

3.7. Community-Based Fisheries Management Project in Bangladesh

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Introduction

Fish from Bangladesh's vast inland waters are vital to millions of poor people, but catches and species diversity have been declining due to such problems as habitat degradation (through siltation and conversion to agriculture), increased fishing pressure, destructive fishing methods, and acute shortages of dry-season wetland habitat. The situation has been exacerbated by fisheries policies for 12,000 government-owned water bodies being based on short-term, revenue-orientated leasing to the highest bidder. This institutional set-up excludes poor fishers, while at the same time, encouraging leaseholders to over-exploit the fisheries.

In the light of these challenges, research on alternative management approaches for the inland fisheries resources of Bangladesh was initiated to improve the resource status and increase the incomes and livelihoods of small-holder fishers. One alternative approach is community-based management where the control of the fishery resource is handed over to community groups for an extended period. Pilot projects that implemented this approach in a small number of water bodies started in Bangladesh in the mid-1980s and were later scaled up. However, in order for such an approach to be successful, a dramatic change in the paradigms of institutions in charge of managing inland water fisheries resources at different levels is inevitable.

Research on Community-based Fisheries Management (CBFM)

The overall goal of the research projects on CBFM coordinated and led by the WorldFish Center (WorldFish) was to: "improve inland fisheries management policy and policy process adopted by the Government of

Bangladesh and NGOs resulting in more-sustainable, equitable and participatory management of resources". In order to achieve this aim, the projects focused on two elements. Firstly, working towards a participatory management approach involving all stakeholders and facilitating the development of linkages between community groups and local government (institutional component); and secondly, developing and implementing improved fisheries management practices comprising habitat restoration and conservation measures. Research was implemented in collaboration with partners, including the Department of Fisheries (DoF) and a number of NGOs through the course of several projects (Table 1). In each of these projects valuable lessons were learned, and by building on the generated knowledge in the next project step-by-step, a prototype for CBFM was developed. The work started in the mid-1980s when, under the New Fisheries Management Policy (NFMP), additional players such as the DoF, the National Fishermen's Association (NFA) and different NGOs became involved in the management of inland fisheries. The project *Experiments on New and Improved Management of Openwater Fisheries* (ENIMOF, 1987–1990) was implemented by WorldFish in collaboration with DoF and the Bangladesh Centre for Advanced Studies (BCAS). The major objective was to "test and develop alternative approaches to managing open-water fisheries, in order to establish, from an administrative point of view, how best to achieve the equity and sustainability goal set out in the government's open-water fisheries policy" (Agüero et al., 1998). It was noted that conservation of fisheries is, in part, a function of fishing pressure and that the current licensing system and lack of enforcement to prevent entry of unlicensed fishers presents a severe limitation to conservation (Agüero et al., 1998). Also, it became obvious during the project that DoF had

Table 1. Overview of the WorldFish-led CBFM projects covered in this study

Project name (Duration)	Donor (Total funds)	Project partners	Water bodies	Summary of major research/activities
ENIMOF (1987–1990)	Ford Foundation (US\$150,000)	<ul style="list-style-type: none"> ■ The WorldFish Center ■ DoF ■ BCAS ■ NGOs 	9	Tested government-led licensing strategy to improve inland fisheries management in different types of water bodies Implementation of different conservation measures (e.g., sanctuaries, re-stocking)
IMOF (1991–1994)	Ford Foundation (US\$150,000)	<ul style="list-style-type: none"> ■ The WorldFish Center ■ DoF ■ 4 NGOs: BRAC, Caritas, Friends in Village Development, Proshika 	20	Tested the government and NGO partnership model Research on: awareness and skills training materials for farmers; alternative income-generating schemes with financial support; studies to assess improvement of fish production in different water body types
CBFM-1 (1995–1999)	Ford Foundation (US\$1,800,000)	<ul style="list-style-type: none"> ■ The WorldFish Center ■ DoF ■ 5 NGOs: Banchte Shekha, BRAC, Caritas, CRED, Proshika 	19	Tested range of fisheries management models and diverse institutional approaches (alternative models of collaboration and partnership) to develop prototype approach for CBFM and institutional arrangements
CBFM-2 (2001–2007)	DFID (US\$8,376,868)	<ul style="list-style-type: none"> ■ The WorldFish Center ■ DoF ■ 11 NGOs: Banchte Shekha, BELA, BRAC, Caritas, CNRS, CRED, FemCom, Gharani, Proshika, SDC, Shisuk 	116	Tested developed management systems and demonstrate that they work – i.e. increase people’s livelihoods Tested mechanism for linking community institutions to better manage larger fisheries systems Informing and influencing fisheries policy stakeholders

Notes: Prior to 2002, the WorldFish Center’s name was the International Center for Living Aquatic Resources Management (ICLARM)
 CRED = Center for Rural and Environment Development; BELA = Bangladesh Environmental Lawyer Association
 CNRS = Center for Natural Resource Studies; SDC = Society Development Committee)

neither the budget nor enough skilled personnel to provide effective institutional and financial support.

Thus, in the subsequent project *Improved Management of Openwater Fisheries* (IMOF, 1991–1994) research focused on potential partnership models of government and NGOs. Awareness (e.g., on the benefits of stocking and seasonal closure of the fisheries) and skill-training materials for fishers were actively developed. Alternative income-earning activities with additional financial support from NGOs were designed and tested in a participatory manner with local stakeholders. The implementation of alternative income opportunities largely increased the adherence to seasonal fishing closure, and formal registration of fisher groups strengthened the participation in fisheries management programs. In parallel, studies were conducted to assess the degree of improvement in fish production in

seasonal and permanent water bodies. The major lesson from this project was that it is necessary to involve all stakeholders in the management of inland water resources, implying a community-based approach rather than just putting fishers in charge and excluding middlemen (Ahmed et al., 1997).

Based on these lessons learned, two successive phases of CBFM projects were implemented for which the ownership of project water bodies was formally handed over from the Ministry of Land (MoL) to the Ministry of Fisheries and Livestock (MoFL). The first phase (CBFM-1, 1995–1999) was carried out at 19 sites, with the major focus being the development of prototype CBFM approaches and institutional arrangements that could be replicated. A range of fisheries management models was tested and diverse institutional approaches, such as the management of watersheds by community-based organizations (CBOs) and providing support

to women to manage their own fisheries CBOs, were explored (Thompson et al., 2003). However, questions remained about the sustainability of CBOs, and coordination across extensive inland floodplains. In the second phase (CBFM-2, 2001–2007), these concepts and arrangements were tested and extended to a larger number of water bodies (116 sites in 22 districts). One hundred and thirty CBOs, mainly comprising poor fishers, were created to manage the water bodies assisted by partner NGOs. To strengthen their status, 116 CBOs were registered as cooperatives under the 2001 Cooperatives Societies Act or the 1961 Voluntary Social Welfare Ordinance. Project beneficiaries received training on fisheries management, alternative income-generating activities, and legal issues around fisheries. Fisheries management models such as

the establishment of fish sanctuaries, closed seasons, and bans for harmful fishing gear were implemented. During CBFM-2 particular focus and effort was placed on the conditions that are required to ensure that CBOs are sustainable and that inland aquatic resources management is efficient and equitable. Furthermore, a process for the integration of CBFM approaches into official policies was initiated and promoted.

Impact Pathway

The impact pathway (Figure 1) shows the hypothesized information channels for policy influence starting from the CBFM project activities in the upper part of the graph down to how a policy change resulting from the research may lead to ultimate benefits.

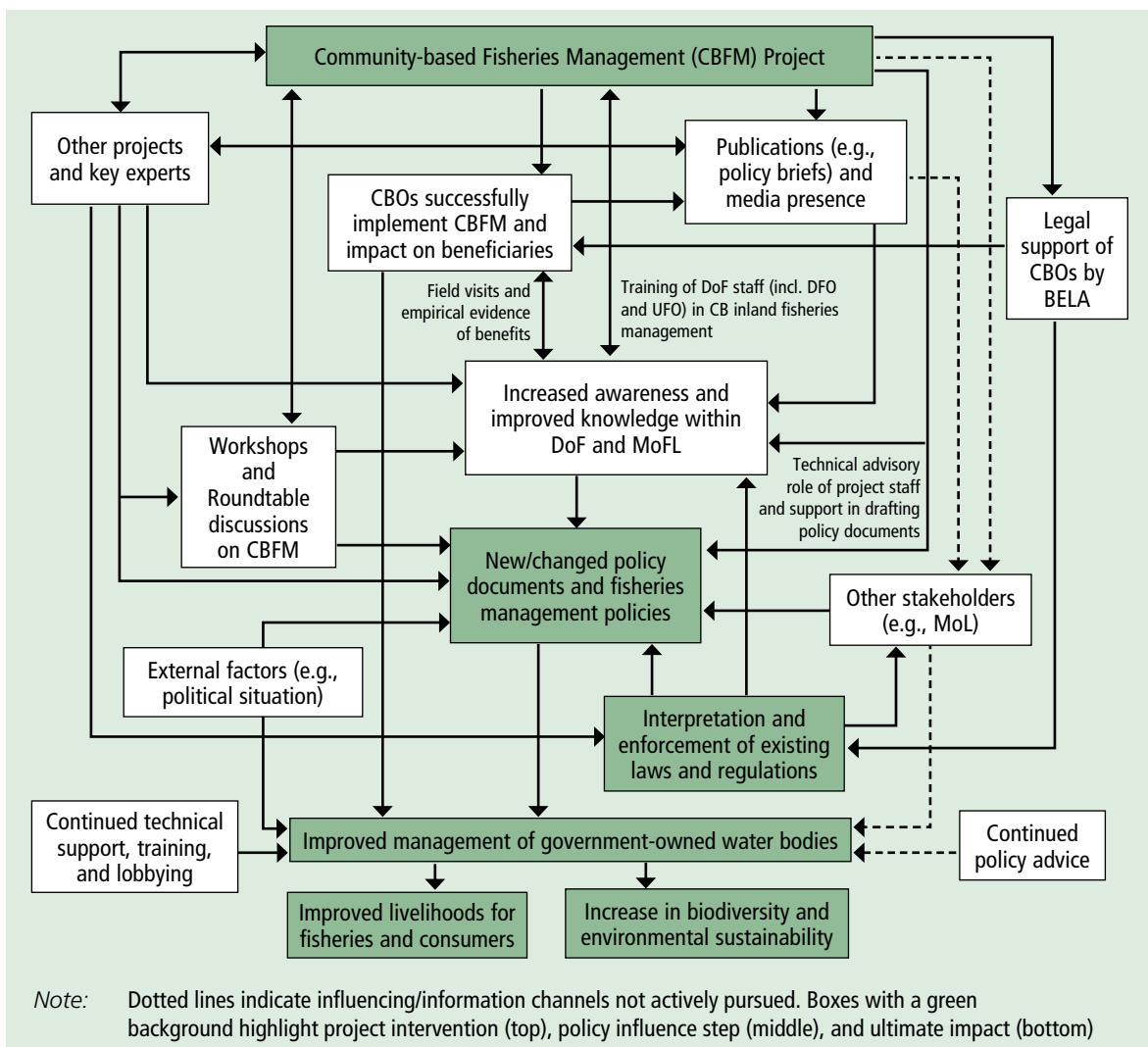


Figure 1. Hypothesized impact pathway for the policy influence and impact of CBFM project

We expect policy influence of the project on three different levels: national, intermediate, and local. A discussion of project activities and related impacts can be found in Pemsil et al. (forthcoming).

At national level, key stakeholders are the DoF, various ministries (including MoFL), and other government bodies (e.g., the Planning Commission). On this level, influence is exerted mainly via policy briefs and reports, workshops and conferences, field visits by officers to the project sites, and study tours to related projects abroad. Also, the legal support that was part of the project not only tackled individual cases of ownership disputes, but also aimed at a general change in the interpretation of laws, e.g., on taxation of water bodies. The informing role of the project also included the participation of leading project staff in official meetings as well as support in drafting relevant policy documents.

In Figure 1 key stakeholders at the intermediate level are government institutions up to district level and various NGOs. The major pathway of influence at this level is the (technical) training of staff, study tours to related projects abroad, day-to-day interaction with the project during its implementation, and training and advocacy material. Although scientific papers are not widely read within DoF, the publication of project results increases the credibility and reputation of the research. Given that the general structure of the Government of Bangladesh is centralized and hierarchical, a 'trickle-down' effect can be expected, once national-level awareness is achieved. At the same time, DoF district staff may be promoted and thus gain national-level influence. In a similar way, some of the larger NGOs are influential at national level and may become involved in the decision-making process and lobby for a particular outcome.

At local level, key stakeholders are communities and especially those households or individuals involved in fishing. The project influence is exercised via the project CBOs, through training of beneficiaries, folk theatres, TV, and radio screenings. The major purpose at this level is to increase the awareness about project activities and foster understanding of the management approaches implemented by the CBOs. The

acceptance and support of the larger community is essential in order to implement aspects of the new management approach such as the ban of harmful gear and the enforcement of sanctuaries and closed seasons for fishing.

There are, of course, other institutions and projects working in the field of inland fisheries management and thus other influences on policy-makers external to the CBFM project. Since we anticipate interactions between the different institutions working on these issues, we attempt to clarify the role the CBFM projects had on other major projects and players and vice versa.

Evidence of Project-level Impact

Unfortunately, an existing panel data set of some 2,800 households (HH) from 44 water bodies that was collected under CBFM-2 could not be used to assess project impact. The data set (baseline 2002, impact survey 2006) contains information on HH characteristics, income from different activities, fishing effort, and food security and the sample size is large, but with several subgroups, such as HH accessing different water body types (rivers, *beel*¹, floodplains) and three different treatment groups (i.e., direct beneficiaries, non-beneficiaries who access project water bodies, and the control group). Beneficiaries of the project received direct project support, including training and micro-credit while non-beneficiaries would gain indirectly from CBFM-2 activities. Control HH are those accessing non-project site water bodies. While some useful insights can be obtained from the analysis of the HH data set, it is not a suitable basis to elicit project-level benefits for two main reasons. Firstly, the size of the control group is small, and respondents are from very few water bodies; control sites are far away from most project sites, thus challenging the assumption that they are comparable and introducing biases if drastic changes due to external factors have occurred at any of the control sites. Secondly, because of changes in fisheries management, the unit of analysis for major impact, such as productivity increases of the water body, cannot be aggregated based on the HH-level results if information on total fishing effort (i.e., changes in number of fishers or intensity of resource

use between baseline and impact survey) is not available – thus the unit of analysis really is the water body. This issue is discussed in detail by Pemsal et al. (forthcoming).

A number of project-level impacts can be assessed based on a survey of all 129 CBOs which was conducted in August/September 2007, half a year after the CBFM-2 project had ended. The information collected comprises: 1. Community and CBO characteristics, 2. Previous and current management of water bodies, 3. Leadership and decision-making within the CBO, 4. Perception of project performance, and 5. Past, current, and future threats and opportunities for CBOs. Each interview was conducted face-to-face by one enumerator and a group of CBO members (including CBO executives) and took around 2 hours. Of the 129 interviewed CBOs, some 123 were still active and practicing CBFM beyond the duration of the project. This result is very encouraging with regard to the sustainability of the intervention. Furthermore, they were hopeful that they could continue doing so even beyond the current lease period of the water body. Furthermore, the majority of CBOs (74 percent) reported an increase in fish production, despite an increase of some 30 percent in the number of fishers accessing the water

body. This is in line with fish catch monitoring findings of the CBFM project that show increasing fish abundance and diversity (Halls and Mustafa, 2007). Rule breaking, both of CBO and other community members, was reportedly low and did not increase after the project ended.

Policy Influence and Contributions to Policy Changes

To analyze how far recent changes in the awareness and opinion of key agencies and policy-makers, as well as the content of new policy documents, can be attributed to the CBFM project, 26 expert interviews were conducted. Respondents were selected by the following criteria:

- Staff of relevant government institutions (preferably in a decision-making capacity)
- Individuals involved in project activities or working in the wider area of community-based management, or inland fisheries management.

See Table 2 for institutions and positions of interviewees.

Interviews were conducted face-to-face in English and took between 20 to 90 minutes.

Table 2. Institution and position of experts interviewed for influence analysis

Institution	Position of person(s) interviewed
Planning Commission (Agriculture, Water Resources and Rural Institutions)	Chief Former Deputy Chief
Ministry of Land	Deputy Secretary
Ministry of Fisheries and Livestock	Secretary Senior Assistant Chief
Department of Fisheries	Director General (former, acting and current) Director, Inland Capture Fisheries Wing Former Project Director CBFM District Fisheries Officer (Narail)
NGOs	Caritas, BRAC, CNRS, BELA, Banchte Shekha
Management of Aquatic Ecosystems through Community Husbandry (MACH)	Project Leader Chief of Party, Winrock International
Fourth Fisheries Project (FFP)	Former Project Leader, DoF/ Danish International Development Agency (DANIDA)
The WorldFish Center	Regional Director Former Project Scientist Project Leader CBFM-2
National Fishermen's Association (NFA)	President
National Fishermen Cooperative Association (NFCA)	President and Secretary General
Ford Foundation	Former Officer (in charge of CBFM)
CBO Central Committee	President

A list of guiding questions was used for the interviews, but not all interviews covered all questions. The majority of the interviews were tape-recorded and transcripts were produced based on the tapes and notes taken. The following text provides a synthesis of the interview narratives (see Pemsil et al., forthcoming) of the expert interviews. The overwhelming opinion of the experts was that the awareness of officials in major decision-making government bodies (DoF, MoFL, and PC) towards inland fisheries management has changed dramatically in the past years. One respondent said the DoF used to be a “Department of Aquaculture” rather than a “Department of Fisheries” because the sole focus was on the increase of fish production from aquaculture. All interviewed experts had a clear idea of the general CBFM concepts and a positive opinion of this approach. They further stressed that CBFM works, and that they had seen this through field visits and in the documentation of the project. While most acknowledged that a number of players are active in this area in Bangladesh, there was consent even among representatives of the other major projects (i.e., MACH and FFP on the pioneering role of the WorldFish Center-led

CBFM-1 project (including the earlier ENIMOF and IMOF projects) and the technical knowledge contributed by the WorldFish Center. This pioneering role is also supported by the sequence of other related projects (Figure 2).

The majority of experts flagged CBFM as the way forward in inland fisheries management in Bangladesh, some with the explanation that “nothing else had worked”, and the conviction that more participation and involvement of the resource users (i.e., the small-scale fishers) in resource management issues is important and desirable. This in itself is an important paradigm change – especially in government bodies.

It was stressed that some policy changes (see Figure 2) are on the way, for example there is explicit mention of CBFM as the preferred management approach in the *Fisheries Sub-Sector PRSP Road Map* of 2006 (Planning Commission, 2005) and the 2007 *Inland Capture Fisheries Strategy* (DoF, 2007). However, major constraints to the spread of CBFM, which is currently only practiced on a minor share of all inland water bodies (only project sites) in Bangladesh, have been the

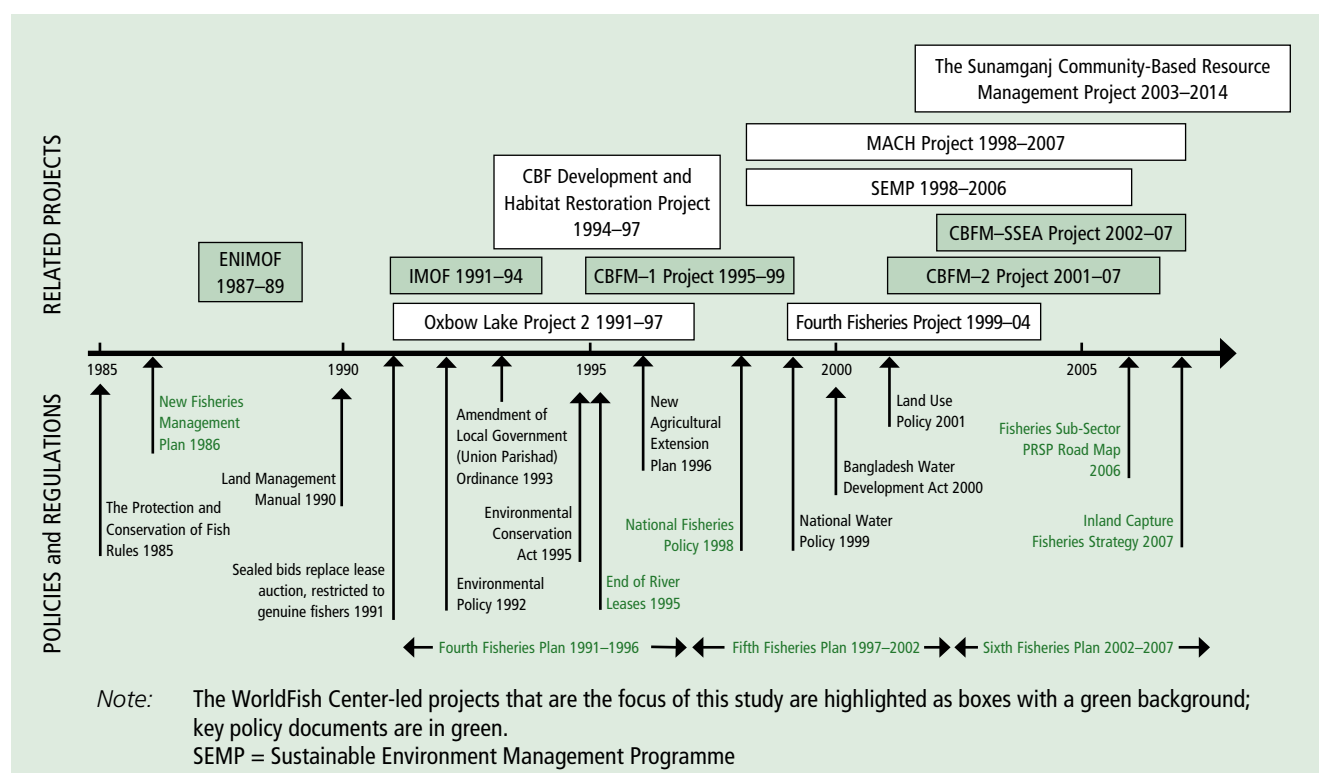


Figure 2. Timeline of recent projects and policies in Bangladesh inland fisheries

roles of different ministries (e.g., land ownership for water bodies is with MoL, which still pursues a highest-bid leasing strategy and was only marginally involved and not kept well-informed of CBFM activities), and the project-driven nature of the recent changes. A number of experts stated that the future of CBFM and its potential spread to more water bodies depend on the availability of external funds. This makes the future of the CBFM approach uncertain, despite the high level of awareness and conviction and recent initiatives of the DoF to get government funds allocated to CBFM work.

Capturing the information exchange among key stakeholders (ministries, NGOs, etc.) is important for understanding the diffusion of ideas and opinions inducing policy change. In many cases, important information follows informal pathways rather than formal, often hierarchical, structures of organizations, or governments. Thus, a written survey was sent out via e-mail to 32 experts from PC, MoFL, DoF, partner NGOs, and staff from other related projects, and 21 completed questionnaires were returned. Combined with the influence narratives and the formal institutional framework, the expert survey helps to assess the impact of network structures on information flows, and the relevance of individual actors in the dissemination of CBFM-related information.

Social Network Analysis is based on graph theory. Communication between two people is represented by a link between them. If the link is absent, they do not communicate with each other (see Wasserman and Faust, 1994, for a detailed introduction to Social Network Analysis). As a first step, we approached the network with two specific questions, applying a rather strict boundary specification to the network of all actors. The questions target the information flow of two subgroups in the project:

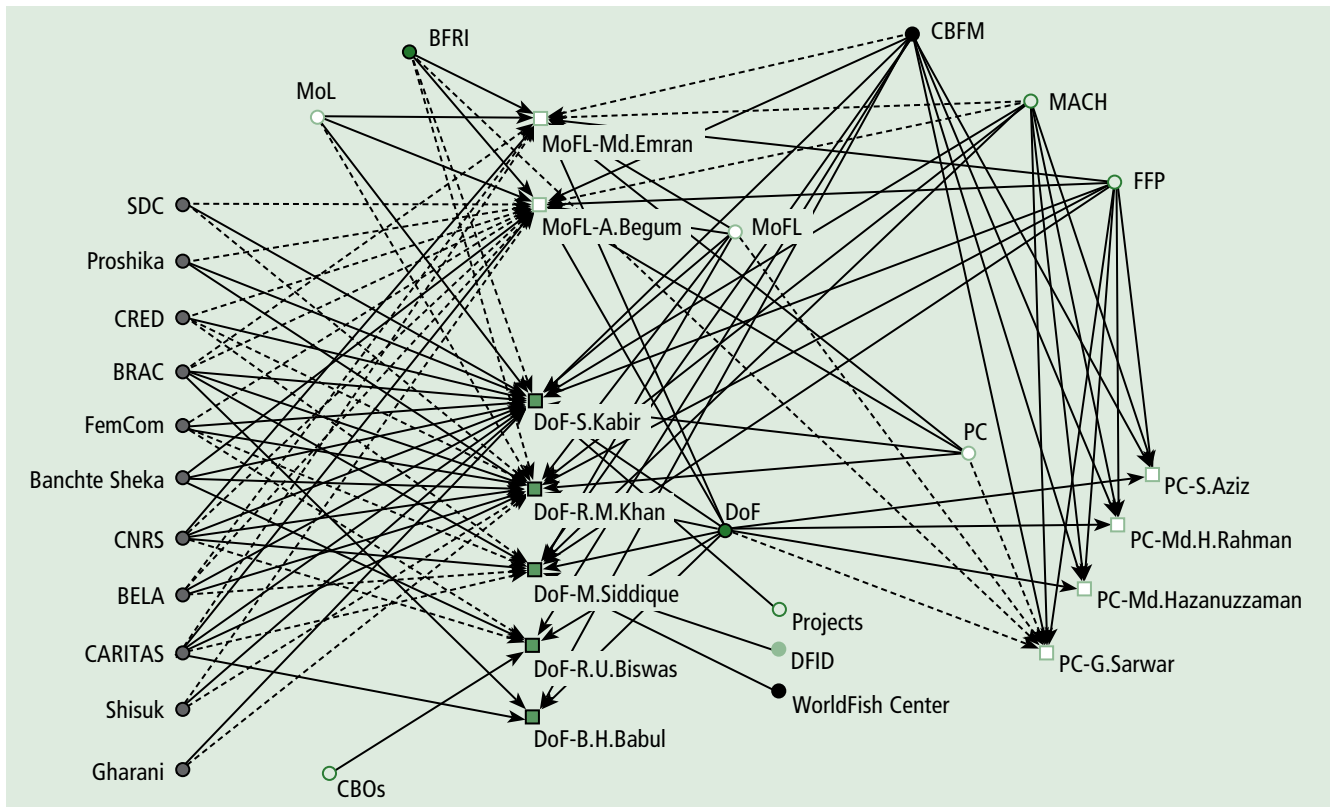
1. Who did the CBFM partners provide with information on the project?
2. Who were the perceived sources of information for actors of DoF, MoFL, and PC?

The analysis of the network graphs will reveal whether or not an informal network structure did evolve that interconnects participants of CBFM beyond the formal

structure of the project; if so, it will identify the most central, and thus important, actors in the (informal) network. It is important to note that distances are without meaning in these network pictures. Actors have been arranged in accordance with the formal structure of the project, where all interviewed experts are displayed as boxes and labelled with their institutional affiliation and their name. All actors who could be chosen as communication partners (listed in the questionnaire) are displayed as ellipses. Generally, the approach to extract networks of limited actors is a suitable way to narrow the number of actors according to specific research questions. We therefore addressed the question of outgoing information from CBFM partners and ingoing information to government bodies in separate networks without considering whether information exchange is reciprocated.

Figure 3 depicts sources for inland fisheries information of major government institutions (DoF, MoFL, and PC). The graph shows that DoF receives information from a wide range of actors, including MoFL, NGOs, major projects, and WorldFish. Surprisingly, the DoF respondents stated that no important information on inland fisheries management is provided by the Bangladesh Fisheries Research Institute (BFRI), the national institution in charge of research related to fisheries and aquaculture. Respondents from within MoFL, on the other hand, received information from BFRI. While MoFL staff stated they had received important information from the CBFM project, they rated the information provided by the MACH project as less important. The PC, as the major decision-makers in the allocation of government funds, did receive information directly from the major projects (including CBFM), rather than getting it via the MoFL, the 'official channel' for this information. Also, PC respondents rated the information obtained from the DoF as 'important' compared to 'less-important' information received from MoFL.

Figure 4 visualizes the information provided by CBFM-2 partners to external actors. The project partners are arranged in an outer circle while the information recipients are grouped in the center. It becomes very obvious which of the project partners are most active in providing information on inland



Note: Dotted lines show provision of less important information and full lines that of important information.

Figure 3. Sources of information on inland fisheries management to MoFL, DoF, and PC

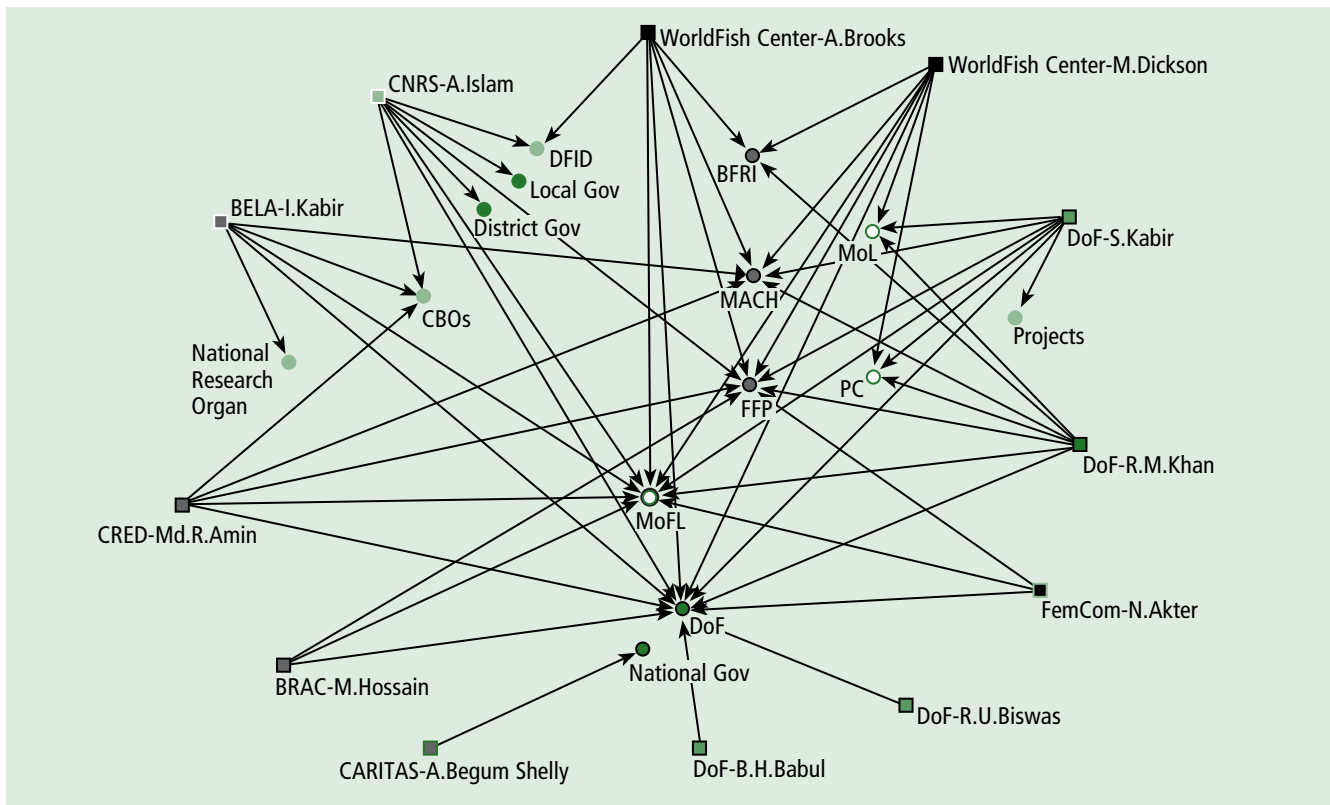


Figure 4. Information provided by CBFM-2 partners to non-project partners

fisheries management to non-project partners. The three NGOs: CNRS, CRED, and BELA communicate with the largest number of external actors, while the WorldFish Center and DoF partners are most crucial in providing information to the major policy players. Major findings of the expert survey and the social network analysis are the identification of central actors in the area of inland fisheries management in Bangladesh. The results show that central actors in formal or information networks can be different from the formal institutional role or position of individuals.

Moreover, the analysis of information sources of the major government institutions with responsibility in inland fisheries management, as well as with a decision-making role for future policy change (Figure 3), confirms the central role of the WorldFish-led CBFM project. The results also showed that there was information exchange between the major projects (CBFM, MACH, and FFP) as indicated in the expert interviews. Finally, when looking at the type and number of external sources partners to whom the CBFM project provided information, the WorldFish Center was crucial as an 'honest broker' between the involved NGOs and national government institutions. At the same time – as one of the project outcomes – there are now also direct communication channels between some of the NGOs with government bodies, so the profile of NGOs has been raised.

Conclusions and Lessons Learned

The PORIA study of CBFM in Bangladesh has had difficulties in providing empirical evidence of the project-level impact of the project. Though the general feedback of all involved staff and exposed government officials has been very positive, an existing large HH data set could not provide the answers to questions on the project impact on HH income and livelihood effects. There is, however, evidence of fish stock increases and an increase in (fish) biodiversity (Halls and Mustafa, 2007). Also, a large majority of the established CBOs were still active and practicing CBFM in their water bodies beyond the project duration.

The CBFM PORIA has been able to clearly show and document the changes in opinion and awareness of relevant policy-makers. Thus, the policy-informing and influential role of the project has been successful and major policy documents now make explicit mention of the CBFM concept as a viable management approach. It is, however, still too early to assess if this influence will really result in a larger-scale change in how inland water bodies are managed in Bangladesh. It seems that, although major paradigm changes have taken place in the concerned government bodies, especially in technical skills, institutional set-up and financial constraints could hamper future CBFM scaling up. It will be crucial to have a national CBFM 'champion' who will continue to push for the CBFM approach, irrespective of externally funded projects.

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1 *Beel* or *bheel* is a Bengali term that refers to a (seasonal) pond or wetland with static water.