedure is a serious concern for DoF and also a concern for IPAC and it has policy implications because there have been a change in the leasing policy that has not been seen as pro-poor. ICF proposal paper has provision to address such issues also. IPAC would work with the policy reforms along with DoF/ MoFL to transfer more waterbodies from MoL to MoFL and assist DoF in implementation of co-management in all the transferred waterbodies with support from leveraged funds or exploring innovative funds

for sustainable institutions. The ICF paper prepared under WB leadership for multi-donor funding of an estimated USD 400 million over 15 years has been prepared in support of the ICF Sub-strategy and action plan.

The need for pro-poor policy for wetland resource use:

The policy guidelines should carefully set priorities to correct the imbalances in the control process of land and water resources that impacts biodiversity and fisheries productivity. It is necessary to develop new resource management partnerships between government and local communities, reduce pressure on fragile ecosystems and wetlands by applying sustainable and equitable distribution of economic efforts on the natural resource base and the rehabilitation of the excessive fishing efforts elsewhere where found manageable in a sustainable manner. Integrated water resource management policy of the MoWR provides importance to adequate water for fisheries but there is little action in practice. This is probably because of the lack of knowledge and conscious of the concerned line department (DoF) in water and ecosystem management needs and processes. In this area capacity of the DoF need to be developed and adequate policy provision has already been made in the National Fisheries Policy, particularly the Inland capture Fisheries Sub-strategy (2006); but action plan need be carefully developed and implemented.

For mainstreaming of the aquatic resources conservation functions the CBO institutions should be given policy and administrative environment where they feel fearless ownership on the waterbodies and it should make use of long term leases as a means of limiting and securing access for the poor and at the same time enabling environment that encourages them to undertake. Policy review and decisions for pro-poor leasing system and inter-ministerial coordination action plan for wetland management involving MOL, MoFL, MoWR, and MoEF should be carefully identified and put in place. Meanwhile World bank in association with DoF developed a long-term program/ project concept to be implemented over 15 years in three phased with multi-donor funding under WB leadership with an estimated budget of USD 400 million. This has taken the advantage of the provision of the fisheries strategy provision for co-management scaling up and scaling out and institutionalization and mainstreaming. This needs to be pursued by IPAC along with DoF and if materialized it will be a major source of achieving leveraged fund for IPAC program implementation. Dialogue may be opened with WB immediately.

MAIN REPORT

1. Background

1.1 Issues in sustainable development of inland fishery resources

Bangladesh is situated at the delta of the world's major river system. Nearly 700 freshwater rivers and numerous tributaries, distributaries and canals play an important role in fish migration and dispersion. These vast waterbodies overflow their banks and flood extensive areas of low-lying lands under floodplain ecosystem during the monsoon season from May- October. Once these waters were full of fishes and other aquatic plants when the aquatic ecosystem was rich, diverse and functional. Now the fish stocks are over exploited and it is increasingly vulnerable to excessive fishing pressure.

A healthy ecosystem insures a rich biodiversity against declines in their functioning and in turn a rich biodiversity insures food security. The effect of changes of biodiversity and ecosystem functioning has become a major concern in natural resource conservation and maintaining ecological functions, but its significance in a fluctuating environment is still poorly understood especially in the inland capture fisheries in Bangladesh. The low flows of rivers and siltation of river and *beel* beds due to natural as well as various water resource development interventions (including the construction of cross boundary Farakka Dam at the upstream of Bangladesh) and abstraction of water for irrigation, conversion of wetlands into dry lands by agricultural project interventions have drastically reduced the water area and environmental flow condition and impacted the fisheries life functions and consequently reduced the ecosystem productivity and loss of fish production. Over the last 50 years the floodplain areas have been reduced from 9.3 million ha in the sixties to 2.8 million ha in the year 2000 (CEGIS 2002).

So it is imperative that improvement of the aquatic ecological functions and environmental flow conditions is an important issue needed to deal with and for this restoration of habitats for overwintering shelter as well as opening connectivity to facilitate spawning and overwintering migration is necessary. At the same time fisheries management good practices to reduce overfishing including the physical interventions e.g. establishing and maintaining sanctuary is need in order to conserve and enhance fish stocks and enhance fisheries productivity in the aquatic ecosystems. The policy goals need be made explicit, and the technical analyses should be designed to provide information relevant to policy decisions

Fisheries management rules could hardly been enforceable in the vast wetland areas and the need for involvement of the community in managing the resources have been evolved in the planning of major project based actions in Bangladesh inland capture fisheries; a number of projects have been implemented by the GoB (DoF/MoFL) with support from development partners. This has been well addressed in the PRSP as well as in Inland Capture Fisheries sub-strategy (2006; DoF website: <http://www.fisheries.gov.bd>). An action plan has been prepared by DoF with support from World Bank that addresses all these issues. But after three years of waiting to get the government approval now the funding has become uncertain.

1.2 Background of wetland co-management

Fisheries have traditionally been seen as common property resources and fish is a major source of nutrition for the poor in Bangladesh. However, poor fishers in Bangladesh have been disadvantaged by fishing rights that favored local elites leasing fishing rights through present revenue based system of fisheries management. In contrast demand for fish will continue to grow as annual populations rise 1.7% in Bangladesh. To meet growing needs with limited resources the government of Bangladesh in collaboration with development partners, identify co-management based approach and technical assistance for improving inland water fishery resources management and develop institution to maximize production through involving community based organizations (CBOs) sustainable management.

During the British colonial period, all the water bodies were the part of *zamindari* estates primarily for collecting taxes on behalf of the colonial government. In 1950 East Bengal State Acquisition and Tenancy Act declared and water bodies were retained by the state under the Ministry of Land (MoL) and subsequently leased to private individuals through auction. Most fishers' cooperatives have been under the influence of persons from rural elites fostering their private interests. The leasing system is not pro-poor.

The current system of leasing is a disincentive to sustainable management of wetland resources. Such system benefits the wealthier; who can raise capital for lease fee. Open access for rivers and other flowing waters does not benefit the poor and through lack of management controls allows over fishing and capture of the fishery by strong non-fishermen groups. Short tenure of existing leasing system and uncertainty of continuation of lease, provokes the lessee to extract resource beyond the limit and discourages physical and technical interventions.

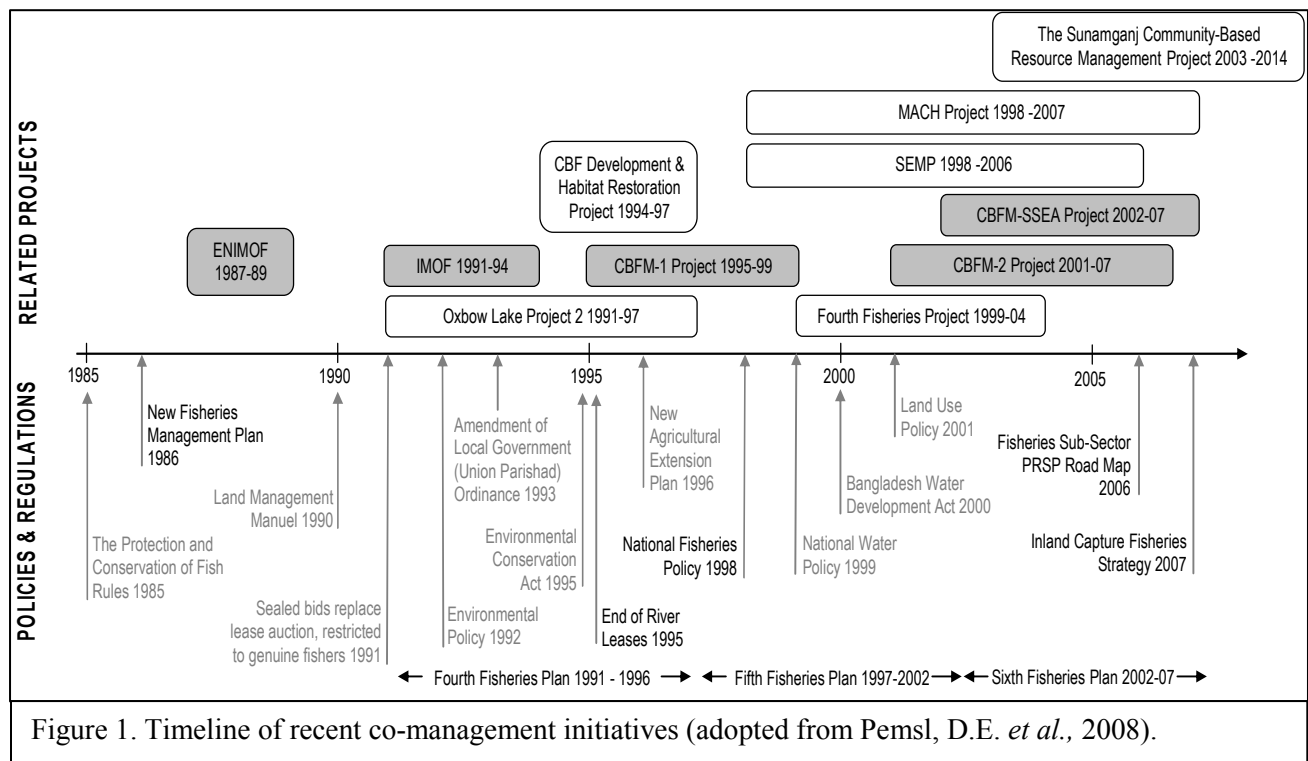


Figure 1. Timeline of recent co-management initiatives (adopted from Pems, D.E. *et al.*, 2008).

In order for fisheries to contribute to the reduction of poverty, community based fisheries resources management was first initiated in late 1980's by Department of Fisheries in semi-closed water bodies, like oxbow lakes at the Southwestern part of Bangladesh and in *beels* and river segments in other parts of the country². At that stage conservation of biodiversity had not been a priority of concern. NGOs were involved for developing community based organizations (CBOs).

Nevertheless, the experience of mobilizing poor fishers, pioneering innovative methods of transferring lease rights of water bodies to fisher groups, and developing communal resource management systems proved to be invaluable. To “scale up” the experience, a number of projects undertaken where community based fisheries was an important component; among which the noteworthy were CBFM-2, FFP, MACH and other revenue projects of DoF. Conservation of fisheries resources had been introduced and maintained by community based organisations. It focused on community participation in order to ensure empowerment and access to waterbodies. The patterns of policies and regulations established related to fisheries projects over the periods in inland fisheries of Bangladesh are given in figure 1.

1.3 The IPAC project

In June, 2008, the Integrated Protected Area Co-management (IPAC) Project began, with funding by USAID for the period 2008-2013. IPAC will provide technical assistance and program support to GoB environment, forestry and fisheries agencies and key stakeholders engaged in the further development and scaling up of the collaborative management or co-management of protected areas in Bangladesh. IPAC is designed to contribute to sustainable natural resource management and enhanced biodiversity conservation in targeted landscapes with the goal of preserving the natural capital of Bangladesh while promoting equitable economic growth and strengthening environmental governance.

IPAC aims to summarize key lessons learned that are relevant to the strengthening of policy and legislative framework, improved organization of field support, institutionalization, scaling up and sustainability of PA co-management. As noted in the annual work plan and quarterly progress reports, IPAC will be organizing a lessons learned seminar to capitalize on the experience of recently implemented projects in community based and collaborative management of wetlands, fisheries and protected forests.

1.3.1 Background of the study

When IPAC team met DG DoF to inform and discuss the lessons learned in fisheries co-management DoF demanded a study to identify the good and bad lessons and the weaknesses those need to address before organizing a workshop. DoF requested IPAC to examine the sustainability of the impacts of project interventions in terms of CBO operation, establishment

² Oxbow Small Scale Fishermen Project funded (OLP-II) by IFAD, Danida, GoB and implemented by DoF, BRAC was implementation partner.

and continuation of access rights, fisheries management good practices and so on in order to generate knowledge of the field, particularly at this point of time when all the three major projects viz. FFP, CBFM and MACH have been completed and project based supports have been withdrawn.

DoF reiterated that since the beginning, objectives of the three projects were almost the same but the approaches were different. It is necessary to evaluate the best practices that can later be taken as examples for further scaling up and scaling out of the co-management activities in on order to ensure steady but faster implementation of co-management. It was intended to identify the role of DoF and other agencies involved in assisting DoF in this process to internalize the good lessons, avoid the proven in-effective approaches and to address the weaknesses in technological and institutional sustainability and address the policy review and policy reforms for a pro-poor environmental conservation.

To meet the growing demands of fish from depreciated water resources and aquatic ecosystems the Department of Fisheries implemented a number of projects on co-management throughout the country. The major three co-management projects viz. MACH, CBFM and FFP were planned with field knowledge to enhance the fish production through enhanced productivity with direct involvement of the community with almost a common goal while the technical implementation mechanism and the community involvement processes were not identical. It is therefore necessary to make a short review of the methodologies those have been proved to be effective and functional in achieving the objectives and in delivering the public goods.

1.3.2 Management of Aquatic Ecosystems through Community Husbandry (MACH), 1998-2008 (phase out period 2010)

MACH aims to increase the sustainable productivity of all wetland resources – fish, plants and wildlife – over an entire floodplain ecosystem (*beels*, seasonal floodplains, rivers, streams) and recognizes that problems of wetlands extend beyond the wetland boundaries.

It has included supplemental income generating activities that focused on fishers and others directly dependent on fishing to reduce fishing pressure. Following are key activities of the project;

- Aims to increase the sustainable productivity of all floodplain resources – fish, plants, and wildlife;
- Supplemental income generating activities through partner NGO for fishers and others directly dependent on fishing to reduce fishing pressure;
- Community management activities support entire resource users that included poorer fishers, farmers, landless labourers, women, local elites and local government;
- Adopted and implemented different resource management interventions applicable for the intervened water areas that includes: aquatic Sanctuaries, habitat restoration through excavation/re-excavation and riparian plantation etc.

1.3.3 Community Based Fisheries Management (CBFM) project, 1995-2007

The CBFM project was designed to test and set alternative management systems where control is handed over to community groups. The CBFM-1 worked with 15 water bodies and continued beyond the end of the project in 1999. The CBFM-2 was designed to test whether the CBFM approach could be extended to a wider range of water bodies (116). Starting in 2001, this was the largest intervention and 116 water bodies were identified including government owned fisheries (*Jalmohal*), open *beels*, closed *beels*, flowing rivers, *haor* and flood plain (private fisheries). The main aim of the project was research based and to promote the sustainable use of and equitable distribution of benefits from inland fisheries resources by empowering communities to manage their own resources. Following are the major interventions:

- Community based organisations formed with fishers classified into three: i) fisher-led, ii) community-led and iii) women-led. Rural champions are included in few sites for sustainability of the project initiatives (need based),
- Revolving fund and micro-credit support from project and also partner NGOs' own fund,
- Management interventions (Sanctuaries, gear bans, closed seasons, controlling and removing destructive fishing gears, and in a limited number of water bodies, stocking with juvenile fish),
- Habitat restoration – excavation/re-excavation,
- Action/grants research for partnership development,
- Control of destructive fishing gears and reducing dependency on fishing (through awareness and AIGA).

1.3.4 Fourth Fisheries Project (FFP), 2000-2006

The Fourth Fisheries Project (FFP) has a series of objectives to which the activities of the Open Water Fisheries Component (OWFC) are central. These include improving the access of poor people to aquatic resources for food and income and improving the capacity of local users to manage the aquatic resources in a sustainable and equitable fashion.

It also expected to contribute significantly in increasing both the production by and incomes of small-scale fish producers using technical measures such as stock enhancement of floodplain fisheries, restoration of fisheries habitats, establishment of fish sanctuaries, Fishing Effort Control and construction of fish pass or conversion of existing irrigation structures in to fish friendly structures (DoF 2003). To achieve these objectives following implementation strategies were undertaken:

- 90% of CBO members are from full-time, part time and subsistence fishers and remaining 10% from rural elite, champions.
- At least 25% women participation in CBO targeted.
- Capacity building of NGO staffs and CBO members on Capture Fisheries Management through training and workshops.
- Documentation of Inland Capture Fisheries Sub-Strategy.
- Project supported stocking programme with contribution from the CBOs.
- Establishment of permanent sanctuary (fishing ban declared in 5% of the water area).

- Construction of fish pass/fish friendly structures at certain sites.
- Habitat restoration through excavation/re-excavation.

2. Methodology

2.1 Design of the study

The study was designed into two parts; a) review of the relevant documents of co-management, and reports on MACH, CBFM and FFP; b) field visit to sites to assess the post-project and post-ante performance of the CBOs activities. Using the field visit findings, comparative assessments of different types of interventions have been made on natural resource sustainability, community organization, community benefit and support from different organization (Government, NGO and private sector).

2.1.1 Mind Mapping and information need assessment

An internal discussion was held to conceptualize the information to be derived to answer the basic questions that are needed describe the successes and to identify the casual links for those successes or failures. The following mind-map was discussed and internalized to set the questionnaire for field data collection as well as analysis and interpretation.

Institutional Building	Micro-credit AIGAs	Fishery Management		External Support	Networks forum	Capacity building
Introduce co-management	Livelihoods diversification	Good Practices development	Fishing Gear management effect	Project based support	CBO networks to raise voice	Training, motivation & awareness
<p>Analysis should lead to the following & info from field should support in identifying the strength & weaknesses; and evaluate the casual links for the findings:</p> <ul style="list-style-type: none"> • What the projects achieved – synthesis • What changed – ex-post analysis • Why this changed – causal relationship • What needs to be done if implemented for a new projects • Determining best approach from this study 						
Strong Institute	Fisher reliance (income & AIGAs)	Good Management		Services, Access rights	Net works	Knowledge
CBOs institutionalized	Fishing pressure reduced; effective in managing closed season	Sustainable ecosystem Increased production Livelihoods impacts		CBOs established good link with service providers (DoF etc) and other LG and admn. Bodies; revenue revolving financial support ensured	CBO networks established; Community empowered to raise voices at higher level	Community have good knowledge of the fisheries & habitat management Good practices, and can take decisions independently

2.1.2 Discussion points at FGDs and interviews

A checklist was designed in consultation with the study team focusing, a) community based organization; b) contribution to biodiversity; c) production and income distribution; d) community services provided by the CBOs, etc. Beside, interviews were organized for professional fishers about the trend of their income and dependency on fishing.

2.1.3 Selection of water bodies and field visit plan

A total of 11 sites were visited comprise from three projects under the study (Figure 2). The selection was made purposively among the sites known as good performing. Field visit plan is given in Table 1. FGD performed at 9 sites of the three projects with beneficiaries and community people. The report has taken views of different stakeholders. The study was conducted during April – July 2009 that includes two phases of field visits: April-May and June-July 2009. The findings are presented based on the outcome of the focus groups discussion with CBOs; and individual and household interview with beneficiaries of different projects.

The study sequence:

- To conduct a rapid appraisal of wetland sites that have benefited from the interventions of community-based management of wetlands,
- To perform an ex-post evaluation of the MACH, CBFM and FFP projects to document key lessons learnt,
- Peer to peer discussion to rationalize the study findings and interpretations as well to evaluate the casual links for successes, failures and weaknesses
- To identify where and how i) fisheries production increased, ii) biodiversity has conserved, iii) lives of fishing communities improved, and
- What are the key lessons learned that should be taken in the IPAC strategic framework and field action plan.

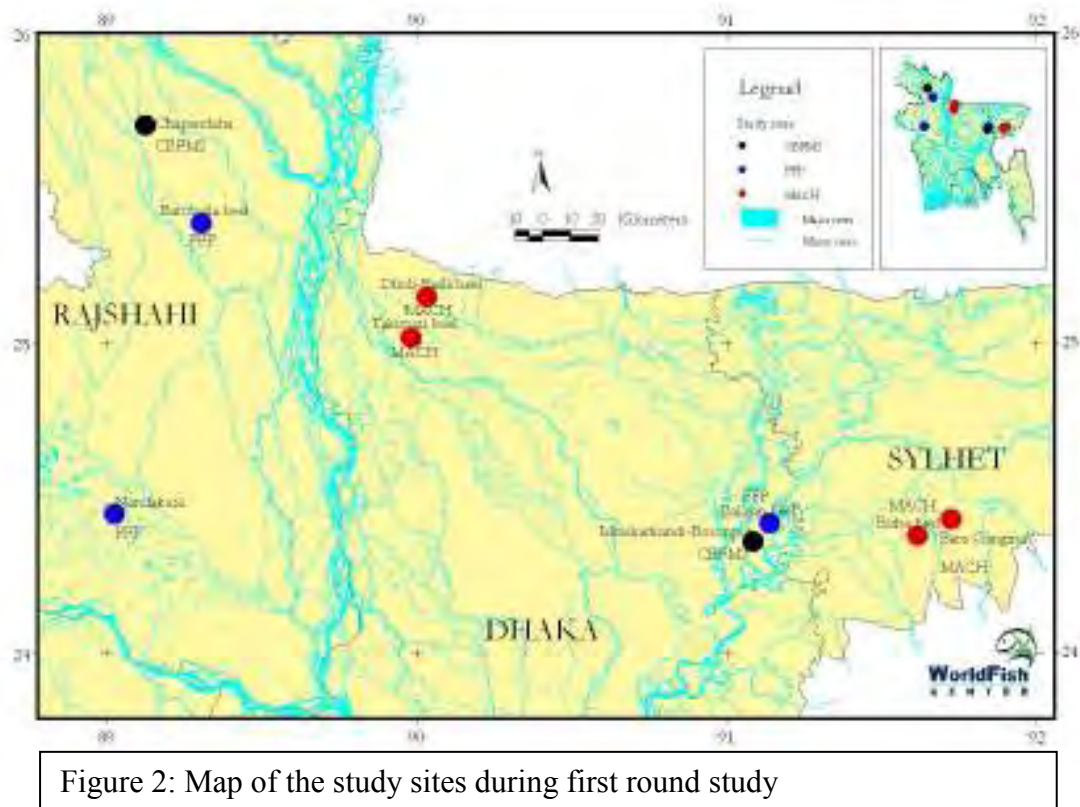


Figure 2: Map of the study sites during first round study

Table 1. Field visit plan

Water body	Nature of water body	Upazila (Sub district)	District	Date visit
MACH Srimongal				
Boro Gangina RMO	<i>Haor</i> fisheries	„	„	16 April
Kalapur FRUG	„	„	„	16 April
Ballah FRUG	„	„	„	17 April
Shanadha RMO	„	„	„	17 April
MACH Sherpur				
Takimari-Derabashi RMO	<i>Beel</i> complex	„	„	26 April
Dholi-Baila FRUG	„	„	„	26 April
FFP sites				
Bolajan Nodi	Open	Mithamoin	Kishorgonj	19 April
Borabila <i>Beel</i>	Closed	Pirgonj	Rangpu	27 April
Nandhakuja nodi	River segment	Natore sader	Nature	29 April
CBFM sites				
Chapandha <i>beel</i>	Closed	Pirgonj	Rangpur	28 April
Mohishakandi-Buranpur Jalmohal	Open	Mithamoin	Kishorgonj	18 April

Second field visit: An intensive second round visit was undertaken to three selected sites from the above list (one each from MACH, CBFM and FFP) in Sherpur and Manipur districts, in order to evaluate the casual relationships for the CBO performances and the sustainability of the Good practices in fisheries and wetlands management. It was a bottom-up approach interview/ sharing process starting with the common villagers who are agricultural farmers, non-fishers or subsistence fishers and gradually interacting with the fishers and the enlightened group of local people mostly the school teachers.

It may be noted that an information gap was identified by the study team while sharing with the peer experts to the effect that the overall improvement of the society (education, health, fish consumption and access rights) and the casual links to the problems and the indigenous knowledge for remedial measures have not been fully describable.

2.1.4 Limitations

The nature of information required for this study is so diverse and complex that it would ideally need a longer time and larger coverage of the intervened wetlands. The present study scope was too limited with this regard to make a comprehensive analysis of the post-ante situation, particularly to evaluate the weaknesses and the casual relationship. The study team however thinks that the lessons derived from this study would be closer to reality while there is room for improvement of the way forward to address the challenges would have been better understood if a comprehensive study was undertaken.

3. Study findings

The study findings are intended to be mostly highlighted on the community based institutions as this is essentially the important parameter to measure the successes of co-management in achieving the basic objective of wetland resource management. The study findings also evaluate the gaps and weaknesses and casual links for effective management of the aquatic ecosystem and the technical interventions.

3.1 Field findings and situation analysis

Given the perspective, after detail discussion and sharing views with DoF, this study has planned to evaluate the lessons learned and post-project status of fisheries and resource co-management of three projects, MACH, CBFM-2 and FFP. However MACH is still receiving some support as follow on period is running, progress may be evaluated. It attempts to assess the effectiveness and sustainable impacts of various approaches and derive the key lessons learned from different interventions.

This report is intended to provide results of post-ante successes, weaknesses, gaps in establishing and sustenance of local institutions for effective conservation and enhancement biodiversity and fisheries productivity and their equitable distribution of benefits from the perspective rural poverty reduction and subsequently draw lessons to address the gaps and to internalize the lessons into IPAC.

The report includes a primary review of existing literature, journal papers and documents produced mainly by the three projects on co-management: MACH, CBFM and FFP. It also takes into consideration the output materials from different workshops. The review also draws on group visits and experience, extensive discussion those who involved with these three projects.



Plate 1: FGD in Chapandaha *beel* (left) and Borobila *beel* (right) in Pirganj, Rangpur

3.1.1 Community Based Organizations (CBOs)

In MACH project the FRUG (Federation of Resource Users' Group) is well organized and operating its activities smoothly. Rural people and NGO is familiar with such income generating activities, only difference is, they know it is not only for own economic benefit but it will also help reducing fishing pressure that contribute for sustainable management of the wetland. This new concept has generally accepted, even to a poor fishing household. Leaders are elected at regular intervals through democratic process.

At the start of phase out period FRUGs initiated the continuation of credit operation through a Revolving Loan Fund (RLF) as Self Help Group (SHG) model. The partner NGO Caritas has an experience of developing such groups. However, sustainability of such groups appeared to be uncertain as there are cases of defaults in the leaders and/ or well off groups.

RMO (Resource Management Organization) is a new concept, for MACH it has been mainly assigned for protecting the sanctuaries in the *beels* and establishing the fisheries conservation regulations. In general, as far as campaign and awareness development, RMOs has a significant success, in spite of some reported poaching which the organization considers as overlooked subsistence fishing. Leaders are more concerned to undertake *beel* development activities, which is important.

It is understood, giving effective leadership in public functions by resource users who are also resource poor, is a difficult and lengthy process for which mostly the leaders are selected from elites who have ability to maintain good link with the UFC and the administration which is also important so long they serve the institution transparently; but efforts to develop new leadership from common fishers is also equally important but presently weak.

In FFP the CBOs as named Fisheries Management Committee (FMC) were anticipated to perform better to uphold the interest of the common fishers through inclusion of local champions. Aspirations dose not always match if inherent capability is lacking, here class interest or commitment is the issue. Similar to other such attempt, champion leadership at Bolajan or Borobila have taken a shape of new radical leaseholder character capitalizing the co-management approach, where commons' interest of empowerment is being ignored. Nandhkuja situation is different, CBO is being engaged in inter-village conflict controlling over the potential fishing spot in the river segment. It had been since start of the project, now worse. These groups have been linking with external political support that inflates the situation.

Most of the FFP waterbodies are under elite capture at varying degrees of concern. There is therefore every risk of loosing access rights of the poor fishers which is a matter of concern. This crisis needs to be seriously managed by direct interference of DoF in association of the local administration particularly at this point of time when the lease period for the CBOs are going to be over and need renew. This is also a concern for IPAC.

Management approaches of CBFM sites differ with the type of water body, open or closed. In closed water body harvesting take place jointly and income expenditure share equally. While in

open water body it is mostly individualist against gear fee. However, CBO are collecting the gear fees for lease payment of the water body.

The closed water body (Chapandha *beel*) is well organized and cohesion of the group is also high. Until 2008, the same office bearer of the BMC had been in position since inception of the project in 2001, only renewed after each 2-year term through consensus. But with the changed national political situation, members wanted to have change in the key office bearer posts. The new office bearers have however work with the old one and the accounts system and the benefit distribution is transparent. Here the success lies, unlike several other FFP sites, in the fact that the fishers association has been existed before the project and since the institution is old they have well adapted during the project. Time of CBO institutionalization is a factor.

At Open water body CBO's cohesiveness is weak and poorly organized (Mohishakandi-Buranpur *Jalmohal*). It is to note here, project had allowed the entrance of local champions in the CBOs to face the previous leaseholders to establish the access rights of fishers. This approach had shown significant success initially. But over the period these champions' groups have virtually jeopardized the spirit of community based management putting the common members as fishing labour with little higher income. Under the arrangement of long-term lease from DoF, the champions are using these wetland resources as private business, and taking advantage of building political carrier. Here the attachment of the CBO with the DoF extension services and to the LG and local administration is very weak; DoF has no functional support to resolve the issue and set the community institution into tune.

3.1.2 Contribution to enhanced fish production and biodiversity

Sanctuaries have demonstrated a significant positive impact in fish abundance in almost all sites irrespective of projects. A number of locally disappeared species has already been found after implementation of fish sanctuaries. However, CBOs or local DoF can keep some records of these changes at the site and make effective use of the office. Fishers informed about the reappeared species, which is higher at MACH sites, compare to other two projects (Table 2). MACH had undertaken stocking of 6 species in the *beels*, which has successful adapted in the local environment. Under CBFM-2 in 2002 CNRS reintroduced six locally species (*meni*, *guji air*, *pabda*, *deshi sharputi*, *foli* and *golisha*) in Pakundia, Kishoreganj.

Chapandha *beel* has shown remarkable results from sanctuary; a number of high valued species have reappeared. Record keeping system can be further improved to capture all these changes.

Mohishakandi-Buranpur *Jalmohal* has also good results from fish sanctuary but general fishers are not being benefited from the conservation methods as expected. It is reported that a vested group within the CBOs leadership has taken away the lion share from *khata* near the sanctuary. What is the best approach and why its works regards to production, biodiversity during baseline year and impact year are given in table 3.

Table 2: Reappeared species in water bodies after sanctuary establishment

Species local name	Scientific name	Boro Gangina	Takimari Darabasia	Boro bela	Chapandaha	Bolajan	Moisha kandi	Nandh kuja
Pabda	<i>Ompak pabda</i>	H	M	L	M	H	H	L
Ayer	<i>Mystus aor</i>	M			L	H	H	M
Chital	<i>Notopterus chitala</i>	L	M			L	L	
Meni	<i>Nandus nundus</i>	M	H	M	M			M
Shol	<i>Channa striatus</i>	M	M			L		L
Sar Puti	<i>Puntius sarana</i>	M	H	M	M	M	M	M
Kalibaush	<i>Labeo calbasu</i>	L	H			L	L	
Bowal	<i>Wallago attu</i>	H	L	H	H	H	H	H
Gania	<i>Labeo gonius</i>	H	M			L		
Kanlla	<i>Notopterus notopterus</i>	M	M	M	L			
Rani	<i>Botia Dario</i>	H						
Chapila	<i>Gudusias chapra</i>	H		H	M			M
Golsha	<i>Mystus bleekeri</i>				L	H	H	H
Kajlee	<i>Ailia coila</i>					H	H	

Source: Focus group discussion with CBO members H= High, M= Medium, L= Low

3.1.3 Biodiversity measures

Results of sanctuaries and fishing ban during breeding period, in general, has been showing very positive, increase of fish is certainly high which is well known in the community. A number of species reappeared due to conservation measures, either adaptation by stocking or naturally at all sites irrespective of projects.

Table 3: Production and biodiversity during baseline and impact years

Project	WB types/cluster	Baseline production (Kg/ha)	Impact year production (Kg/ha)	Baseline Biodiversity index (H')	Impact year Biodiversity index (H')
MACH	Hail haor	177	388	2.80	3.42
	Turag-Bangshi	58	320	3.24	3.41
	Kangsha-Maljee	150	315	2.69	2.98
	Average	128	341	2.91	3.27
CBFM	Closed <i>beel</i>	380	921	2.24	2.58
	Open <i>beel</i>	442	596	2.03	2.11
	River	227	331	1.73	1.86
	Flood plain	190	303	2.04	2.29
	Average	310	538	2.01	2.21
FFP	Average	120	289	Re-emergence of 19 to 40 species	

Source: Projects reports (Thompson et al 2007; Halls and Mustafa, 2006; Mustafa and Halls 2006; The World Bank 2007)

Species record by water bodies including reappeared species is needed to keep at CBO level, on sample basis of catch and DoF can assist CBOs in developing the sampling methodology and record keeping. As a large predator, *bowal* (large cat fish) is occupying the top of the food chain in inland open water, the presence or abundance of *bowal* may be an important index of the health of wetlands. However, knowledge sharing process needed to improve to aware the

resource users' technical aspect of conservation measures e.g. indicator species for ecosystem health diagnosis.

3.1.4 Fish production and benefit distribution

Individual earning from *beel* fishing has reduced due to longer dry period in last two years. However number of fishers increased, indicating the availability of fishes this may be due to conservation measures. Simultaneously FGD reveals that there is no doubt about the increased availability of fishes as a result of conservation measures. It is learned while individual fishers have been in competition for catch but major harvest has been controlled, at some *beel*, by small fishers groups with the support of local elite and financed by fish whole sellers.

Production of Chapandha *beel* has been achieving a steady growth. It reduced investment cost raising fingerlings at ponds adjacent to *beel*. Equal participation in investment and income is clearly measurable in Chapandha *beel*. Accounts are well maintained and updated. However, an audit report made by cooperative department has not been identical to records of CBOs accounts books. Common fishers' income of Mohishakandi-Buranpur Jalmohal also increased. Many of them invested in agriculture, small trading, etc. which made them less dependent on fish. However, some of them also reported that their income has been declined. Full time fishers have an annual income from fishing is not less than Tk.15,000.

Production has also increased at FFP sites. It is learned however that fishers' income at Bolajan Nadi is low; many of them have migrated. FMC had undertaken a bulk harvest last year for maintaining the operational cost of committee (it was not disclosed at the FGD discussion, only found while looking the accounts books). Significant improvement of fishers' livelihood is visible at Borobila villages in improvement of housing condition; most of them have now tin roof, they have less dependency on agricultural activities.

Professional fishers consider that the project has resulted in only a marginal increase in catch and income. It would seem from responses, it is unlikely that the income of poor fishers has increased substantially. The reason is that these projects have tended to divert benefit to subsistence fishers at many sites.

In general production has increased, which is found from project steady as well as from fishers' reports during FGD. This is a common success. But equitable distribution of benefit has been an issue. This perplexing situation in wetland resource management is not uncommon.

CBOs have been leasing out seasonal *khata* (brush-shelter) or space for pen culture, virtually allowing well-off members of the CBO grabbing the benefit invested by external, like fish whole sellers, local money lenders. These technically draining out benefit has been possible where community organizations are weak or in conflict. If the leaders from fisher community maintain good linkages with the DoF and local admn can resist and maintain the access rights and protect the elites from taking illegal benefits derived from the peoples' hard work, and there is evidence.

3.1.5 Social services of CBOs

In spite of all the issues the overall fish production increases has benefited the society at large which can be described through example of some sites of MACH and CBFM where packages of social services both for members and other villagers have been provided. The living conditions, general health and sanitation and the education have improved and school attendance has increased rather than dropouts. It was discovered while talking to the enlightened e.g. the school teachers.

The indication of good managed CBO with pro-poor leadership reflects in undertaking social services activities that create scope that ensure benefiting individual, like covering whole village with improved sanitation, drinking water, schooling to all children, systematic medical or marriage support program for all or introducing AIG open to all members/village (*Chapandaha Beel*). On the other hand, non pro-people leadership tends to spend CBO's common fund more on religious function or donating local institution mostly religious institutions to establish their future political career. All but one of the visited seven CBOs is of second category.

This is a clear indication of the successes of the co-management projects (but at varying degrees) in spite of the fact that there are several issues and constraints. The team is encouraged to report that if the issues and challenges could be addressed by the GoB line agency where IPAC is ready to extent hands the situation will be much more improved. It is a matter of pleasure to note that the general villagers are benefited to some degree in almost all sites.

3.1.6 Record keeping and fisheries management plan

Audit report prepared by the concerned organizations, the CBOs registered with, has not been in compliance with the actual expense and income of the CBOs at some sites. This has not been in the notice of the CBOs and other partner agencies.

Fisheries Management Plan (FMP) is prepared as a routine work by most CBOs, however require funding support to make effective use of FMP. It is one of the major tasks of DoF in assisting CBOs in formulating fisheries management plan (*Inland Capture Fisheries Sub-strategies, 2006*). A program concept paper in this respect was prepared by DoF with support from World Bank but now the funding support looks uncertain. IPAC may explore in association with DoF, the scope of funding through WB.

3.2 Field findings and casual links

A comparative table was produced based on first field visit to 11 sites from the three projects. Simultaneously to evaluate the causal links among different parameters measured during second field visit a causal links table was produced. Table 4 records the finding from first visit and the table 5 records from the second field visit with a view to evaluate the casual links.

3.2.1 CBO functions and democratic practices

CBO's structure and members' knowledge about the management of resources differs among projects that studied. On the other hand, work force and logistics support to mobilize and aware the community also differs from project to project. Adequate financial and human resource support and good motivation and awareness of the CBOs for achievement of fisheries objectives appeared to have played a fundamental role. Comparing to MACH, support from other two projects were not adequate. Differences also happened due to level of post project linkages with and support provided by local DoF. In the sites where continuous mentoring and refresher courses for skill development provided by local DoF and NGOs on techniques of management tools the CBO members and community became skillful on management practices.

The concept of Endowment Fund in MACH project is an innovation in fisheries co management and found to be effective for CBO's long-term sustainability and has advanced co-management intervention in the wetland resources conservation and enhancement. Direct and functional link of the CBOs (RMO) in MACH project and beyond with DoF and local administration and local government bodies in the form of Upazila Fisheries Committee (UFC) has been seen as another progressive and effective methodology for CBO sustenance and resource management.

Caritas has been seen to continue credit support in case of MACH waterbodies while in CBFM and FFP such support was virtually withdrawn after the end of project by the partner NGOs.

Alternative Income Generating (AIG) was found effective to diversify livelihoods and reduce poverty but this has not been directly linked with the resource management plan for wetlands resource users to encourage them to refrain them from fishing during breeding season that is declared as closed season.

The concept of including champions (local elite or richer people) in CBO in FFP waterbodies to safe guarding the interest of common fishers and other poor has been in practice for more than a decade. The observations are mixed. In closed water body where investment and income shared equally; and predictable it is seen that the local champions have a common tendency to capture the resource. But some site experiences says that it can be reversed by the poor leaders with stronger links with DoF (e.g. UFC Operation) and local administration but general literacy in the fishers leaders is a generic problem that may be carefully addressed by DoF/IPAC.

In open water fisheries where fishing are of individual nature or through small groups, to establish access of the poor resource users, strong hold of champions are required. In most cases the positive role of champions do not sustain over period. They tried to find out their own incentives for the services that they provided for people. But this is not a surprise as it is a basic need for some one's time input but that needs to be dealt with transparency. There must be some way out if the harvests from the benefit of co-management need to be reaped by the society equitably. And natural resource governance needs to be established; there is no alternative to this.

A variety of interest groups has direct and indirect links to wetland resources. In this context, stakeholders of all levels need to be absorbed by the projects in the CBOs. This is found effective where negative champions (usually ex-lessee) were motivated towards co-management practices during project period. However, in case of closed or semi-closed water bodies where the benefits are more visible in terms of enhanced production mainly due to restocking of fish fingerlings memberships need be selective in order to avoid the capture of elites.



Plate 2: Discussion with teachers and students of Ghonachatra Government Primary School near Chapandaha beel in Rangpur

Introduction of Alternative Livelihood Options to the poor resource user groups especially the fishers aimed to reduce the fishing pressure but not to supplement their livelihood during lean period. It was observed that the AIGA beneficiaries have mostly been able to reduce their dependency on fishing; yet fishing pressure is increasing as because almost every household now a day became subsistence fishing HH. So, the AIGAs need be linked to resource management plan that would be time and area specific and eco-friendly.

It is informed at all sites of all projects poaching is common issue be it small or big. The study mission's observation is that a pressure group is active (or became active after project closure) particularly at this time when lease renewal time is knocking at the door. The community institutions seem to have a risk if it is not closely looked into by the line government agency.

CBO leadership, either champion or not, being affected with the changed national political situation. Their involvement in party politics, which is common for this category of rural people, sometimes placed the entire CBO in a vulnerable situation. On the other hand without political linkages, in the context of the country, it is also difficult to provide the desired services.

During visits and study, it was felt by the study team that democratic practices followed by leadership changes might not bring positive results as assumed if the leaders do not provide services to achieve the main objectives. A strong leader who is pro-poor and proactive to the management practices; who has capability to safe guard the intervened water body from being grabbed; who can provide fishing security and who are able to establish strong links with local administration and other service providers are more effective leaders for the CBO irrespective of their selection process; either by secret ballot or by consensus. It was evident also in one or two cases during the visit.

Sanctuary maintenance by the CBOs was not found satisfactory except Baikka *Beel* which is a MACH site. In most cases, katha or similar Fish Aggregating Devices (FAD) set on either side or around the vicinity of sanctuary. Techniques are used to attract the fishes from sanctuary to gather into the FAD. Allowing to set '*khata* or FADs' close to the permanent sanctuaries has been creating conflict among the members; mostly done by powerful leaders/members in collaboration with external to extract the result of conservation measures undertaken. This demoralizes the common members but very difficult to manage if not dealt with seriously by the line agency. This needs to be addresses through policy reforms as well as by innovation techniques to develop transparency in leadership with socially and logically acceptable support for incentives for their services to the institution.

Table: 4. Findings from three project sites during field visits

Waterbody	Habitat type	Role of elite	Poaching	Katha captured near Sites?	How CBO members are benefited?	CBOs selling off leasing rights for pen culture/katha	Elite capture of CBOs	Stocking
Boro Gangina RMO	Haor	Supportive	Not reported	NA	Increased catch due to sanctuary	No	No	No
Kalapur FRUG	Haor	Supportive	Not reported	Not seen	As above	NA	No	No
Balla FRUG	Haor	Supportive	Not reported	Not seen	As above	NA	No	No
Shanada RMO	Haor	Supportive	Not reported	No. Fishers do it with permission from the RMO	As above	Not reported or seen	No	No
Takimari-Derabashia RMO	<i>Beel</i> complex	Supportive	Some poaching	Yes	Sanctuary, AIGA	Not reported or seen	Yes	No
Dholi-Baila <i>Beel</i> FRUG	<i>Beel</i> complex	No. Capture expected	Some poaching	No. Done through consensus	Sanctuary, AIGA	Not reported or seen	No	No
Bolajan Nodi	River segment	Undemocratic but somewhat supportive and ensures access rights	Uncontrolled poaching	Katha set by CBO leaders and elites	Sanctuary but affected by poaching	Yes	N	N
Borobila <i>Beel</i>	Closed <i>beel</i>	Not supportive	Uncontrolled poaching	Yes	Well maintained sanctuary, but affected by poaching, lost access to better sites	Yes for Katha	Y	N
Nandakuja Jolmohal	River segment	Unsupportive, unorganised, negative champion	Uncontrolled poaching, also in sanctuary	Yes	Not benefited because of poaching, lost access to better spots.	Illegal kathas set by outsiders	N	N
Chapundaha <i>beel</i>	Closed <i>beel</i>	Supportive	Not Significant.	Such practice does not exist	Sanctuary, nursery, stocking	Such practice does not exist	N	Y
Mohisherikandi-Boronpur	River segment	Supportive	Some	Such practice does not exist	Sanctuary	Such practice does not exist or observed	N	N

Table 5. Field findings from second visit and issues linked to casual relationships

<i>Parameters measured</i>	<i>Findings/ issues</i>	<i>Observations</i>	<i>Challenges/ way forward</i>
CBO Institutions Sustainability	<p>MACH CBOs (RMO, FRUG) in Takimari-Darabasia are well organized. Registered with social welfare. Have good linkage with local administration through UFC. Supported by endowment fund. Resource (Water body) will remain with CBO for long term tenure. Good chance to be sustained.</p> <p>BMC of CBFM-2 in Chapundaha <i>beel</i> is also well organized and registered. Have good linkage with Upazila Fisheries Office but not that much with Upazila administration. Fund position is good. Good income source from fish sale proceed. BMC can able to retain Water body occupation for long term. Good chance to be sustained.</p> <p>FMC of FFP in Borobila <i>beel</i> not well organized though registered. FMC has less control on over all management process. Ex-lessee has influences. Chance of loosing water body in future. Fund position is not good and transparent. Conflict among fishers and farmers exist. Linked to Upazila Fisheries Office but not to UNO or UP. Less chance to sustain.</p>	<p>-CBO should be provided with a permanent source of fund before project ends;</p> <p>-CBO should be strongly linked with Upazila and Union Parishad through a committee like UFC;</p> <p>-Resource (Water body) should be laid to CBO for long term tenure.</p> <p>-Closed monitoring and supervision of DoF beyond project must be ensured,</p>	<p>-A permanent source of fund would have to be ensured for the CBOs while designing future wetland co-management projects.</p> <p>-In case of leveraged sites where IPAC will work, permanent fund source like endowment fund will be required for the CBOs that need be managed from leveraged fund or any sources whatsoever.</p> <p>-A regular incentives for the CBO leaders should be given for the service that they are providing;</p> <p>-Recently formed “Fisheries Conservation and Development Committee” at district and upazila level is too big and will not be effective as UFC. Initiatives to be taken from IPAC side to redesign these committees.</p> <p>-Intensive training on wetland resource conservation for the local DoF officials, NGO staffs and CBO members should be regularly arranged from IPAC. In this context a training curriculum on wetland resource conservation techniques need to be prepared by IPAC in collaboration with DoF.</p>
Democracy & Leadership	<p>Democratic process well maintained in MACH & CBFM-2 sites. Election held regularly. New leader come up. However, incase of MACH site elected CBO leaders are not always popular, rather there are complains against them regarding dishonesty, biasness etc. They are not strong enough to maintain poor fisher’s interest.</p> <p>Election not regular in FFP site. Ad hoc committee continuing. One influential leader is managing all activities though at present he is not the convener of the committee. He has popularity and acceptance to most of the resource user groups. Without him it would be difficult for the community to hold the occupancy right of the resource. He look in to the interest of poor people but at the same time, get some own benefit from the resource.</p>	<p>-Democracy and leadership development is not always mandatory for CBO development. Rather a strong leader with good influence within the locality can help CBO and its management activities to sustain. Such a leader should be pro-poor and should be able to keep the water body away from poaching and being occupied. Such a leader can ensure the access and interest of poor resource users, even after he use to get some own benefits from the resource.</p> <p>-Voice rising of poor fishers and resource user group is not possible unless they are literate.</p>	<p>-Intensive leadership development training should be imparted to the community;</p> <p>-Regular election and AGM must be ensured in each site;</p>
Access Right and Benefit distribution.	<p>Access of poor fishers and resource user groups not fully ensured. Some part of the water areas yet being occupied by influential fishers/non-fishers/farmers who set Katha, Bana/Fencing, Large lift nets etc. where access restricted</p>	<p>-100% access right and benefit distribution is not possible unless local administration and local govt. provide regular support to the CBO. On the other hand CBO leaders should be of beyond self interest.</p>	<p>-Number of fishers and fishing units must be specifically determined as per carrying capacity of water body. This has to be done jointly by local DoF and CBO. Then fishing licensing</p>

	for the poor fishers and resource users. It is reported that CBO leaders have secret trading with such occupiers. Such scenario prevails in MACH and FFP sites. In case of CBFM site, as group fishing occur hence every body have access.		system can be introduced according to CPUE.
Biodiversity Conserved and Fish production enhanced	It is evident that for successful implementation of resource management practices through co-management approach, aquatic biodiversity conserved and fish production increased significantly. In all 3 sites avg. 3-7 native fish species reappeared and production increased by 2-3 times.	-Aquatic Sanctuary; Restoration of habitat; Effort control; Closed Season; selective stocking; riparian plantation conserves biodiversity and increases production.	
Fish Consumption & social development	In all 3 sites it has been reported that avg. fishing household's fish consumption remains same or decreased to some extent than before project though fish production increased. But overall developments have taken place in several areas in terms of education, health, sanitation and school attendance	-Population and number of HH increased, so rate of fish consumption decreased. -As other livelihood expenses increased by many times hence fishers do not intend to keep some part of his catch for HH consumption. Rather if they prefer to sale the whole catch for family savings with which he can meet other family expenses. Due to high price, fish became a luxury food item for poor resource users.	
Best Management Practice (s)	Usual management practices adopted and implemented in these sites are: Sanctuary; Habitat Restoration; Selective Stocking; Fishing Effort Control; Closed Seasons, <i>Beel</i> Nursery etc.	-Fish Sanctuary is the best management practice which is low cost and easily manageable. -Stocking should be discouraged as it creates conflicts of interest among the CBO leaders and community; resource user must be compensated with Alternative Livelihood options.	Emphasis would have to be given to establish and maintaining fish sanctuaries. Besides loss of connectivity need to be revive through re-excavation. <i>Beel</i> Nursery would have to be introduced
Poaching/Illegal resource Exploitation	Observed in MACH and FFP sites. In CBFM-2 site, as the water body is semi-closed and group fishing occurs hence no poaching observed.	-Poaching/Illegal fishing is not harmful if it is in small scale. -When it occurs in massive scale then benefit distribution disrupted. -Massive scale poaching or illegal fishing is not possible unless CBO leaders have hidden interest.	-Accountability of CBO leaders to the community need to be ensured; -Necessary measures to be taken through local DoF and administration.
Livelihood, AIGA and Dependency on Resources and <i>mohajons</i> (Money lender).	Livelihood improved in all 3 sites. AIGA functioning well in MACH and CBFM-2 site. No AIGA observed in FFP site. Dependency on fishing not decreased rather increased. AIG credit recipient did not stop taking money from <i>mohajons</i> .	- Livelihood improved not only for increased fish production but also due to HYV crop and other services received; -Number of actual fishers decreased; almost all HH became subsistence fishing HH; thus fishing dependency increased. -Alternative livelihood options provided to poor fisher will not ensure him to avoid <i>mohajons</i> . Actually fishers take credit from <i>mohajons</i> not only for his fishing capital but also for social security. <i>Mohajon</i> is a socially influential person; usually he protects the fisher who took money from him for his own interest.	

3.3 Lessons learned from the three projects

The post-project as well as post-ante outcomes of the three projects i.e. MACH, CBFM and FFP are not directly comparable in generic terms because of the following differences:

- a. Number of waterbodies handled
- b. Number of NGO involved in implementation
- c. Length of implementation period
- d. Technical areas covered under implementation plan
- e. Physical nature and geographical location/ topographical condition of the waterbody
- f. Within project variation in mode of implementation and human resources

There are also physical, political, administrative and social variations those have large impact on the achievement of desired objectives. There are however some common measurable parameters to evaluate the successes, failures and weaknesses; but it was not possible in these short visits to separately measure the degree of impact on different cross-section of the people of the benefits or non-benefits. However depending on the circumstantial differences and given the time and scope of the study the lessons have been evaluated with as far logical synthesis as possible on the feedbacks received from the interviewee but to make a casual links in the interpretation and analysis was a real difficult task.

3.3.1 Common lessons

- l. All the projects have established community based organizations (CBOs/RMOs/BMCs) in all the project waterbodies handed over to the community through DoF,
- m. All the CBOs have been able to establish their access rights in the waterbodies (*Jalmohals*),
- n. All the CBOs in all the waterbodies sanctuaries have been established and maintained; sustainability however needs steady and intensive effort and takes time,
- o. All CBOs have rules and by-rules for fisheries management good practices but the not effectively observed,
- p. Fish production and fisheries productivity has substantially increased in all sites,
- q. Common people have been benefited from the project interventions.

Summary of common lessons are given in figure 4 through scrutinizing the lessons from three co-management projects. Almost all the lessons learned mostly relate to institutions and governance. Some lessons learned relate to effectiveness of management and activities.

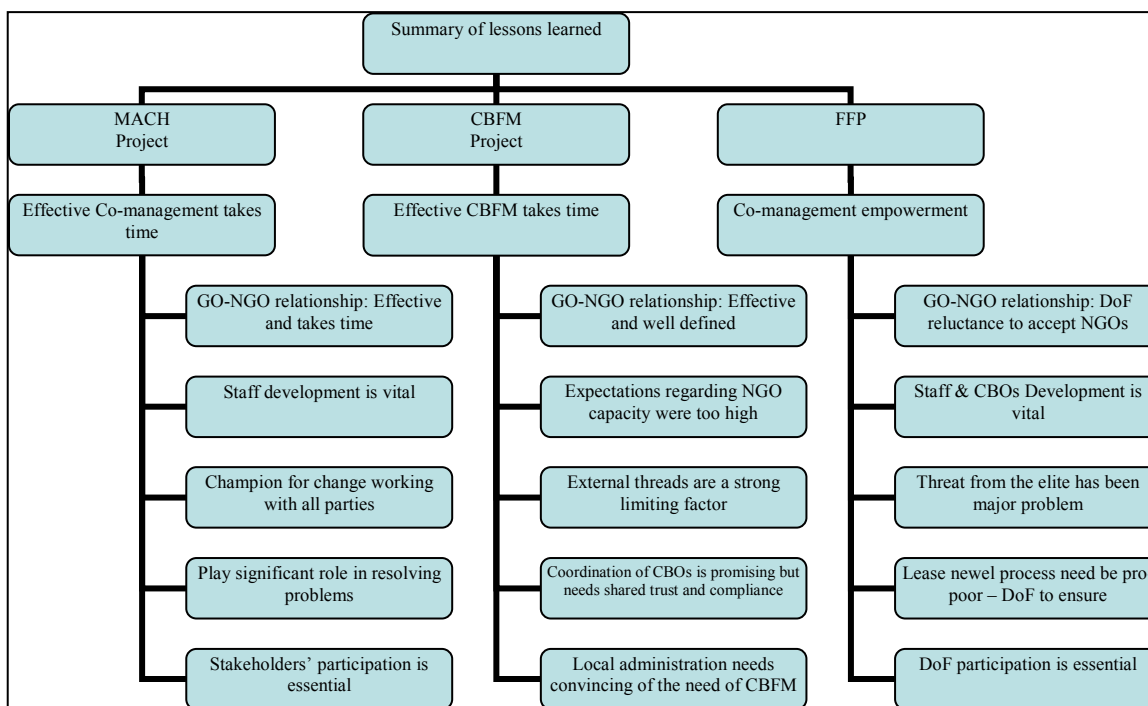


Figure 4: Common lessons learned from three co-management projects

3.3.2 Notable lessons

MACH project has a greater dimension in achieving success in the context of enhancement of biodiversity and ecosystem productivity as this project dealt with not only fisheries but to a wider dimension of wetlands and all living resources therein. The particular reference of the Hail Haor the broader scale benefit of the sanctuary maintenance reaching over a large area far beyond the sanctuary have a unique example of the benefits reaching the common fishers, and villagers around. MACH project stands apart in developing and maintaining strong and functional linkages of the CBOs with DoF, LG and local administration through creation of UFC and has been innovative in making provision and smooth operation of endowment fund that leverages the CBO operation for maintenance of sanctuaries, small scale habitat restoration and adopt the good practices in fisheries management.

There are some issues however those needed to be resolved to make it sustainable in the longer-term, but one need to be patient and allow time for this sustainable institution but again it is needed to be seen what happens when support including NGOs are fully phased out.

Although CBOs have been continuing and sanctuary benefits have been derived but most of the FFP waterbodies are under elite capture at varying degrees of concern. DoF support and linkages to CBOs in the FFP sites seemed to be weak. There is therefore every risk of losing access rights of the poor fishers. This crisis needs to be seriously dealt with and carefully managed by direct interference of DoF in association of the local administration particularly at this point of

time when the lease period for the CBOs are going to be over and need renew. It would not be a surprise if the ex-lease holders (who are present in the CBOs in one form or the other) take the advantage of the weaknesses of the policy/ system in takeover the access rights back and displace the fishers. This is also a concern for IPAC.

Technical interventions e.g. effort reduction, destructive gear control, establishing management rules and good practices based on action research in addition to sanctuary establishment and maintenance through CBOs, were major focus in CBFM. The livelihoods and AIGAs were comparatively better linked to resource management; but measuring the impact of this individual action was not possible and left to be seen. Impact of the CBFM follow on funds provided to NGOs to establish CBO network and empower the CBOs and sustainable institution was not visible in the field, probably because there was a lack of rigid operational procedure.

3.3.3 Fish sanctuary - a low cost but high impact intervention

All the sites visited by the IPAC-WorldFish and DoF team have some common successes with varying degree and impact in establishing fish sanctuaries. Sanctuary is the major and most effective technical intervention with a high degree of impact that reaches to the common fishers, subsistence fishers and also to the common people in social development terms. Apparently all the projects and all the sites have established and still maintaining sanctuaries with highest level of belief and aspirations. This intervention has by now become popular to the villagers and received much appreciation from the grassroots to the policy level.

Fish sanctuaries have been seen by the study team as much more beneficial intervention than it is reflected in the project completion reports. Because fisheries harvesting practices are still destructive everywhere and there are overfishing in real terms and there are hardly any controls. So the positive shift in the fish production and per capita income from fishing is seen is a surplus after absorbing the negative shock of the overfishing. So the sanctuary benefits may be doubly weighted. It may be worth to explore the possibility of increasing the sanctuaries in a waterbody by size or by number for further higher level of impact in enhancing fisheries regeneration and recruitment that reaches in the bags of the commons far beyond the sanctuary. It is a low cost intervention provided exhaustive work on habitat restoration is not required.

3.3.4 Habitat restoration

Fish sanctuaries are followed by habitat restoration. In some waterbodies visited the inter-ecosystem connectivity reported to have largely been lost due to siltation, particularly in those where there are flush floods and during project restoration was weak. To sustain the outputs from the sanctuary the community needs the support of endowment types of fund or those have good connection with local administration and DoF could possibly secure small funds from UZ development fund through DoF. Here a committee or sort of system like UFC in that UZ could be helpful.

3.3.5 Aquatic Resource Management

One of the basic objectives of introducing co-management is to establishing of fisheries management rules and regulations with direct participation of the community as it has been a proven truth that law enforcing in the vast water areas is not possible without the GoB authorities concern. So establishing of good practices in fisheries management has been introduced in the CBO norms and all CBOs have their by-laws to follow the norms as good practices. But in the field this practice have not been established; there are however some exceptions. DoF needs to establish linkages and oversee the CBO management and this may be embedded in the leasing contracts as there are provisions for performance evaluation as a pre-requisite for lease renewal. Otherwise if the overfishing and destructive fishing continues that may in the long-run undermine the positive impacts of the other good interventions e.g. sanctuary.

3.4 Sustainable institutions

Enabling a sustainable institutional environment is fundamental to achieve the objectives of co-management in terms of enhancement of fisheries productivity and biodiversity, ensure higher sustainable fish production and equitable distribution of benefits. In all waterbodies CBO has been formed and are still functional but not equally effective after the project. Transparency in leadership is a big issue. In the FFP sites almost all CBOs are under elite capture mainly because of the weak formation, inclusion of elites more than planned since the beginning and more importantly no functional linkages have been developed with DoF local extension services. It is apparent that developing sustainable institution takes time but FFP was implemented at a faster speed due to its comparatively smaller implementation time frame.

On the other hand the MACH CBOs (RMOs) are well linked with DoF (and with local administration through DoF) as a result of the formation and continuation of UFC. This has been supported by an innovative course of endowment fund operation that helps to keep the institution functional and lively, an example of success in institutional mainstreaming and it is a lesson to scale up and scale out in other areas.

Keeping aside the physical nature of the waterbody (semi-closed) another set of good example of sustainable institution is the Chapandaha *Beel* of CBFM. The leadership is transparent and the benefits distribution appeared to be equitable, democratic and transparently. The CBO have had a pre-existence from before the project interventions. The community was self motivated and trying to undertake the activities from their own for long time and the project support was considered by the community as a blessing for them and they made full utilization of the project resources.

Rate of illegal fishing activities like use of current jal, *katha jal* (small meshed gill nets or seine nets) setting *Katha* or *Bana* (bamboo fencing) have slightly decreased at the user levels but influential still continue to operate and that discourages the commons to stop themselves; the overall improvement in observing the good practice rules are yet to be institutionalized. CBOs are socially not yet capable to protect such activities or in some cases it was informed that such

activities allowed by the CBO leaders for their own interest. DoF support to CBOs in this is essential.

3.5 Equitable distribution of benefits

Legacy of project is that productivity increases (mainly through sanctuaries) but big problem remains in distribution of equity. Elite capture, poaching, *katha* setting by influential near the sanctuary has remained as a big issue. *Katha* setting must be beyond a certain limit of the sanctuary keeping a buffer zone. There are by-laws about buffer zones in some CBOs but the members are helpless. DoF needs to be helping the community to control illegal operations and observing the by-laws.

3.6 AIGA and micro-finance

Alternative Income Generating Activities (AIGAs) were found to have good impacts on livelihoods diversity as well as to reduce poverty of the people who are reliant on wetlands resources. Dependency on fishing decreased among the beneficiaries but over all fishing pressure was not reduced, rather increased as most rural households are now a days involved in subsistence fishing. This AIGAs should be more effectively planned to link with resource management e.g. to provide livelihoods options for the fishing ban period; it has to be sorted out on location and time specific as well as socially acceptable way.

MACH beneficiaries are happy with little exceptions of defaults from leaders. Caritas plan of credit support is well thought of, and managing fund well that would supposedly overcome the small problems. In FFP there was no fund provision for micro-credit that encourages NGOs to set up such activities. It worked well with large NGOs during project but ended up with the withdrawal of project support. CBFM2 Managed well by larger NGO. But at the end of the project financial management skills of the CBOs dropped. Even the follow on fund provided by the CBFM to the NGOs after the project to maintain the CBO activities and establishment of CBO network did not work properly probably because no mechanism was identified to make a functional relationship with the apex bodies' e.g.

3.7 Governance

CBOs are in place in the FFP sites but hardly any project developed governance or management approaches were evident. Increase number of *kathas* and run small businesses by elites/leaders is common. Transparency in the leadership also is a big issue. Here it has been found that elite in leadership can function well if they are transparent (but not in most cases), the community leaders (fisher leaders) can also perform well if maintain a good linkage with DoF and UZ Admn. An intensive interaction was made with local enlightened group who reacted that if the leaders are good then the commons are good too. And we have to find people from within those who have been involved in the process since the beginning. They are not bad people but they need some sort of transparent incentive for their services to remain honest, manage the

sanctuaries and the GPs and remain responsible to the society. They made some suggestions that are provided in the text in box 1.

Box 1.

Transparent leadership development: Harvesting local knowledge

(Local knowledge based suggestion to develop transparent and responsible leadership. leadership to put a good governance in place)

During interactions in the field with the enlightened group they opined that common people are generally innocent by belief but involves in illegal fishing when they see that other are continuing to do this. They opined that **Commons are ok when leaders are ok.** Leaders have to be transparent and then they can have the cooperation of the villagers as now everybody has understanding by the awareness made by the project that conservation has good impact for the whole society.

Develop a common pool of aquatic resources that would generate income other than poaching or destructive fishing to make room for a surplus production to be owned by all members of the community and particularly the leaders will be eligible for the lion share to serve their family from incentives derived from the common pool resources as against their time input for the community services.

They advised to take measures, for example, to re-develop aquatic plants and weeds that benefits commons and they have interest in supporting conservation, for the CBO leaders' continuation of providing service they should have a transparent earning from the waterbody and the leaders can find some socially and democratically acceptable benefits and remuneration. Plantation of fruit and timber trees in the *beel* periphery and provide ownership of the CBO leaders in a set quota can help (the headmaster elaborated more to this context) so that they have a guaranteed income from the waterbody without touching any fish illegally. The services can not be provided by the leaders for free all the time. The leader/s also have to feed their families and therefore needs a transparent source of remuneration for their services and time.

Rural people used to depend on only fish but also aquatic plant roots, stems, fruits as food which are almost extinct. Necessary development may be planned and executed to revive the ecosystem with aquatic weeds. This will increase ecological productivity, also plantation can be made where possible and community may be given the ownership and they are encouraged to guard and take care for longer as well as shorter term.

CBO leaders' continuation of providing service they should have a transparent earning from the can have some socially acceptable benefits. Plantation of fruit and timber trees in the *beel* periphery and provide ownership of the CBO leaders in a set quota can help (he elaborated more to this context).

Advice, supervision and extension services received from DoF would be necessary to some extent. It would not be needed for full time as the rules are generally followed by the villagers but the problems lie in the leaders; so frequent presence of DoF officers to interact with the leaders in presence of villagers would make a difference.

3.8 Issues and constraints

Although CBOs have leased and established access to rights they are anxious about continuation, there were some drives from ex leaseholders to take over the possession but CBOs had to struggle to maintain access to rights and finally they are successful. Those who have good connections with administration are less worried but a clear enforceable policy is needed to cover the risk, otherwise good practices in management and good motivation in technical interventions and benefit distribution will suffer.

CBOs are generally not directly involved in poaching and use of destructive gear but can't always stop it. Subsistence fishing way from the sanctuary is generally overlooked. But involvement of CBO leaders or external influential in setting kathas close to sanctuary is seen as offence by the common members as well as villagers and these activities demoralizes the commons in obeying the laws and by-laws in fisheries management good practices. This has more evidences in the FFP sites where the institutions remained weak possibly because of the comparatively small time lag to nurture the CBO formation as well as sustainable operations. This illegal practice by the leaders or elites is also not un-common in the CBFM and MACH sites but comparatively better handled. Transparency in leadership has remained to be big issue.

CBOs are strongly affected by political influences. The democratic operation and the changes brought in to this regard is sometimes worse in "*Exit the dragon, enter the tiger*". Many people opined that good leaders should remain as long as possible (so long they are committed to the society and serves as the spokesman of the poor resource users and their access rights and benefit distribution equity. The team also considers that a good and sustainable CBO institution does not only mean an institution operates through democratic processes; but observance of the fisheries good practices and transparent technical operation of the waterbody and the natural resources to ensure enhancement of productivity and biodiversity that leads to public goods is more important be the operation of CBO follow the 'democratic processes' with secret ballot or by peoples consensus, so long people believe that they are their spokesman.

Most of the FFP waterbodies are under elite capture at varying degrees of concern. There is therefore every risk of losing access rights of the poor fishers which is a matter of concern. This crisis needs to be seriously managed by direct interference of DoF in association of the local administration particularly at this point of time when the lease period for the CBOs are going to be over and need renew. This is also a concern for IPAC.

3.9 Challenges faced in developing community based institutions

The situation from which development efforts in the water bodies began in the late 80s and early 90s was that of transforming open access resources. There are a number of possible routes out of an open access system: i) to privatize the resource, make it the property of the lease-holder; ii) to turn into a resource for government organization to invest in; iii) to turn a common property regime (CPR) of the fishers; iv) to turn it into the common property not of fishers, but of the community. All four methods have been tried in Bangladesh.

A common property regime involves shared management, return and labour by a clearly defined set of users, i.e. not “open access”. Unlike individual private property, in a common property regime, the right to use a resource rests not with an individual but in a group of persons.

In Bangladesh, co-management is seen as way of sharing responsibility for decisions about resource use between the state and the resource users’ themselves (Mark Aeron-Thomos, 2005). Its advantages, over the more traditional approaches of state command and control, lie in the more intimate knowledge of users of local resource potentials and constraints and their ability to enforce decisions through mutual monitoring and the force of social pressure. This does not mean that the state ceases to have any role in fisheries management. Rather, it tends to shift to that of supporter, facilitator, adviser and the final authority in dispute resolution.

In each co-management arrangement the best division of roles and responsibilities depends on the ecological, economic and social characteristics of the fishery and the relative strength of different parties. The goal of the co-management arrangements is to improve outcomes for the poor by passing greater control of them. There is much greater need for capacity building and support for community based organisations, if they are not fall victim to internal capture and external challenge. These threats are best met by: an institutional structure that limits the opportunities for elite capture; through training in procedures for decision-making and record keeping that will support openness and transparency; and a set of outside stakeholders (NGO, government) committed to supporting the CBOs and adequately funded to perform them.

In Bangladesh, the task of pro-poor CBO formation is made particularly difficult by prevalence of patron-client relationship between elite individuals/families at different administrative levels and between local elites and poorer members of society dependent on them for land or work or access to state resources that they control or distribute. In these circumstances, to form pro-poor CBOs requires not just an institutional set-up that can limit the influence of elites; which is found more dominating during post-project period while relation with NGO and government became weak or absent. Rather emerging elites have been gaining strength networking them regionally and centrally, putting the interest of common fishers in the sideline. Sufficient faith and confidence among the poor challenging the changed situation has weaken, which is needed to patronage.

Legal support provided to CBOs by project initiatives, but how can the process sustain is still unclear. It is stated however in Inland Capture Fisheries Sub-strategies, 2006 that the management of inland capture fisheries must be for the benefit of local community and can continue to be a source of income for large number of the rural poor. The strategy was followed by an ‘action plan’ (may need mentioning; not implemented). A program concept paper in this respect was prepared by DoF with support from World Bank but now the funding support looks uncertain.

3.10 Circumstances under which Common Property Resources (CPRs) can function

It is necessary to see under what circumstances CPRs do not function, this is something often ignored in the literature on CPRs. A CPR is an agreement between the members to cooperate in the managing of the resource and in sharing its benefits. It would function on the basis of some agreement on how to share the expenses and benefits. The agreement, if not indefinite, is expected to last at least as long as the group has the lease or access to the resource. What bind the group together is that they have a joint lease over the water bodies (Dev Nathan, 2007). Of course, membership can be changed and this happened with political pressure, when ruling political parties change. But it would not be easy for ordinary members to take action to remove someone who takes more than his/her share. They break the agreement and corner a higher share of the benefits either over-stating the actual expenses or colluding with fish traders, whether in buying inputs or in selling fish.

Under what condition such an agreement likely to last? The agreement can be kept if all parties discount the future benefits for the CPR at a low rate (Dasgupta, 2005). There a number of specific feature of low discounting of future incomes that will promote cooperation. Agreements are less likely to be broken when members care about each other, or have inter-dependent utilities; or, if they have a pro-social disposition.

The fish groups do not form a homogenous social group. They tend to be mixture of traditional fishers and other poor, combining Hindus and Muslims. As a group, they do not have a history of prior collective action. All of this goes against strong reliance on inter-dependent utilities or pro-social disposition of members. As a result, breaking an agreement to equal sharing of returns is not likely to meet much or even any social isolation. Such an unequal sharing structure could develop even from within a group that, to start with, was homogeneous. They could utilize their varied connections to rise above the others in both economic and socio-political spheres to grab a higher share of the benefits.

Such a situation only reinforces the point that, where there are temptations to breaking agreements, because the returns are large, then there is a need for punishment for breaking the agreement; either through mutual enforcement by the members or through external enforcement. Mutual enforcement is of course the preferred option. It would make the job easier if one could count on mutual enforcement working. If ordinary members regularly monitor activities of the committee members, and make credible threats of sanctions for those breaking the norms, then it may be quite easy to keep CPRs functioning.

Why do the ordinary members settle for an unequal share? It must be that their benefits are still more than they could otherwise expect. "...even through the agreement is to share the benefits of cooperation unequally, both parties gain from cooperation" (Dasgupta, 2005). Thus, the CPR continues to exist, although with unequal benefits to members, though it is not their desired choice.

In Bangladesh most of the CBOs of common property resources has attained a stage of such equilibrium of cooperation and benefit sharing. As a review of collective action, the returns to members are generally likely higher where there has been a democratic and egalitarian base to

the collective action, as compared to a situation where there has been no history of a democratic and egalitarian base (Knox and Meinzen-Dick, 2001).

3.11 Internalizing lessons into IPAC

It is imperative that improvement of the aquatic ecological functions and environmental flow conditions is an important issue needed to deal with and for this restoration of habitats for overwintering shelter as well as opening connectivity to facilitate spawning and overwintering migration is necessary. At the same time fisheries management good practices to reduce overfishing including the physical interventions e.g. establishing and maintaining sanctuary is need in order to conserve and enhance fish stocks and enhance fisheries productivity in the aquatic ecosystems. The National Fisheries strategy 2006 and specifically the Inland Open water Sub-strategy of the DoF/MoFL has identified the action plan for this interventions (DoF website: <http://www.fisheries.gov.bd/>).

Transparency in leadership has remained to be big issue for IPAC to address in association with DoF and MoFL. Some mechanisms need to be explored and embed into the CBO leadership's management. CBOs need to be strongly connected and embedded with the LG and local administration through DoF, need management knowledge and capacity to deal with institutional operation but also fisheries and wetland management. The following are key to achieve that objective:

- a. Capacity building of the leaders – skills development, awareness and motivation. “right people on the bus” supported by policy reforms, and development of committee like UFC in all UZs and all waterbodies to connect with LG and local administration through DoF needs to be establishes;
- b. Gradually move from committees where stakeholders have a say in the project to co-management committees where CBOs and government have a say in the future of the wetland and associated livelihoods;
- c. Built-in resource support in needed for CBO sustainability. It may be done in the form of endowment funds or retaining lease revenue for co-management;
- d. Involvement of DoF from starting to end is necessary for smooth transfer of the mainstreaming link between the CBO and the local admn and the LG; UFC operation in MACH is a good example to scaling up the process;
- e. Since wetland management involves many stakeholders, a strong coordination is essential and co-management arrangements should adjust to local needs, e.g. to address pollution linking with industry and DoE or to address low flows in rivers, loss of navigability and connectivity linking with BWDB/ WARPO (MoWR) for integrated water resource management and MoL for smooth leasing management of the waterbody and review the policy of the land use. Policy reforms for waterbody leasing and gradual transfer from MoL to MoFL need to be addressed;
- f. Transparent policy and administrative mechanism need be there be to renew promptly leases and rights of the CBOs over the waterbodies and the paramount in this respect is the long tenure of the lease arrangement that gives a sense of ownership and encourages investment;

- g. Livelihood diversification and reduction of dependency on fisheries is not enough; but AIGAs should be specifically linked to resource management plan;
- h. Building consensus – networks clusters and forums need to be established to empower the CBOs to raise their voices at the policy level;
- i. Adequate political and financial support, paralegal support in formalizing and empowering CBOs and gradually make a shift from elites to the real community leaders who have a sense of ownership as they rely for generations on the aquatic resources;
- j. A program concept paper in this respect was prepared by DoF with support from World Bank but now the funding support looks uncertain. IPAC may explore in association with DoF, the scope of funding through WB that would make the leveraged funds available to address the issues by IPAC.

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