

IFAD Innovation Mainstreaming Initiative

Case Study of the Oxbow Lakes Small-Scale Fishermen's Project (OLSSFP) Bangladesh - 1990-1997

Field study carried out in March 2004

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Innovation in this Project:

The Oxbow Lakes were granted on long-term lease, 50 years, to designated artisanal fishers and other poor around the lakes. Some of the ponds dug at the ends of the lakes were granted on similar leases to poor women living near the ponds.

The project innovations were:

1. Decentralization of resource management through granting long-term, leases on government-owned water bodies to poor men and women; and
2. Setting up common property regimes (CPRs) to enable fishers to get the benefits of decentralization.

Historical and Institutional Background

Before the project, these lakes used to given out on short-term leases through auctions. The short lease meant that there was no incentive to undertake investment in putting in or improving infrastructure. Along with this infrastructure investment problem, there was also an incentive problem in undertaking annual stocking. First, there is an inevitable carry-over of stocked fish from one year to the next. Not being sure of securing the lease in the next year meant that the lease-holder was likely to restrict stocking much below the levels possible. Second, the lakes are bordered by a number of villages. This makes poaching relatively easy, or, alternatively, makes guarding relatively expensive. This reduction of the margin, whether through higher costs or lower return, further reduces the incentive for stocking.

The above factors were reflected in the relatively derelict condition of these lakes at the beginning of the project. The lakes were inevitably covered with water hyacinth. Stocking was low.

¹ IFAD Consultants. The views and interpretations expressed in this paper represent the opinions of the authors and should not be attributed to IFAD

The leases were given to so-called fisheries societies, formed under the New Fisheries Management Policy (NFMP). But these societies were in practice controlled by some of the local powerful persons, who organized and financed the entire operations of lake fisheries. The fishers themselves were in the position of share catchers, getting usually 25% of the catch.

Before the IFAD-GOB-DANIDA project, the World Bank undertook a project for government management of some lakes. These lakes were withdrawn from the auction-lease system and placed under the management of the Department of Fisheries (DoF). Teams of fishers were appointed to carry out fishing, for which they were paid 40% of the value of the catch. This was a substantial improvement in fishers' share, which remained at around 25% in privately-leased lakes.

As is well-known, government-operated enterprises have a sustainability problem due to the "soft budget" problem (Kornai) – the treasury makes up any losses sustained and thus reduces the need for the business to pay for itself. This is compounded by the factor of strong corruption in Bangladesh, which is rated about rank bottom in the corruption index in the world.

Stocking in the government-run lakes was not only carried out through official money. Private money was also used to carry out stocking, which was not shown on the books. The result was that the government-run lakes were both making losses in official accounts, while allowing a number of officials to earn quite large profits. Of course, the fishers did earn their 40% share of total fishing income, both official and unofficial.

The functioning of the government-run lakes has been recently further affected by the "re-auctioning" of the positions of managers of the baors (lakes). If one manager carries out stocking, with all the personal financial implications and risks, but another manager comes in at the time of harvesting – then even the unofficial, incentive system is upset. As a result the managers at the time of stocking will reduce their personal risk by reducing stocking levels.

This illustrates a point made by Olson – in a system of banditry it is better to have a stationary rather than a roving bandit. The stationary bandit has to be concerned with the sustainability of extractions and thus may well undertake to provide the public goods needed to keep the exploited population in a condition to continue producing. The roving bandit, on the other hand, has no such need to support the producer and is, as a result, more destructive in exploitation.

Thus, before the IFAD-GOB-DANIDA-BRAC project there was a situation where a few lakes were being run under government management, with the usual problems of losses for the government exchequer and private profits for officials, while the majority of the lakes were on auction-based, short-term leases. Stocking levels were very low in the leased lakes and most of them were in a

derelict condition, overgrown with water hyacinth and other vegetation choking the water bodies. The limited benefits of lake fishing were disproportionately captured by the local elite, while the fishers got 25% of the catch.

The expectation was that secure, long-term leases to fishers would:

1. Allow fishers to undertake investment in stocking fish; and
2. Undertake maintenance and improvement of infrastructure.

And that additionally setting up a common property management system (CPR) would:

3. Enable equal sharing of costs and benefits by fishers; and thus
4. Provide them secure higher income to move the fishers out of poverty or at least reduce their poverty.

The original project documents, the IFAD Appraisal Report, and the Loan Agreement between IFAD and GOB, all specified indefinite tenure or user rights for the groups of fishers. The ponds, which were to be excavated at the ends of the lakes, were also supposed to be handed over to the same groups of fishers. But, in order to increase the numbers of those benefiting from project investment, it was decided, sometime after the MTR, to hand over the ponds to groups of poor women.

The innovations in the two components, lakes and ponds, will be discussed separately. A concluding section draws together the findings from both.

Implementation

The project was implemented from 1990 till 1997.

Initially, besides the usual administrative problems, there were two specific issues: (1) securing the rights of the groups of fishers who were poor, and (2) establishing Common Property Management or Common Property Regime (CPR) systems for the lakes, so as to allow for somewhat equal sharing of benefits.

Securing User Rights of Poor

The various water bodies were all under the Ministry of Land (MoL), while the project was one of the Department of Fisheries (DoF) in the Ministry of Livestock and Fisheries (MoFL). Getting the MoL, acting through the District Commissioners (DCs), to handover the lakes to the DoF and the Project Implementing Unit (PIU) was itself a long process. It took two years and even more for this to be done.

Once there were decisions to handover such lakes to the PIU, then there was the process of actually putting the lakes in the hands of the groups of fishers or Lake Management Groups (LMGs), as they were called.

In order to ensure that genuine poor persons were made members and only they remained members of the LMGs, the project formulated rules for membership. The rules in particular required that members (1) be from the poor, defined as those with land less than 0.4 ha or household income less than Tk.10,000 per year (at that time about USD 300 per year); (2) participated in fishing activities for at least 80% of the number of fishing days in the year; and (3) agreed to equal sharing of costs and incomes.

The poverty criterion and the necessity of substantial participation in fishing activities (at least 80% of the time) helped to eliminate those who were obviously above the poverty level and also those whose interest in membership was to be able to gain control over the LMGs and their functioning.

In many cases the local elite, who controlled the former leases, obstructed the process. They were not within the category of the poor and thus were not eligible to be members of the LMGs. Formation of LMGs and securing effective control over the lakes required a long process, in the course of which these elite were, at least to some extent, isolated from the majority of the fishers. This was achieved by the project in all the lakes handed over, with the exception of one. That exception, Jhapa Lake, was then dropped from the project.

Establishing CPRs

After securing effective access over the lakes and getting the LMGs in place the project simultaneously carried out a number of activities. The project financed the clearing of water hyacinth from the lakes, while also proceeding with infrastructure development, initially by DOF itself, later on the by the specialized engineering department called Local Government Engineering Department (LGED).

The LMGs were trained in technical matters, like composition of stocking, size of fingerlings to be stocked, and so on. More important was the facilitation of democratic methods of CPR functioning. With established user rights, CPR functioning requires the monitoring of actions of the committee by ordinary members.

The project identified the critical operations as being those of stocking and sale of harvested fish. In stocking expenses could be overstated and poor quality would undermine productivity; while in sale of fish income could be understated.

Thus, these operations had to be carried out in a manner that was open and allowed monitoring by ordinary members.

Procedures were established for openness and monitoring of purchase and stocking of fingerlings through tenders and for sale of fish by auction at the landing site. Non-committee members were encouraged to be present at stocking and sale of fish, so that committee members' actions could be monitored by ordinary members.

Open procedures for elections of committees were put in place. There was also the stipulation that persons could not be elected members of the committees for consecutive years. The monopoly of technical and marketing knowledge can be an important source of monopolization of benefits by a handful. Spreading this knowledge widely through the group could help prevent or control such a monopoly. The Project idea was to ensure that knowledge of the technicalities of stocking, and selling fish did not remain a monopoly of a few, but spread more widely through the group.

Another area for securing extra benefits was through guarding. Stocked fish require guarding. When this is done by non-members it can become a way for the guards to secure a share of the income for themselves, over and above their payment as guards. Best is a situation where the members themselves do the guarding. This was implemented in a number of lakes. But there were some cases where the groups of fishers stayed a distance away from the lake. In such cases the LMGs paid some local persons to do the guarding. This was a way in which the income benefits of the stocking of fish were spread to some other poor members of influential groups.

Credit

After securing user rights and along with setting up CPRs the groups of fishers also require credit to finance their operations. The credit requirements were quite large, ranging from USD2,000 (Btk.100,000) to more than USD10,000 (Btk.500,000). Credit can be secured, for instance, from fingerling traders or fish wholesalers. But in each case there are conditions that substantially reduce fishers' income. Fingerling traders increase prices and even give poor quality fingerlings, which affect the productivity of the investment. Wholesale suppliers insist on tied sale at prices below those prevailing on the market. Further, experience showed that it is through such tied purchase or sale measures that some of the more knowledgeable fishers, the elite among the fishers, got a higher share for themselves.

Credit for stocking and to finance other inputs, like boats and gear, was provided through the NGO, BRAC. This was implemented in the micro-credit system. What were actually loans to the groups were designated in the names of

individual members. After some initial differences, repayments were agreed to be made out of fishing income, whenever fishing was carried out.

Infrastructure

Moving from small-scale to semi-intensive (i.e. stocking, but without feed or fertilizer) fish culture requires infrastructure of a higher order. Landing platforms, with roads to connect to the main roads leading to markets were constructed by the project. Some of the lakes also required screens at the connections to the rivers; these screens were also constructed by the project. At the end of the project period, infrastructure was handed over to the LMGs for them to manage and maintain.

Partnerships

The project was implemented by a complex group of partners. There was, of course, the Department of Fisheries (DoF) of the Government of Bangladesh and the Project Implementation Unit (PIU). The other main partners in implementation were DANIDA, which financed and provided the Technical Assistance (TA) Team and the NGO, BRAC, which handled the formation of the groups of fishers and credit. But credit itself was through the Bangladesh Krishi Bank (BKB). Since the lakes were government-owned, they came under the purview of the Ministry of Land (MoL). The subsequent handover of the lakes to the project, involved the district officials of both ministries, i.e. the District Commissioners (DCs) and the District Fisheries Officers (DFOs). At the level of supervision, UNOPS supervised the project.

Finally, of course, there were the groups of fishers, men and women, who were the primary stake-holders and key implementers of the project. At times the various project agencies also had to seek the support of organizations and persons, other than those listed above. This was particularly in cases where local influential persons had to be isolated and removed from membership of the lake fishing groups. School teachers, local leaders of political parties, even MPs, all played a role in supporting (some in obstructing) the project.

Analysis of the Innovation

Strengths

1. The major strength of the innovation was that it gave a definite group of fishers a clear and long-term stake in managing lake fisheries.

Weaknesses

1. A long-term institutional structure for credit supply was not put in place.

2. The NGO involvement was similarly restricted to the project period.
3. The leases required bureaucratic renewal at the end of each 10-year period.

Opportunities

1. Incomes of poor fishers could increase through semi-intensive fish culture.
2. Fishers could learn methods of CPR management and systems of fish culture.

Threats

1. Bureaucratic and political pressure could be used to deny fishers renewals of leases.
2. Poor social mobilization in a number of cases meant that an elite group among the fishers could take a much higher share of fish income.
3. Credit dependence weakened fishers in relation to financiers, who are also fingerling traders.
4. Inability to resolve internal conflicts could lead to the lakes becoming derelict once again.

Assessment of the Innovation

About 7 years after the project closed, the investigating team visited 17 out of 23 lakes in the project. For 15 of these lakes we could get reasonable information on the areas listed below. We present a brief assessment in terms of the impact of the innovation on (1) secure user rights, (2) CPR and management control; (2) condition of the lakes; and (3) impact on incomes and well-being.

User Rights

The leases and licenses remained largely in the hands of those who had secured these rights during the project. There were problems at the time of the renewal of leases at the end of the 10-year period. Attempts were made by non-fisher groups to get the lakes transferred to their names. But the existence of government records showing the leases to the licensed fishers made this virtually impossible. Officials, we were told, did argue that they could not take such decisions to change the members. But, at the same time, the fishers' groups did have to pay some money to get the leases re-confirmed in their rightful names. In one case we found that the fishers' group had to pay Tk.100,000 to renew their lease; but a group that offered Tk.1,000,000 to get the lease changed was not

successful in their effort. In monetary terms this would mean that the fact of user rights meant that they had to pay 90% less than if they did not have such rights.

Along with this, it must be noted that there were changes in numbers of fishers in some lakes. This issue can do with further investigation, but it would seem that the attempt of the project to increase numbers of fishers from the situation of about 1 person per hectare to 2 per hectare was not continued out after the project closed. It is not clear how the names of new persons were dropped. But what is interesting is that there were not bigger problems in this process. This must mean that the scope for various kinds of livelihoods has grown in rural Bangladesh, thus reducing the pressure to enter the fishing group.

CPRs and Management Control

At the same time, there was clearly increased pressure from traders and financiers to try and get a greater share of fish income. In half of the baors, fingerling suppliers sold on credit, which means that they got a price at least 20% higher than that prevailing for cash sales. Along with this interest of 20% for a period of 3 to 4 months, the fingerling suppliers also got substantial management control over the lake. The same fingerling suppliers continued from one year to the next. Which means that because of the financial relationship there was not a free choice of suppliers. All this was done in collusion with a group from among the LMGs, who must have got a bigger share for their role.

What was the implication of loss of management control to a collusive group of leaders and traders? The income of the fishers still remained at around 50% of the total fish income; which is a higher share than the 40% that fishers get in the government-run baors or 25% in other private fisheries. The higher share that LMG fishers continue to get can be attributed to their having legal and well-established user rights over the lakes.

The likely deterioration from loss of management control to virtual or real sub-lease can be seen in two cases. In Bhandardoh the fishers have their names in the lease and license deeds, but the whole operations are managed by a group of financiers. The fishers are virtually labourers who get just 20 to 25% of the income. In Bakra-Ujjalpur the LMG has actually signed a sub-lease to a group of financiers for a period of 4 years. This group will finance and manage all operations, while the fishers will get just 30% of the fish income.

Two points stand out from the above findings. Good management within the group of fishers can keep the group functioning well. Some of these groups have their own fingerling-raising ponds. Some also use part of harvest income to purchase fingerlings. Others are able to access bank credit for this purpose. These groups are able to retain control over management, including finances, of

lake operations. These groups also pay the largest shares of total fishing income, 60% or more, to the member fishers.

The other point is the importance of working capital for the LMGs. The absence of formal credit, whether from NGO or commercial bank, is a critical weakness which enables traders, in collusion with a group from the LMG, to capture management and financial control. A well-managed LMG, with good social mobilization, can prevent this from happening. But this requirement of large amounts of working capital leads to a situation of weakness. This weakness can be taken advantage of by trader-financiers in collusion with a group from the LMG. The result is that the fishers' share of income falls to around 40%, reducing the effect on poverty of ordinary members.

The groups are clearly dynamic. It is possible that the second group of not-so-well managed baors will fall further under the control of traders-financiers and a small group of fishers, and end up in the third group, i.e. with a real or virtual sub-lease. Under certain other conditions, like the setting up of a formal credit system for the LMGs and/or some support from NGOs to facilitate internal democracy, it is also possible that the groups improve and go up to the first category. These are factors that need to be taken account of in designing post-project activities.

Condition of the Lakes

As mentioned earlier, at the beginning of the project all the lakes were in somewhat derelict condition, overgrown with water hyacinth and with low levels of stocking of fish. From our field visit we would summarize the present condition of the lakes as follows:

In all except two of the 17 lakes visited the water condition was good to excellent; and there was no overgrowth of water hyacinth. In Khatura lake there was an intense conflict between groups in two villages. As a result the lake portion and infrastructure (metal screen) near the village whose group had lost power was not in good condition. The lake of Bakra-Ujjalpur, which had just been sub-leased, was also in very poor condition, quite overgrown with water hyacinth.

But in all the other 15 lakes the condition of the water was good. There was also substantial investment of labour and money in maintaining and even improving the infrastructure provided by the project. Screens were being repaired, and guard houses and boats built. One lake (Kaligonga) had invested in a motor-powered boat, both to help in guarding and because the engine was expected to increase aeration (absorption of oxygen) of the water.

The high levels of stocking over the past decade and a half meant that there was no past stock of vegetation, such as there had been earlier. Consequently, fishers pointed out that natural productivity had gone down. This was being

compensated by inputs of feed and fertilizer. In 8 out of 13 lakes where we got information on this question, the LMGs were adding external inputs of feed and fertilizer. Thus, as a result of a fall in natural productivity there was a move from semi-intensive to intensive fish culture. With a greater expenditure on inputs it is likely that margins had gone down, even if productivity had not.

The increase in intensity was also reflected in the widespread use of the multiple stocking and multiple harvest system. At the time of project completion (1997), this was being done only in one lake (Marufdia). But at the time of this field visit (March 2004) virtually all the lakes were carrying out this system.

Income and well-being

Income was shared at the time of harvesting and then again at the end of the year, from any outstanding net balance. On fishing days the fishers got 50% of the day's income and then an extra of about 10% of total income at the end of the year. This would give about 60% of total fish income being distributed among the fishers.

In March 2004, we found the following situation prevailing:

Table 1: Summary Condition of Lake Groups

Group No.	User rights	CPR condition	Income share	Income per fisher	No. of lakes
1	Secure	Good	At least 60%	Tk.13,000 to 30,000	8
2	Secure	Okay	Around 50%	Tk.10,000 to 12,000	3
3	Secure	Management in hands of traders	50%	Tk.12,000 to 15,000	2
4	Sub-leased	Non-existent	30%	Tk.2,000 to 5,000	2

Average annual income of fishers ranged from Tk. 10,000 to Tk. 30,000 per person in lakes in group 1, 2 and 3; with very low figures of Tk.3,000 and Tk.5,000 in the two lakes in group 3.

The difference between Groups 1 and 2 is that of better or not-so-good CPR management. This difference shows up not only in a higher share, 60% versus 50%, but also in a higher average income. In Group 1 there were high per capita incomes clustered around Tk.16,000. The one lake in Group 1 which had an income of Tk.13,000 per fisher, Nasti, had just recovered from a period of

internal conflict-cum-flooding and that temporarily reduced its income from its earlier higher figures of around Tk. 20,000 per head.

In 11 lakes of Group 1 and 2 for which we got information on house improvements, virtually all fishers had 'tin roof'; while from 5% to 60% had built 'pucca' (brick and mortar) houses. What this shows is that while there was an all-round improvement, there were also some who benefited more than the others. These would be the various groups of leaders, who also are likely to have built access to other sources of income. They are also likely to have benefited from their becoming significant in local politics. The LMGs were both substantial blocks of voters and also major economic enterprises in the localities.

Leveraging income from / membership of LMGs

Along with the direct income from fishing, the fishers had on a large scale been able to take land on mortgage. The percentages of those taking land on mortgage ranged from a low of 30% to a high of 100% in the lakes in Groups 1, 2 and 3. In as many as 5 out of 12 baors, all the fishers had either purchased or taken land on mortgage.

In the four best managed baors in Group 1, the commercial bank, BKB, had started a scheme to provide loans to fishers. They were given loans of, about Tk,10,000 each, of which Tk.2,000 was kept by the group for fishery related expenses while Tk.8,000 was individually spent by the fishers. The repayment of loans was made out of fish income. This involvement of a commercial bank shows that the fishers had become a credit worthy group. They could leverage their membership of the LMGs to secure credit from the commercial bank.

Further, as they pointed out, since they were earning cash during the fishing season they did not have to sell their rice outputs immediately after the harvest, but could hold on and sell the rice when prices go up.

THE ROLE OF IFAD

The innovation through its process

1. Recognition of a need, of an opportunity for innovation

The oxbow lakes (baors) of South-western Bangladesh were lying in a state of neglect, generally overgrown with water hyacinth and with very low productivity. At the same time the traditional fishermen who depended on fishing from these and other waters were clearly poor. Ways were needed to solve the two problems of increasing fish production from the lakes and eliminating or reducing the poverty of the fishers.

2. Scouting and selecting a promising innovative solution from a range of options

The range of options included: (1) leases by auction; (2) state management; (3) community management; and (4) management by a group of the poor.

Leases did exist in Bangladesh. But they were for short periods of just one year, at times for 3 years. Both of these types of leases did not provide an incentive to undertake investments in needed infrastructure development. Further, the losses due to poaching by the poor living around the lakes, increased the costs of and thus reduced the incentives to undertake full capacity seasonal stocking.

The next option was that of state management. From the late 80s onwards there has been a recognition of various problems with state management of natural resources. The weaknesses of state management – ‘soft budget’ constraints leading to enterprise losses, incentive problems for forest dwellers and fishers often leading to actions that defeat the conservation of natural resources, the necessity of using local knowledge of the users, etc. all forced attention on alternatives to state management. Various schemes of co-management (state and community management) or simple community management have come up for consideration – the Joint Forest Management (JFM) programmes in India, Community Forest Management (CFM) in Nepal and so on; fisheries co-management systems in fisheries in various Asian countries.

But along with the moves to decentralize forest and fisheries management there has been the concern that decentralization would lead to a strengthening of the position of local elites and the capture of a major portion of the benefits of decentralization by these local elites.

It was in this context that IFAD designed two projects that sought to decentralize resource management in a manner that empowered the poor – the OLSSFP, Bangladesh, and the Nepal Hills Leasehold Forestry Project. Both of these projects attempted to provide secure user rights over natural resources (lakes and forests) to definite groups of the poor.

3. Testing innovation performance and impact

There was no formal testing of the innovation. What did happen is that lakes did not come into the project all at the same time. Consequently, lessons from the first few lakes were used in formulating approaches that were generalized. In particular, the criteria for membership of the fishers’ groups (being below the poverty line, participating in fishing for at least 80% of the time and equal share in

expenses and income) were formulated after the project had been in existence for a few years.

The various CPR management systems were also formulated after some experience. The rules regarding tender for stocking, time and place of stocking, rules for sale of harvested fish, guarding, the right of ordinary members to monitor all activities, the restriction on standing for election in consecutive years, and so on – all these rules and methods were formulated after observing and analyzing the experiences of the LMGs. At a technical level too the guidelines on stocking composition, side, harvesting, etc. were formulated after a couple of years' experience.

4. Modification and improvement as a result of test results

As mentioned above, many of the rules and systems were formulated after a couple of years of observing the manner in which LMGs went about their functions.

What is noteworthy is that fishers innovated on their own. As managers of the lake with fishing rights they obviously took a keen interest in the condition of the fish and lake. It was the fishers of Marufdia who on their own started the multiple stocking and harvesting method, harvesting not the recommended more than 1 kg size, but smaller table size of about 0.5 kg. This was a size that was easier to sell, and also enabled the LMG to use more fully the biological carrying capacity of the lake. After the closure of the project, this method of multiple stocking and harvesting of smaller-sized fish has been taken up more generally in all project lakes. And the approach has even become a standard part of lake fisheries' management in the region.

5. Extraction and sharing of lessons learned from innovations

At the end of the project, the various project partners together wrote papers analyzing various aspects of project experience and impact. These were presented in a workshop organized along with ICLARM and the Ford Foundation. The workshop papers have been distributed widely.

6. Arranging for replication or upscaling of the innovation by users, with support from various agencies

It was hoped that the experience of the project would lead to the formulation of a similar national policy for such lakes and similar water bodies. The lessons were disseminated in the above-mentioned and other workshops. They were studied by ICLARM and published in a volume on community management of fisheries.

But, it must be said, that there has not been the hoped-for upscaling of the lessons of the project. The same approach has been taken up in IFAD's ongoing Aquaculture Development Project (AqDP). In this case, however, the lease period has been reduced from 50 to 20 years. In the various Community Based Fisheries Management (CBFM) the lease periods are even shorter.

One might say that the very success of the project in showing that a high level of income could be earned by awarding secure user rights to groups of the poor, has worked against its targeted replication. There are many private interests that would like to get these or other lakes on longer lease. Officials too would be interested in keeping lakes under government management, so that they can earn private incomes. All of this has made it difficult to overcome the opposition to generalizing the innovation.

Ponds for Poor Women

Historical and Institutional Background

In Bangladesh, despite the prevalence of Hanafi Islamic Law, which grants women land rights equal to 50% that of men, in practice, women do not have direct access to productive resources, like ponds or land. The position of single women (widowed or divorced) is particularly bad and they have to live at the mercy of male relatives. Distribution programmes of government-owned land or similar productive resources have not considered women as recipients.

The project AR too did not have any provision for giving pond user rights to poor women. The construction of ponds at the ends of the lakes was taken up after the MTR. Initially these ponds were to be given to the LMGs for them to raise fingerlings. But given the well-developed market for fingerlings and the desirability of increasing the numbers of persons benefiting from the project investments, it was proposed that the ponds be given to groups of poor women. Some of the ponds had already been given to the LMGs, but in those cases where this had not happened, they were given to groups of poor women organized in Pond Farming Groups (PFGs).

The members of the PFGs had the same user rights as the LMGs. They were given documents stating their right to use the ponds for culturing fish, on the condition of paying the annual lease fee.

Securing User Rights of Poor Women

Poor women are socially weaker than poor men. Since the project gave priority to single women (widowed or divorced) that made the groups of women even weaker. Further, in the Project poor men were organized in somewhat larger numbers (from 50 to 250) than women (15 to 50). All this meant that it was more difficult to secure the user rights of poor women in the ponds.

We were able to collect information on the situation in ponds in 9 lakes (10 villages). In one case (Porapara) the men of the LMG had taken over the ponds, with the support of the local administration, and were using it to raise fingerlings. But the women had not given up their claim, and had gone to court for restitution of their rights.

In another case, Nasti baor, the ponds at village Ujjalpur were forcibly taken over by youth of the ruling party after the last general election. But these youth were not able to get the list of those with user rights changed. The ponds still remain in the names of the women. They have been supporters of the earlier ruling party and are expecting that when the political situation changes, they would once again get back the ponds.

In three cases (Bukhbara, Khedarpara and Padmarajpur village of Nasti) the women had sub-leased the ponds to men. For this sub-lease they got Tk. 1,000 each, which in a sense is the income from their user right. The women continue to pay the lease fee and ensure that the ponds remain in their name. But they were not able to withstand local pressure of the men and thus gave these ponds out on sub-lease.

In the remaining 5 cases, women retained their user rights, remained in possession and continued to culture fish in the ponds.

Table 2: Summary of Pond Farming Groups' (PFGs) Condition

S.No.	Status of pond groups	No. of villages	Income/fisher
1	Women retain and operate ponds	5	Tk.3000 to Tk.10,000
2	Women retain but sub-lease ponds	3	Tk.1,000
3	Women lose possession but continue to struggle	2	-

Income and Well-Being

Their income ranged from T. 3,000 per woman (Koikhali) to Tk. 10,000 (Kayetpara). They financed fingerling purchase both from their own savings. Some of the groups got some BRAC credit. It is interesting to note that while BRAC withdrew from financing the LMGs after project closure, they have continued to finance the women's PFGs till now. The lake groups are really small to medium enterprises and their credit needs and strength as a group do not fit in well with the micro-credit system. The women's PFGs, on the other hand, fit in much better in the micro-credit system and BRAC is clearly comfortable in carrying on this activity.

The women reported substantial changes in household and personal well-being. Houses had been improved with tin roofs and all had acquired a number of animals (cattle and goats) with fish income. In Saster the women had not improved their roofs, but mentioned that they were saving money to be able to put up a pucca (brick and mortar) house. At Kayetpara, with annual income of about Tk.10,000 per capita, fully 50% of the women had been able to build such brick houses. Many had taken land on lease and started other economic ventures, like small shops. The pond embankments were used to grow vegetables and this provided a substantial additional income, at times even more from that in fish cultivation.

Women also mentioned (Nathan and Apu, 1998) that there was an improvement in their status both within the household and in society. They were regarded as “owners of ponds” and not merely assetless women, as they were before the project. They also said that there were now fewer quarrels within the household and that family life was more harmonious, which is a way of saying that there was less violence at home.

The women controlled all the activities of stocking, feeding, and sale of fish. Guarding was usually done by men from their families. In some cases there was no payment for this. In one case (Koikhali) the husbands were paid for guarding. Initially this was a fixed amount. But the women realized that through this the men got a very large share of the net income. They then changed the remuneration to a share, 20% of net income. Their ability to change the system of remunerating their husbands for guarding the lakes shows that women controlled the financial and other management of the ponds.

Pond Condition and Infrastructure

As is to be expected, the pond condition was uniformly good. What was impressive was the substantial investments made by women in improving productivity. Guard sheds were constructed. In Saster, where the embankments were of rather slushy soil and tended to slide down, the women every year invested time in rebuilding the embankments.

Analysis of the Innovation

Strengths

1. In a country where women rarely have direct (i.e. not through their relationship to a man) access to productive resources, it gave poor women direct access to productive resources.
2. This gave women a strong incentive to struggle to retain their user rights.

Weaknesses

1. Poor support from NGOs and other civil society organizations in establishing their user rights.
2. Poor support, even opposition, from the groups of fishermen organized by the project.

Opportunities

1. Assured additional income from fish culture and vegetable cultivation.

2. Improvement in household and social status of women.

Threats

1. Politically-based eviction of women.
2. Organized groups of fishermen take over ponds.

Conclusion

The OLSSFP attempted a two-sided intervention: one, decentralization of resource use through secure, long-term tenure (50 years) to improve investment and income from lake/pond fisheries; and, two, the establishment of CPR systems in order to increase the benefits flowing to poor fishers (men in the lakes and women in the ponds).

Overall, the condition more than 7 years after project completion is positive. Both the lakes and ponds have become and remain resources with substantially improved productivity compared to the pre-project stage. There are high levels of stocking and income, the water condition is good in almost all cases. Infrastructure provided by the project has not just been maintained, it has even been improved.

The share of income earned by fishers in the lakes is high at 60% to 70% of total income in 8 out of 15 lakes studied, and 40% to 50% in another 3 lakes. Per fisher income per year ranges from Tk.13,000 to Tk.30,000 (USD 210 to 520). With a hundred days of fishing per year, this gives a daily income of about Tk130 to Tk.300, as against the peak agricultural wage rate of about Tk.80 per day. Only in 2 out of the 15 lakes is fishers' share of income low at 20% to 30%.

The above shares of income from 50% to 70% earned by fishers of OLSSFP should be compared with the 25% fishers usually earn, and that too with much lower levels of fish stocking, in lakes with short-term leases. And the 40% that fishers get in the government-managed lakes. These government-managed lakes, in the usual expected manner, face the additional problem of formal, book losses that have to be made up by subsidies from the exchequer; and are thus not sustainable.

The best-managed LMGs, on top of the direct income from aquaculture, are able to leverage their user rights in the lakes to secure credit from the commercial banks. They have become bankable in the commercial bank system – this is an important indicator of success. Most have improved their house condition and either purchased or taken agricultural lands on lease. All of these additional improvements are linked to the regular income from lake fishing.

In the ponds, the women earn an income of Tk.3,000 to Tk.10,000 (USD 53 to 175) per capita per year. This income is earned with less than 20 days of labour, which gives a daily per capita income of Tk.150 to Tk.500. In addition there is the income from vegetables grown on the pond embankments.

Most of these women have improved their house condition, purchased livestock and taken land on lease. There have been substantial benefits to women in terms of improved consumption of clothes for themselves. Their acquisition of legal user rights to the ponds has improved their status both in the household and in society.

Thus, overall, there has been a sustained improvement both in the productivity of the lakes and ponds and in the income earned by fishers, men and women.

We end this concluding section with a brief discussion of the challenges faced by the project interventions.

With regard to decentralization of resource in the case of the lakes, the threat of formal or political displacement of the group of fishers did not materialize. For the lake groups (LMGs) the main problem/threat came from the dependence on financiers for their large credit needs combined with poor social mobilization. This dual condition has resulted in weakening the CPR systems and thus the share of income accruing to the fishers.

With regard to the decentralization of ponds to women, there was just the opposite of the above. With regard to internal cohesion there was not much of a problem among the women's groups. There was no instance of a group falling apart due to internal conflict. But they faced threats of take-over from outside men, either the relatively powerful LMGs, politically-backed groups of youth, or other such local groups.

It is likely that size of the groups, large in the case of the LMGs (50 to 200 men) and small in the case of pond groups (5 to 8 women) contributed to the above outcomes. First, the large size of the LMGs meant that it was not easy to displace them from formal user rights. Second, the same large size of the LMGs also meant that CPR systems were difficult to put in place and were weaker.

The small size of the pond groups, and that too of socially weak poor women, meant that they could be threatened and displaced from access to the ponds. At the same time, where the groups were successful in retaining the ponds, the small size again meant that CPR systems functioned better and there was not a take-over by a small group within the pond groups.

Why does group size affect the functioning of a CPR? As pointed out by Olson, collective action is easier in a small group – the members can monitor and check the actions of each other more easily in a small group than in a large group. The

problem of size becomes compounded when the groups are in different villages, as is often the case with the lake groups. The pond groups, on the other hand, all live as neighbours, even relatives, in a small area. They can easily monitor each other. These factors make CPR functioning easier in the small-sized women's pond groups than in the large-sized men's lake groups.

Annex: Detailed Tables of LMG and PFG Performance

Table 3: Performance of Lake Management Groups (LMGs) of OLSSFP

Group	S. No.	Lake	Average annual income (Tk.)	Fishers' share of total (%)	Source of operating capital	Guarding of lake	Fish sale system	Election of LMG	Tin roof	Pucca (brick-mortar) house	Land purchase/ mortgage	Social conflict	Use of Feed	Lake physical condition
1	1	Marufdia	20,000	60	Fixed supplier	Self	Lake site	Regular	100%	16%	100%	No	Yes	Excellent
	2	Nasti	13,000	60%	BKB	Self	Lake site	Regular	50%	20%	30%	Low-internal	Yes	Excellent
	3	Saster	17,000	60%	BKB	Self	Lake site	Regular	70%	-	50%	No	Yes	Excellent
	4	Porapara	16,000	60%	BKB	Self	Lake site	Regular	40%	60%	50%	No	Yes	Excellent
	5	Benipur	18,000	60%	Own savings + supplier	Self	Lake site	Regular	100%	8%	100%	No	Yes	Excellent
	6	Konnadha	30,000	60%	Own + fixed fish wholesaler	Self	Whole sale market and lake	Regular	100%	-	100%	No	No	Good
	7	Saganna	18,000	70%	Own	Self	Lake site	Regular	70%	5%	90%	High-external	Yes	Excellent
	8	Kaligonga	16,000	60%	Own	Self	Whole sale market	Regular	-	100%	100%	No	Yes	Excellent
2	9	Bukhbara	12,000	50%	Fixed supplier	Hired	Whole sale market	Not regular	-	-	-	High - external	-	Good
	10	Khatura	12,000	50%	Fixed supplier	Self + hired	Lake site	Not regular	100%	5%	80%	High - internal	No	Poor (in part)
	11	Hariharnagar	10,000	50%	Fixed supplier	Hired	Lake site	Regular	85%	20%	30%	High - internal	Yes	Excellent

3	12	Khedarpara	12,000	40%	Fixed supplier	Hired	Lake site	No election	100%	15%	100%	High - external	No	Good
	13	Kayetpara	15,000	40%	Fixed supplier	Hired	Whole sale market	No election	75%	25%	55%	High - external	No	Excellent
4	14	Bakra-Ujjalpur	2,000	30%	Sub-leaseholder	Hired	Whole sale market	No election	-	-	-	High - external	No	Very poor
	15	Bhandaraha	5,000	20%	Own + moneylender	Hired	Whole sale market + lake site	Not regular	-	-	-	High - internal	No	Good

Table 4: Performance of Women’s Pond Farming Groups (PFGs) of OLSSFP

Group 1: Retain User Rights and Manage Ponds

S. No.	Lake/ Village	Annual income fish (TK.)	Annual income vegetable (TK.)	Source of operating capital	Guarding of ponds	Fish sale system	Election of committee	Tin roof	Pucca house	Land purchase / mortgage	Social conflict	Use of feed	Pond’s physical condition
1.	Kayetpara	10,000	-	Own savings	Women and men	Wholesale market	Regular	-	50%		High - external	Yes	Excellent
2.	Saster	6,000	3,000	Own savings	Women and men	Wholesale market	Regular	100%	Saving for pucca house	-	No	Yes	Excellent. Annual labour to repair embankments
3.	Hamidpur	4,000	3,000	Own savings	Women and men	Wholesale market	Regular	100%	-	100%	No	Yes	Excellent
4.	Koikhali	3,000	-	Own savings	Men	Wholesale market	Regular	100%	-	15%	No	Yes	Excellent

5. Bhandardah Women are operating one pond. Income is quite good, which was not disclosed to us in presence of some LMG members, with whom there has been a serious conflict over control of the ponds.

Group 2: Retain User Rights but Sub-Leased Ponds

6. Khedarpara Out of 5 ponds, 2 were under private owner as per decision of court that this was private land. The 3 other ponds have been leased out to local villagers for Tk. 1,000/member/ year. The women retain the user right documents and pay the lease for these ponds.

7. Nasti Padmarajpur ponds have been leased to villagers. Women retain user right documents and pay lease.

8. Bukhbara Leased out to villagers. Women have been earning Tk.1,000/person/year as lease. Pond user right documents remain with women.

Group 3: Lost Control but Continue Struggle

9. Porapara LMG has taken over women’s ponds with the support of the local administration. Women have gone to court to seek return of the ponds.

10. Nasti The Ujjalpur ponds have been taken over by youth of the ruling party.

