

SECURING ACCESS TO WATER BODIES

CARE RURAL LIVELIHOODS PROGRAMME

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Working paper

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LIST OF ACRONYMS

BDT	Bangladesh Taka (USD 1 ≈ BDT 60 at time of publication)
BNP	Bangladesh National Party
BRDB	Bangladesh Rural Development Board
BZ	<i>Bilani Zamin</i>
CO	Community Organiser
DNKSS	Daksin Nayabad Krishok Samobay Samity
DTW	Deep Tubewell
FFS	Farmer Field School
FT	Field Trainer
GO-IF	Greater Opportunities for Integrated Rice-Fish Culture
HYV	High Yielding Variety
ICLAM	World Fish Centre
IP	Influential Person
NBJUS	Nayabad Bekar Jubo Unnayan Samity
PC	Project Co-ordinator
PM	Project Manager
PNGO	Partner NGO
PRA	Participatory Rural Appraisal
RLP	Rural Livelihoods Programme
STW	Shallow Tubewell
TNO	Thana Officer
TO	Technical Officer
UP	Union Parishad
YDD	Youth Development Department

GLOSSARY

<i>amon, t.amon</i>	main monsoon rice crop
<i>b.amon</i>	early monsoon rice crop
<i>bana</i>	shelter constructed from branches to attract fish
<i>beel</i>	seasonally inundated water body
<i>bilani zamin</i>	seasonally inundated water body where cultivation takes place
<i>boro</i>	main irrigated rice crop
<i>chai</i>	bamboo fence built to prevent fish from leaving water body
<i>choka</i>	small deep depression in <i>bilani zamin</i>
<i>ghoto</i>	see <i>choka</i>
<i>gushti</i>	patrilineage
<i>jamaat</i>	congregation of single mosque
<i>kacca</i>	rough, unsurfaced
<i>khas</i>	government
<i>kua</i>	see <i>choka</i>
<i>madrassa</i>	religious educational institution
<i>maund</i>	approximately 40 kilograms
<i>nirbahi officer</i>	leading government official at Upazilla
<i>para</i>	hamlet, cluster of houses
<i>piker</i>	fish trader
<i>pukka</i>	surfaced
<i>samity</i>	society
<i>Santal</i>	group of indigenous people
<i>shalish</i>	local informal court
<i>shaliskar</i>	dispute adjudicator
<i>thana</i>	sub-district level of local government
<i>union</i>	local government unit comprising several villages
<i>Union Parishad</i>	locally elected body
<i>upazilla</i>	see <i>thana</i>
<i>ward</i>	sub-division of union from which individual parishad members are elected

SUMMARY

1. INTRODUCTION

Poor men and women, with whom CARE's Rural Livelihoods Programme (RLP) would most like to work, have generally lacked access to the land and water resources required to effectively utilise the technologies that RLP has been promoting. Over the last three years, field staff have sought to address this problem by involving target group members in the management of seasonally inundated *bilani zamin* (BZ) and smaller, permanently inundated, *khas* ponds.

This paper provides case studies of one large and one smaller BZ and one *khas* pond initiative, and represents the first consolidated review of what has been accomplished. In each instance, an attempt is made to understand relevant aspects of the context; to re-construct the nature of the intervention; to identify its impacts for different groups of people; to assess the sustainability of any positive impacts and to explore how any negative impacts might be addressed.

The research was led by the social development team but also involved several staff from other parts of RLP and partner organisations. Approximately five days was devoted to each individual study. A range of PRA and other methods were used, and although these proved broadly satisfactory, some difficulties were encountered. Research was also affected by a number of other constraints and care should be exercised in interpreting the conclusions presented.

2. THE LARGE BILANI ZAMIN

2.1 The Setting

The large BZ was the better documented and understood of the two BZ cases, and was investigated more intensively. It is located within the Vulli floodplain, a few miles to the north of the Thakurgaon district headquarters, and is about 200 acres in area. Water flows in seasonally from the north and exits from the south. Some parts are inundated for only 1-2 months each year and others for 4-5. There are also some smaller more deeply flooded pockets (*ghoto*) where any fish remaining at the end of the monsoon retreat as the waters recede.

The land is all privately owned, but prior to the intervention, anybody was entitled to fish throughout the period of inundation, with a few professionals operating alongside a much larger number of primarily subsistence fishers. The low lying *ghotos* would then be harvested, under an arrangement between the individual owners and a small number of professional fishers, as the waters receded. It is very difficult to arrive at an accurate picture of the numbers engaging in fishing in the BZ prior to the co-op CARE helped to establish, and even harder to determine how much each household caught during the season. The position with regard to the catch made from *ghoto* at the end of the season is, on the other hand, relatively easy to re-construct. With the exception of cooking and some processing, all activities relating to fishing were heavily male dominated.

Almost the entire area falls under irrigated High Yielding Variety (HYV) cultivation in the *boro* season with *b.amon* or *t.amon* being grown in the monsoon. The intensification of agricultural activity and various developments in the local infrastructure have led, in recent years, to the elimination of certain species of fish from the BZ and a reduction in the overall catch.

A large number of local communities have a continuing interest in the BZ. The cultivated land area falls mainly under the ownership of the immediately adjoining communities of Haji *para* (which controls about 50%), Hindu *para* (15%), Vatia *para* (15%), and Wahid Ali *para* (10%). The local picture is completed by the three adjoining *para* of Jalpaitala, Mohun and Molani, which are home to a low status indigenous Santal community.

The various *para* differ significantly in size, power and wealth. With the exception of the cluster of Santal communities to the south and Hindu *para* in the south-west, all are at least predominantly Muslim in composition, and all of the Muslim communities are long established apart from Vatia *para*. Some members of all classes and religious-cum-ethnic groups were involved in fishing prior to the intervention. Those not taking part were slightly more likely to be concentrated in the poorest landless category, but the relative significance of fishing to the nutrition and income of participating households here would have been greater than for other groups.

A small number of individuals, nearly all of whom control relatively large areas of land, dominate the communities immediately surrounding the BZ. The bonds and conflicts defining relations between these influential people provide an important backdrop to the events surrounding the development of the co-op and are ultimately likely to have a critical bearing upon its sustainability. Three overlapping sets of factors – kinship, religious/*jamaat* affiliation and more fluid political alliances - all have a part to play here.

2.2 The Intervention

CARE arrived in the area in 2000, and in 2001 male and female Farmer Field Schools (FFSs) were established in the Jalpaitala Santal community. Instruction in rice-fish and vegetable-based production, of the type the organisation had been promoting over the previous decade, then began, and a range of further activities were launched under the new Rights-Based Approach. In addition, members were consulted as to whether there was anything else that they would like to pursue, and it was out of these exchanges that the idea arose of converting the BZ from an open access regime into a co-operatively managed common property resource. This would entail the construction of fences to stop fish escaping from the area; the introduction of new species alongside the indigenous fish that were already present; banning virtually all general fishing from the water body during the period of inundation; harvesting only from the *ghotos* at the end of the season; and distributing the proceeds between all households who had purchased a share.

FFS school members began by seeking the support of leading individuals from surrounding *para*, with CARE staff helping to win over key members of this group by offering them advice about the management of their crops and domestic ponds. With further support from CARE, these leaders then helped to convince other major land owners. With their agreement secured, a co-op was finally launched in March 2002. A total of 132 people, drawn from all of the main *para* around the water body, decided to join and various committees were duly elected. It was agreed that each participant should contribute BDT 200 to meet the expenses, but a handful of the poorest Santal households were exempted in return for an undertaking to provide guarding and other services.

The first step was to make certain essential repairs and improvements in the structure of the water body and to build guard sheds. Leases were then negotiated with the *ghoto* owners and contact was initiated with fish seed suppliers. Using its own resources and following CARE's recommendation, the co-op introduced two

exotic species – silver and common carp - together with four indigenous species that had largely or entirely disappeared from the BZ. A little later a CARE Technical Officer was also able to arrange for additional seed to be donated to the co-op by the Department of Fisheries stocking programme.

As noted above, under the new regime, virtually all fishing was supposed to stop during the monsoon, but the people of Vatia *para*, a relatively poor community immediately adjoining the more deeply inundated and productive area to the east of the water body, refused to accept the new restrictions. Matters came to a head when a group from this *para*, most of whom were not co-op members, used illegal nets to catch a substantial quantity of fish. This came to the attention of co-operative members in other *para*, who called a *shalish* that determined that the nets of all of those involved should be destroyed.

Other parties from inside the co-op also broke the rules, but were able, by virtue of their more powerful positions or connections, to escape punishment. The transgressors included committee members and their immediate kin, and the *ghoto* owners themselves, although to some degree the fish appropriated might be regarded as informal payment for services rendered. In the absence of a well organised and reliable system of record keeping, the extent of these informal extractions and their relative legitimacy could not, however, be determined.

The best estimate that can be produced on the basis of the poor quality of data available is that fish worth BDT 164,000 has been caught over the entire season, an increase of BDT 98,000 over the assumed previous catch, and equivalent to some 3.7% of the gross value of crops produced from the same land. Some 62.4% of this finds its way into co-op funds, with the remainder dividing between payments to *ghoto* owners (13.5%) and various more or less legitimate diversions into private pockets (22.1%). When costs of some BDT 55,000 are deducted, this leaves a profit of BDT 308 per share after guards had been paid – a figure a little lower than the value of the assumed average catch in the pre-co-op period. 56% of the recorded catch comes from the introduced seed, by far the greater part of which is contributed by three exotic species. When output figures are compared with seed input, it is clear that all other species perform poorly, suggesting that the question of species mix requires further investigation.

2.3 Impact

The most obvious winners are 15 large land owners, who are believed to have increased their crop yields by 10-15% through technical advice from the Field Trainers (FTs), and 10 pond owners, whose returns are believed to have risen by an average of 30% for the same reason. The *ghoto* owners, most of whom are at least moderately wealthy, are also likely to be substantially better off. Non-elite co-op members, who account for the majority of the 132 households who have joined, will mainly have benefited on a more modest scale, although the small minority who fished relatively extensively before may actually be at least a little worse off in purely material terms. Among the poorer and less influential, the Santals have gained the most. All continuing present and future users of the BZ will benefit from the increased diversity of fish species, the conservation of naturally occurring fish species, the reduction in cultivation costs, and the improvement in soil fertility and yields arising as a consequence of the new technology that have been introduced. In addition, poor people are now more able to participate in community fora, and animosity between previously competing factions may have been reduced somewhat. The main losers are former fishers who have not joined the co-operative. For reasons discussed earlier, their precise numbers are difficult to determine,

varying according to different estimates from as few as 50 to as many as 90 households, and including between 4 and 11 households who fished on a regular and commercial basis.

The implications for CARE staff should also be considered. The main responsibility has fallen upon the FTs, who have clearly benefited in a number of ways: gaining experience in facilitation and negotiation on a much wider stage; and building skills that were not required when work was confined simply to working with FFS. Their activities have made them much better known in the area and their profile has been further strengthened by media exposure. All of this has helped to build acceptance and a platform upon which future activities can more readily be built. Other project staff, who have been more marginally involved, have gained similarly by building a better understanding of local social and political relationships, and forming closer relations with the local administration. The demand for CARE services as a whole in the area has grown. On the negative side, the burden on FTs has grown, with the new responsibilities that have been taken on not being compensated by any officially sanctioned reduction in other work.

In conclusion, it is important to consider how sustainable outcomes might be. At this relatively early stage it is only possible to speculate, but a number of important indications are already available. One advance that seems very likely to be sustained is the shift to lower input, lower cost and higher output agriculture in the BZ area. The more direct financial returns from fishing that have been achieved are fairly modest, both in relation to the investments of time and money expended, and to the other main use of the same land for paddy cultivation. Unless productivity can be substantially increased it might in future be difficult for people to continue to find the motivation to keep a quite complicated institution running when CARE is no longer present. This is particularly likely to be the case under circumstances where different factions with a previous history of conflict are present, and where there have in the past also been a number of conflicts on a smaller scale between members of the same factions. Similarly, the presence of the FT has so far helped the Santals to gain a foothold in the management of the BZ and in local society more generally, but whether these positions could be maintained in the absence of FT support is at least open to question.

3. THE MEDIUM SIZED BILANI ZAMIN

The second and smaller of the two BZ was less well documented prior to our own work and has a longer and more complex history. Ultimately it does not add very much by way of understanding of the issues arising from the story of the first water body. The account presented here is therefore much briefer, and attempts only to highlight the main differences that distinguish it from the other case.

3.1 Before the intervention

The BZ is only 30 acres in size. The hydrology and associated fish movements have again been influenced by road construction and other infrastructural developments, and a similar pattern of changes in species composition in the pre co-op catch has been noted. For the time being, however, the water body remains much deeper than its larger counterpart, with some sections being inundated for almost the entire year. Cultivation, as a result, is much less intensive and the relative importance of fishing *vis-à-vis* agricultural land uses somewhat greater. Power relations are more polarised than in the large BZ and there are no leading actors who are able to mediate effectively when disputes arise between the main factions.

Attempts at co-operative management began one year before CARE's involvement, when 45 households participated. A rather different set of institutional arrangements, which reflected the longer period of inundation, were devised here. Members were drawn from both major local factions. For reasons we have not been able to probe into very far, but which may well be related to factional tensions, this initiative was not very successful.

3.2 The intervention

As in the previous case, CARE's intervention again came via its prior involvement in a FFS that began in 2001. One of the members owned a significant area under the BZ, and had joined the co-operative, and it was largely at his instigation that the CARE staff agreed to get involved.

A reformed co-op was duly established. This included a few FFS members, all of whom owned land under the BZ, together with a handful of significant local actors who owned no BZ land themselves. The process was completed much more quickly than in the earlier case. Rather than all members receiving equal shares, certain households who were in a position to do so purchased larger numbers. Infrastructure was again improved and attempts again made to procure fish seed. These attempts, however, broke down, and at this point one leading individual stepped in and provided all the seed himself, in return receiving 80 shares. The outcome was quite successful, with a return of BDT 340 for each BDT 100 invested. However, some difficulties arose, with individuals from the minority faction, some of whom had not joined the co-operative, continuing to fish.

The co-op duly reformed at the start of the second year, but continuing disagreements now made the arrangement impossible to sustain. It was therefore decided to lease the entire area out to an individual from an outside community. The returns were relatively good and in the most recent season, nine former members, who include only one FFS representative, have decided to re-activate the co-op. All are drawn from the large, medium and small farmer classes.

Whilst precise details are not available, it would appear that this group of nine, together with the other BZ land owners, are the main winners. The most any poor person will have gained is some employment as a guard. Whilst a complete ban in fishing during the monsoon has not been imposed, the main losers are again clearly those who fished before. Numbers could not be obtained, but this group would clearly have included some poor people. The initiative may prove to be sustainable in its present form, but those who CARE seeks to target are no better off, and some may actually have lost.

4. THE KHAS POND

The final case study concerns a *khas* pond that falls under Kahoral *thana* in Dinajpur district. It lies some three miles to the east of the Upazilla in Ramchandrapur Union near the Dhapa river, and is about five acres in area. The immediate area is predominantly Hindu, but forms part of a Union with a sizeable Muslim presence.

4.1 Earlier developments

There has been a pond on the present site since colonial times. Originally, this was a simple naturally occurring depression that was replenished each year by the rising floodwater. Indigenous fish entered with the floods, and could then be caught by anybody under an open access regime. But in 1971, the Fisheries Department

assumed control of all *khas* water bodies, and the pond was then leased out to individuals under a system administered by a committee with representatives from the Union Parishad and the Upazilla. This arrangement continued up until 1981, when a local school teacher held the lease.

During 1981, direct responsibility for *khas* ponds passed on to the Bangladesh Rural Development Board (BRDB). Under the new regime, embankments were constructed for the first time. These kept out the floodwaters whilst retaining a substantial volume of water throughout the year, and the capture of naturally occurring indigenous species now gave way to managed aquaculture, with introduced fish seed. At the same time, the practice of leasing to individuals was abandoned in favour of a co-operative system. In response, the teacher organised a co-op - the Dakshin Nayabard Krishok Samobay Samity (DNKSS) – which was mainly made up of moderately prosperous households from his own lineage and surrounding *para*. This co-op tendered successfully for the lease and was then able to retain it for nearly two decades.

In 1995, overall administrative control of *khas* ponds switched again, this time to the Youth Development Department (YDD), with direct decisions about the awarding of leases now being vested in an Upazilla-level Committee. YDD had been created to help young people from poorer households, and DNKSS clearly did not meet these criteria. It was therefore only with considerable difficulty, and after paying a substantial bribe, that the school teacher and his associates were able to renew the lease when it next expired. This weakened the *samity*, and its financial position was never subsequently as viable as had previously been the case.

While this was going on, in 1998 another co-operative was established nearby, under YDD auspices. This took the name of Nayabard Bekar Jubo Unnayan Samiti (NBJUS) and had 42 members drawn from several *para*. Most came from the poorer households targeted by YDD, but as is normally the way, a nucleus of wealthier and more powerful actors were also recruited. The initial focus was on training, and as this drew to a close, possible activities started to be reviewed. Members were aware that *khas* resources were supposed to be administered on behalf of the poor and decided to tender for the pond. Drawing on a YDD loan and additional resources raised by members themselves, they were able to outbid the financially weakened DNKSS and eventually secured the lease for BDT 155,000. The teacher was furious and attempted to sabotage operations by pumping out water from the pond, taking the fish and uprooting banana plants growing on the banks. As a consequence, production was brought to a halt for the first year, in turn precipitating a crisis for the new co-operative. Negotiations then began in an attempt to resolve the matter.

4.2 CARE's intervention and what has happened since

It was at this point that CARE became involved. An FFS had already been established in the neighbourhood, and had recruited members and associate members (buddies) from a number of different *para*. These included the chair of the new *samity* and the UP member for the ward. These individuals initially approached the FTs for technical advice about the management of the *khas* pond, but as the crisis broke, they then sought their assistance as mediators. The team agreed and duly embarked on what was to prove a rather lengthy process, working alongside a number of other more local actors.

First, a meeting was convened with the *samity* members to form an impression of the key local actors among the population at large and within the administration, and to formulate a strategy. Next a series of discussions were conducted with local

residents to elicit their views on the specific issue of the pond and what might be done about it. This was then followed by consultations with a number of key actors from the administration to gauge their position, leading in turn to an agreement that they should attend a community meeting. Discussions were also facilitated with the chairman and other UP members. This eventually paved the way for a meeting with the teacher at which he was left with little alternative but to concede control and agree to make no further attempts to disrupt operations.

With the dispute finally resolved, NBJUS was able to assume proper control of the pond around the end of 2001. Available accounts are not good enough to form a clear overall picture of what has been achieved thus far. One estimate suggests a gross income of BDT 70,000 in the first full year of production, whilst another indicates a net operating profit of BDT 20,000 by the time the research was carried out at the end of 2003. These are modest figures which would be likely to be substantially exceeded in subsequent years, if the co-op were able to continue and become more technically and managerially proficient. Whilst a question mark remains against the immediate financial viability of the enterprise, events taking place in the first two years of uninterrupted operations nonetheless suggested a high degree of commitment amongst the membership and enduring support in the wider community.

This seemed to provide a promising foundation upon which the co-op might in future build, but more recently it has encountered a serious setback, from which it may not be able to recover. This has arisen through the convergence of two initially unrelated series of events: the passing of control to the newly formed Barind authority, which has thus far been unwilling to award the *samity* a new lease; and a union council election at which the previous chairman, with whom the *samity* was allied, was replaced by a rival to which it is not connected.

4.3 Impact

Recent developments make it impossible to arrive at a definitive overall assessment of who has gained and who has lost from the intervention. All that can be done is to take stock of who would have been in these positions if the *samity* had been able to continue operating the pond. From this perspective, winners and losers seem to be roughly equally balanced, with those gaining most probably coming from the rather better-off part of the membership, as was the case with the BZ. The gains of the winners appear on balance to amount to a little less than the losses of those who have suffered .

The case raises a number of important questions for CARE. To what extent do poorer households really benefit from an initiative like NBJUS? To the extent that this really is a poor-focussed intervention, is it reasonable to encourage households from this group to enter into such relatively large financial commitments in an uncertain environment that they do not control? Like the other cases that have been considered, this case again demonstrates that local politics are complex, fluid and hence difficult for the outsider to understand. Under such circumstances, is there not a danger that CARE itself becomes the unwitting tool of groups whose interests differ from those that it seeks to promote? Even if this problem can be overcome, can progress be achieved without the expenditure of disproportionate amounts of time and without an unacceptable diversion of resources and energy from other activities that the organisation is perhaps better equipped to pursue?

Raising these questions does not imply that the answers will necessarily be negative. It does, however, suggest that it would be wise to embark on a process of very

Careful consideration of a small number of cases before attempting to move forward on a wider front. This is reflected in the more general recommendations that follow

RECOMMENDATIONS

For present RLP initiatives:

1. The number of interventions in the present portfolio is far too large given the complexity of the issues arising, the current levels of understanding, the possibility of negative implications for some poor people, and existing staff capacity. Many should be suspended, although careful consideration will need to be given to how this is to be accomplished in order to minimise negative consequences for participants, damage to the morale of the individual staff members involved, and wider loss of confidence in CARE as an organisation.
2. Everything else being equal, it is the more complex, larger scale interventions that should be terminated and the relatively simpler smaller interventions that should be retained.

3. In the case of initiatives where support will continue to be given, consideration should be given to how these might be strengthened through the incorporation of and integration with other rights-based activities currently being promoted under RLP, especially those relating to input procurement, accessing extension advice, storage/processing and marketing. (*More detailed proposals for immediate support appear in the next sub-section*).
4. Doing all of the things envisaged above will require a larger time input than was originally envisaged under "Learning and Changing". Urgent consideration should be given as to how that time should be found.

Providing ongoing support to a small number of pilot initiatives:

1. Co-operative accounts are currently not retained at all or are kept in a scattered and disorganised fashion. Professional help should be sought in designing proper accounting systems. Computer access and training should be provided so these systems can be administered effectively. Simpler back-up non-electronic systems should also be designed and introduced to co-op members.
2. Records from the recently completed harvest should be obtained and analysed in consultation with committee members, *choka* owners, the professional fishermen holding contracts with the co-operative and FTs. Particular attention should be given to presenting data in ways that are comprehensible to illiterate members and those who only have very basic literacy skills.
3. In particular, catch composition should be analysed in order to determine the effectiveness of present stocking recommendations, and these should then be modified accordingly.
4. An investigation should be conducted into the feasibility of organising landless men and women to lease one or more *choka* where fish seed production

could be carried out, and to providing any necessary training and other technical support (*see also next sub-section*).

5. There is currently no properly agreed system governing who is entitled to catch and enjoy the use of fish resources or how office holders are to be compensated for their time inputs. Negotiations should be initiated to design a simplified and fair system that is understood, agreed and respected by all of those holding an interest in the BZ.
6. Collaborative arrangements should be forged with government and other non-government agencies (possibly including current partner organisations) who are more experienced in the various issues to be addressed than CARE.
7. Although much of the required support will be provided by members of the social development team and consultants, FTs and other RLP staff will need to make substantial inputs as well. To enable them to do this properly, other responsibilities should be lightened.

Increasing women's participation:

1. Current CARE work with BZ and *khas* ponds may have very considerable implications for women's work and time use, but currently only actually involves them in a very marginal way. If future initiatives, as both DFID and CARE intend, are to "put women and girls first", one of three things should follow. Either: a) the activity should be discontinued as not relevant to the overall guiding principle; or b) it should be allowed to continue as an "outlier" for which an exception can be made on the grounds of other things to which it can contribute; or c) it should be adapted to explore the possibility of women performing more prominent roles – perhaps as keepers and multipliers of fish, vegetable and rice seed, or as more general 'bare-foot' extensionists. Whilst c) may have its attractions, it should be recognised that is by far the most difficult option to implement effectively. Doing it well will take time and scarce resources that could not then be deployed elsewhere.

For future undertakings of a similar nature:

1. Any intervention should be preceded by a careful investigation of relevant aspects of the local eco-system, of the way in which a water resource is currently managed, and of the wider configuration of social and political relationships within which that management system is embedded.
2. Whilst broad guidelines can be laid down in advance, the approach adopted in any particular instance must then be carefully tailored to the specific nature of the location and proposed participants. Fundamentally, those taking part must be actively engaged in determining broad objectives, and in planning how these will be accomplished, as well as in the actual implementation of activities.
3. The need for prior analysis of a reasonably high quality and a considerable level of detail inevitably restricts the scale on which a programme should operate and suggests that even when success is attained at pilot level, thoughts of going rapidly to scale should not be entertained.
4. With the possible exception of interventions conducted on a very small scale, approaches entailing a fundamental re-configuration of existing social

relationships or a serious challenge to established power structures will normally fail and should generally be avoided.

5. The complexity of the issues arising, and the high degree of year on year variability in conditions, means that a support agency must normally be prepared to commit itself for a period of 3-5 years, with the necessary length of engagement increasing with the scale of the proposed project.

1. INTRODUCTION

1.1 Issues

Many of the types of people CARE's Rural Livelihoods Programme (RLP) would most like to work with are presently unable to take advantage of the aquaculture and vegetable cultivation technologies that have been promoted, because they lack sufficient access to land and water.

In large areas of the North-West, there are substantial bodies of seasonally inundated land (*bilani zamin*) where private agricultural cultivation has traditionally co-existed with open access fishing around and during the monsoon. There are also many smaller permanently inundated *khas* ponds that are supposed to be allocated for the exclusive use of the poor. If effective access to both of these types of resources can be secured, substantial numbers of poor men and women might be able to start using the new possibilities in aquaculture and vegetable cultivation which RLP promotes, as well as benefiting in other ways.

With this possibility in mind, RLP and partner organisation staff have been experimenting with new institutional and technical support arrangements for water body management in the Districts of Thakurgaon, Dinajpur, Rangpur and Kurigram. The earliest of these initiatives are now in their third season.

With the *bilani zamin* (BZ), negotiations have been conducted with larger land owners, leading to the formation of co-operatives which include poor Farmer Field School (FFS) members and offer them a share of the catch in return for financial contributions and/or the provision of services. In the case of the *khas* ponds, poor people have been made aware of their legal rights, and coalitions have then been built, uniting the landless and near landless with favourably disposed formal and informal local leaders and Government of Bangladesh (GOB) representatives, to secure leases for operation.

Both of these types of experiment have been started at the initiative of local staff where they deem conditions to be suitable, and have so far not been subject to any centralised control or planning. This report represents the first consolidated attempt to determine whether the interventions are succeeding in expanding opportunities for poorer households, and also asks whether there may have been some detrimental impacts on their livelihoods.

1.2 Approach

We started by seeking advice from specialists from the World Fish Centre (ICLAM) and the Fourth Fisheries project, and by reading some of the key literature they helped us to identify. As a result, it quickly became apparent that the issues that had been identified were quite complicated and would not be amenable, in the first instance at least, to investigation by extensive survey methods. Account also had to be taken of the limited amount of time available for research.

Keeping these considerations in mind, a decision was taken at the outset to opt for a two-stage approach. Stage one, which would take up most of the time, would be devoted to the construction of a small number of detailed case studies that would enable the full range of variables affecting outcomes to be explored. Stage two would then involve the communication of findings to colleagues who would be in a position to comment on how far these initial findings were representative of the wider experience of the organisation.

In all, three case studies were completed. Two dealt with BZ and one with a *khas* pond initiative. In outline, each investigation sought to do four things:

1. understand relevant aspects of the context in which the RLP intervention had taken place
2. re-construct the nature of the intervention
3. identify its impacts for different groups of people
4. assess the sustainability of any positive impacts and explore remedial action for any negative impacts arising

Approximately one week, or five working days, was devoted to each case.

Work was carried out by a core team comprising five members of the social development unit and three other GO-IF staff, working under the overall guidance of Brigitta Bode and Mick Howes. In addition, the pairs of Field Trainers (FTs) from the locations under consideration were involved for the duration of the studies of the communities in which they had been working, and a number of CARE and PNGO staff from Dinajpur and other districts joined the team for shorter periods of time (a full list of those involved appears on page i).

A range of mainly PRA-based methods were used, and although these proved broadly satisfactory, a number of specific difficulties were encountered (*Figure 1*). More generally, the research suffered from:

- excessive reliance upon a small number of key informants
- a shortage of time, which sometimes meant that quality control suffered and made it difficult to involve all team members in the analysis of data or build their capacity to carry out such work in future
- a failure to report back and validate findings in the study communities (although this will be remedied in due course)
- the long distances that had to be travelled to reach the study sites
- overlap with Ramaddan

At the end of the three week period, results were presented and discussed at a one day regional workshop attended by 70 CARE and PNGO staff. This event generated a lot of useful feedback, and went at least some way towards meeting the objective of building a more general picture of what was happening. It was, however, apparent in retrospect that participants could have contributed a lot more if additional time had been available, or if a larger portion of the day had been set aside for the feedback sessions. This is an important lesson for the future organisation of such events. With the fieldwork completed, preliminary findings were also shared with staff from the two agencies that had offered advice at the outset and further valuable insights obtained.

Results were then drawn together in draft form and submitted to a further round of discussions with the core research team. The outcome is presented in the pages that follow and falls into four sections. These deal respectively with:

- the study of a large BZ co-operative
- the study of a medium sized BZ co-operative
- the study of a *khas* pond co-operative
- recommendations for follow up action

All of this is very much work in progress. No attempt has been made to produce a rounded paper of the type that would normally be expected where it was intended to disseminate findings directly to a wider audience beyond the programme and the organisation. Supporting documentation in the form of tables, maps and other figures has been assembled in a separate annexure that can be referred to simultaneously with the text itself. These materials have been presented in full so as to facilitate the further analysis that will undoubtedly be required, with little or no attempt to summarise and highlight in the fashion that would be appropriate for wider presentation. Ultimately, once the further work indicated in the final section has been undertaken, and a more comprehensive picture has emerged, it is intended that a more rounded account will be prepared and more widely disseminated.

2. THE LARGE BILANI ZAMIN

The large BZ is the better documented and understood of the two cases. It was also the subject of more intensive investigation and will therefore be considered first.

2.1 The Setting

2.1.1 Location, topography and cropping patterns

The BZ is located immediately to the north of a small *pukka* road, about a mile to the east of the main Thakurgaon to Panchagaor highway, a few miles to the north of the Thakurgaon district headquarters. Its relatively accessibility location has contributed to its becoming something of a show case, frequently visited by senior CARE staff, drawing the support of the local administration and even attracting a certain amount of media interest.

The water body is roughly circular in shape and originally we were told that was in 350 acres in size. Subsequent enquiries suggested that the actual figure was closer to 200 acres. This still remains a very substantial area that takes about an hour to walk around. The body is bounded to the north, west and east by higher land and by the embankment upon which the *pukka* road has been constructed to the south. The construction of the road had the effect of dividing into two what was previously a much larger single body of water. Water enters through two inlets to the north and leaves through a single culvert under the road to the south.

With the exception of two relatively small outcrops of higher land to the centre (zone "A" on the map), the land slopes downwards from the north-west to the south-east and divides into four broad categories. The largest (zone B) is only inundated for 1-2 months each year at the peak of the monsoon. C and D are flooded for longer, whilst the lowest area (zone E) remains under water for approximately five months, and in addition contains a series of deeper pockets known locally as *ghoto* which could potentially hold water for longer periods still, and where any fish remaining in the BZ at the end of the monsoon retreat to as the waters recede.

Almost the entire area falls under irrigated High Yielding Variety (HYV) cultivation in the *boro* season. Yields are a fairly uniform 50-60 maunds an acre, although we suspect that zone E, by virtue of its greater moisture retention, higher soil fertility and the wash down of fertilisers, requires lower inputs and is thus more profitable to cultivate. *Amon* yields are highest in B and C, where transplanted HYV varieties are cultivated, and lower in D and E, where only local transplanted and broadcast varieties respectively can be grown. At a rough estimate the total gross annual value

of crop production from the area as a whole would be BDT 4.5 million (see Figure 2 and Table 1).

2.1.2 Hydrology and fish movements

The water body forms part of a wider hydrological system that is itself in a state of continual evolution. Key changes occurring at this level have helped to shape the way in which the area has been operated and managed and provide a critical backdrop to the events with which we shall be centrally concerned.

The BZ forms part of the floodplain of the Vulli river, which flows in a south-easterly direction some three miles to the west. Although it is difficult to be certain, it appears likely that a century ago it formed a somewhat deeper *beel* where little or no cultivation took place. It is also possible to speculate that as the area began to be cultivated, jute would have been the first crop to have appeared (vestiges of which remain in the current cropping pattern), and that this would have been followed successively by broadcast *amon*, transplanted *amon*, and finally *boro*. Irrespective of whether this is the case, it is certainly true that the significance of the land area for agricultural production is now greater than it has ever previously been, and that its use for fishing, which was earlier predominant, has had to accommodate this reality to an ever increasing extent.

The first major event contributing to this transition was the construction of the main highway, which took place some time during the colonial period and cut across the floodplain between the river and the *beel*. Prior to this, water would have spread in sheet-like fashion across the plain in an easterly direction as the river broke its banks each monsoon, freshly inundating a series of other smaller *beels* on its way to Balia, and then proceeding through a further series of *beels* before finally flowing back into the river to the south. A relatively small amount of fish would have entered the *beel* with the water flowing in, but far more significant would have been the movements of larger river fish swimming up from the south against the current to their breeding grounds. They would have co-existed in the *beel* with a number of smaller more locally breeding species. The immediate effect of the construction of the road and of the periodic culvert passing below it is likely to have been a reduction in the overall flow of water, leading to a shallower inundation of the *beel* and probably to some reduction in the number of larger fish entering the area from the south.

Two further important events took place during the Pakistan period. The first was the construction of the *pukka* road eastwards from the highway. The immediate effect of the road was to divide the BZ into two parts: the smaller and shallower area to the north, where CARE's work has been concentrated; and the larger deeper area to the south, where it appears likely that the best local fishing grounds lay. The second was the building of the Vulli side canal, complete with its sluice gate and the culverts required for it to pass under existing roads. The primary purpose of the canal was for irrigation, but flood control may also have been a consideration. The combined effect of these two developments appears to have been to have further restricted the flow of water into the BZ, and with it the inward movement of fish. The level of inundation would have lessened, and the suitability of the land for agricultural production, for at least a part of the year, would have accordingly have increased – at a time when population densities were growing and more and more previously marginal land was being brought under cultivation. At the same time, however, it appears likely that by providing better access to markets, the road may have boosted commercial fishing as an activity, in the process hastening the disappearance of certain species like *gojal* which were in demand and especially easy to catch. The growth of commercial

opportunities may, in turn, explain why *ghoto* owners in the BZ embarked upon a process of deepening these areas of land in the 1950s and early 1960s.

The most recent round of changes prior to the co-operative, from the 1980s onwards, revolve around the introduction of irrigated *boro* cultivation and are easier to document. First a publicly owned Deep Tubewell (DTW) was installed just beyond the BZ area, and a cement-lined channel constructed from north to south across the western part of the area. More recently, a series of private Shallow Tubewells (STWs) have been installed in the lower lying areas to the east, and now, as we have seen, almost the entire area can support a *boro* paddy crop. The major effect of this has come via the introduction of pesticides and chemical fertilisers, which are an integral part of the HYV package and are believed to have been responsible for accelerated fish mortality, and the disappearance of certain species, most notably *meni* and *sarputi*. At the same time the general increase in cultivation has encouraged the removal of water hyacinth and the elimination of species like *khalisha* that depended upon the plant for shelter.

There also appears to have been an impact on the ways in which fish have been caught, which is discussed as a part of the more general discussion of technology in section 2.1.3. below.

Other issues also arise here. *Amon* cultivation and fishing could to a large extent go hand in hand, although some land owners at the shallow peripheries of the area are believed to have been concerned by actual and potential damage to the crop by trampling from fishermen at certain points in the cycle. With *boro*, the potential for competition between fishing and cultivation appears greater, with land owning interests dictating that *ghotos* should be pumped out relatively early, so that cultivation can begin, and those with an interest in fish wishing to delay so that growth opportunities and final catch could be maximised. Clearly those that only rely on fish and have no interest in the land will lose as a result, but elsewhere the intertwining of land-based and fishing interests creates a more complicated picture, where individual gains and losses become much more difficult to calculate.

2.1.3 Catch technology and current fish species

It is difficult to determine when precisely the first fishing would have taken place in the BZ and who would have been involved, but what is clear is that alongside the various ecological and infrastructural changes that have taken place, a variety of fishing techniques has come into use at various points in time, adapted to particular environmental niches and/or meeting the needs and resources of different types of household.

Currently the most important are a series of different types of net, which together account for an estimated 55% of the total catch. Some of these, like the presently illegal current *jal* (*fandi*), are set and left, whilst others, like the predominant seine net (*ber jal*), or the individually operated, lower cost lift (*chatka*) and push nets (*tela jal*), are used in an active fashion. Some will have narrow meshes, and hence be suitable for the catching of a wide range of fish, whilst others are wide mesh and are targeted at the larger species.

Next in this BZ come various hook and line methods (*nofa*, *ketai*, *chip*) that are responsible for about 17% of the current catch, are generally low cost and hence suitable for use by both the better off and the poor, and again are found in passive and active variants. These are followed by the entirely passive bamboo made traps, which are used exclusively to catch smaller indigenous species of fish and account

for a further 13% of the catch. These tend to be set in shallower water and to be used particularly in the monsoon season on migration routes, and are thought to be declining as currents have weakened and movements have diminished. Finally there are indigenous barrier methods (*dewai*) and different varieties of spear (*kocha*, *guchi mara*, *gol*) which may be used by the individual fisher to catch larger species. (More details appear in Table 2 and Figure 3).

Various catching methods that have been used in the past but that have now disappeared include *polo*, *jhati* and other communal systems, including those that were initiated by the beating of drums. Their elimination may reflect the growing importance of agriculture and the need to avoid damage to standing crops. It may also be a function of the reduction of the previously extensive areas of relatively deep water required for them to be practiced effectively.

The species of fish that had survived the various changes described earlier and that could still be caught in the BZ prior to the co-operative fell into four broad categories (see Table 3):

- Snakeheads: especially striped snakehead (*shol*) and climbing perch (*koi*)
- Carp: especially black rohu (*kalibaas*) and olive barb (*sarputi*)
- Catfish: especially stinging (*shing*) and walking (*magur*)
- Various small indigenous species

2.1.4 Fishing communities

A large number of local communities have a continuing interest in the BZ (see Figure 4). The cultivated land area falls mainly under the ownership of the immediately adjoining communities of Haji *para* to the north-west (with about 50%), Hindu *para* to the south-west (15%), Vatia *para* to the east (15%), and Wahid Ali *para* to the north-east (10%). The remainder is divided into smaller parcels belonging to the slightly more distant Post Office, Wadu Haji and Khairul *para*. The local picture is completed by the three adjoining *para* of Jalpaitala, Mohun and Molani, which lie immediately to the south-east of the BZ. These are home to a low status indigenous Santal community, which formed the focus of the CARE FFS, but which controlled hardly any land under the BZ and little else beside. The overall pattern of ownership is broadly reflected in the critical *ghoto* land, but there are also owners from two other *para* in this case (see Figure 5), including Jalpaitala. With the exception of a small portion of Vatia *para*, which falls under Debipur, all of the *para* mentioned here fall under Balia Union.

The various *para* differ significantly in size, power and wealth. Of the three that were investigated in some detail (see Table 4), the predominantly Muslim Haji *para* is the largest, with more than 50 households; whilst Hindu *para*, (where most of the residents are Hindu), with 16% of its households falling into the large farmer category (with more than 7.5 acres), is clearly the wealthiest; and the Santal Jalpaitala *para* is the poorest. Despite these important differences, all communities share the characteristic that small farmers (with 0.5 – 2.5 acres of land operated) comprise by far the largest individual category, accounting in each case for 40-50% of the total number of households.

The approximate status of other key *para* can be guessed from patterns of labour hiring and share cropping relationships. These suggest that Vatia and Molani *para* are net suppliers of labour services and hence comparatively poor, whilst Post Office, Mohun and Khairul *para* have more large land owning and influential households,

and tend to draw in services from elsewhere. Wahid Ali seems to occupy an intermediate position.

With the exception of the cluster of Santal communities to the south and Hindu *para* in the south-west, all *para* are at least predominantly Muslim in composition. All of the Muslim communities are long established, apart from Vatia, which was settled by households who came from other parts of the country to take over land vacated by departing Hindus at partition in 1947.

2.1.5 Dominant individuals

A small number of individuals, nearly all of whom control relatively large areas of land, dominate the communities immediately surrounding the BZ (see *Table 5*). The bonds and conflicts defining relations between these influential people (IPs) provide an important backdrop to the events surrounding the development of the co-op and are ultimately likely to have a critical bearing upon its sustainability. Three overlapping sets of factors – kinship, religious/*jamaat* affiliation and more fluid political alliances - all have a part to play.

With regard to kinship (see *Figure 6*) it appears nearly always to be the case that IPs from the same *para* will be related to one other – sometimes as brothers (as in the case of Haji), and sometimes in looser configurations of uncles, nephews and cousins (as in the case of Khairul). More occasionally, kinship links also extend between *para* (Khairul and Molani being a case in point). Often, kin will also be political allies, and this applies in all instances where no specific intra-*para* linkages have been shown on the diagram. But it is also frequently found that siblings and more distant relations from powerful households fall out with one another. Examples of this are found in both Haji and Khairul *paras*, and most critically of all (for reasons that will become apparent below) in the neighbouring historical centres of local power of Singia and Choto Balia.

As far as religion is concerned, the primary divide is of course along Hindu/Muslim lines, although interestingly, several communities contain representatives of both groups. The numerically dominant Muslims then divide along *jamaat* lines, and in many cases (for example in Haji, Singia, and Post Office) these are confined to individual *para* with their own mosque. But it is also found that three *para* without mosques of their own (Wahid Ali, Molani, and Ajim Haji) are drawn together into a wider *jamaat* centering on the mosque in Khairul. Over and above this, Khairul's significance in the local scheme of things is further enhanced by the presence within the *para* of a *madrassa* and an orphanage, both of which are government supported, and both of which draw support from the other primarily Muslim *para* of Haji and Singia (see *Figure 7*). The combined effect of *jamaat* and these wider connections, expressed primarily by the membership of leading individuals on committees, is to create unifying bonds between all of the Muslim communities within the environs of the BZ. But things are made complicated by the internal state of affairs within Khairul *para* itself, where most of the influential people are, for various reasons, at loggerheads with each other, and which at the same time is the home of a Hindu leader with potentially divisive fundamentalist leanings.

The way in which relationships are played out at the political level is the most complicated of all. The primary cleavage here is between supporters of the two main political parties – the Bangladesh National Party (BNP) and the Awami League – although there is also a small body of *Jamaat Islam* supporters. The ground has recently shifted here with a new Union chairman coming to power in the elections taking place early in 2003. But whilst his accession may subsequently have

significance for the BZ, this post-dates the events with which we shall be concerned here, and our focus will therefore be on the situation as it was immediately prior to the first steps towards the formation of the co-op in 2001.

At this time, the local centre of power lay in Singia, a *para* a short distance away from the BZ, the members of whom only had a small minority land holding under the BZ. The Union chairman owed allegiance to the BNP, and had actually displaced his own *para* co-resident, a supporter of the Awami League, some ten years before. Each appears to have headed a faction, with the Muslims of Haji *para* and the Hindus linked to the AL side, the leader of Molani to the BNP, and the leading members of Khairul split between the two (thus re-enforcing the other intra-*para* cleavages noted above). As Figure 6 makes clear, a number of key individual inter-*para* alliances are constructed along these lines, and some significant conflicts exist between parties from opposing sides of the divide, although this does not preclude conflict between supporters of the same party either in certain instances. The final part of the picture is then created by the leaders of Wahid Ali and Azim Haji *para* respectively, both of whom are BNP supporters, but neither of whom appear to have especially close relations with the BNP leader, and most of whose most significant individual linkages appear to be constructed across the party divide. In the case of Wahid Ali, this process is carried a step further by linkages extending across the religious divide as well.

All of this appears to replicate the situation encountered earlier in the NW Institutional Analysis where party allegiance had some enduring significance for certain individuals, but where others were happy to support one party in elections and to work predominantly with followers of the opposition in between. If we had time to delve further, we would almost certainly find that party and other alliances are in a state of flux, with local issues splitting former allies, former opponents finding it convenient to set aside their differences, and people changing political sides for a variety of pragmatic reasons.

2.1.6 Fishing in the pre-co-op period

It was very difficult to arrive at an accurate picture of the numbers engaging in fishing in the BZ prior to the co-op, and even harder to determine how much each household caught, and hence what the overall level and composition of production might have been.

To begin to unravel what was going on, it is important to distinguish initially between the day to day fishing that would go on throughout the period of inundation, when a few professionals would operate alongside a much larger number of primarily subsistence fishers, and the clearing of the final catch as the waters receded, which would take place by arrangement between the *ghoto* owners and a small number of professional fishers.

The position with regard to the final catch is relatively easy to re-construct. There were about seven fishermen, each of whom entered into their own annual leasing arrangements with one or more of the 15 *ghoto* owners. A cash sum would be agreed in each case based on the anticipated yield. This would not directly reflect the size of the *ghoto*, but would be based on previous productivity. This, in turn, would be a function of a combination of factors including location, depth, and whether owners had constructed shelters (*jhar*) to attract more fish. In total, it was recalled that some BDT 19,200 had been paid to the *ghoto* owners in the year preceding CARE's intervention. In addition, owners would receive 15% of all the fish caught from their areas in kind.

The day to day yield is far harder to determine. Different exercises were carried out in an attempt to throw light on the matter. One set of estimates of the numbers involved, broken down by *para* and distinguishing between different intensities of fishing, is presented in Table 6. These suggest that a total of 178 households, drawn mainly from 11 *para*, may have been engaged to some extent, with the largest numbers coming from Haji, Vatia and Wahid Ali respectively. It appears that the majority of households here would have fished in the BZ at some time or other during the season, whilst the proportion from Hindu *para* and the other communities to the south side, with easier access to the larger BZ to the south of the road, would have been rather lower. Of the total, about 64% were probably purely subsistence fishers, a further 19% would have sold a few fish, and the final 17% could be classified as professional fishers. 11 of the 17 professional fishermen came from communities some distance away from the BZ.

Details about the social class of those fishing are only available for the three *para* that were studied more intensively. Contrary to what was anticipated at the outset, these suggest that members of all classes and religious-cum-ethnic groups were involved to an approximately equal degree, and that if anything those not fishing were slightly more likely to be concentrated in the poorest landless category. This applied equally to commercial and subsistence fishing. Set against this, however, is the fact that the relative significance of fishing to the nutrition and income of poorer households would have been greater than for other groups – especially since the period when fish were available through the monsoon coincided with the traditional lean period leading up to the *amon* harvest in December.

We were only able to directly explore the size of the individual catches through a small number of individual case studies, the results of which are laid out in Tables 7.1 to 7.5. These focussed on the more active end of the fishing spectrum and showed one instance of a commercial fisher with a total catch value of approximately BDT 10,000 per year and two semi-subsistence fishers in the BDT 1,000-2,000 range.

Some sense of the overall annual catch can be obtained by taking the post co-op catch, which was worth approximately BDT 165,000, and deducting from this the 60% arising from introduced species. Assuming that the remaining species, which would have been present anyway, were not adversely affected by the new species coming in¹, this suggests total previous production of only BDT 66,000. This would equate to an average catch value of about BDT 370 per household. When one considers the concentration of the catch in the hands of a minority of more active fishermen implied by the figures quoted in the previous paragraph, it is clear that the median figure would have to be much smaller than this, and often scarcely equal to the value of the necessary investment in gear. Almost certainly something must be wrong with one or more of the figures than have been used, and further checking in the field will be required before a closer approximation to the true situation can be obtained.

2.1.7 An overview of production

In a preliminary attempt to move beyond the confusion, the FT was asked to sit down again and attempt to reconstruct the overall composition of production in the pre-co-op period in the light of everything that was now known. This produced the

¹ This is something about which knowledgeable team members disagreed and which should be subject to further investigation.

contrasting set of figures presented in Table 7. The primary difference concerns the number of households involved, which is now assumed to be much lower.

2.1.8 Gender roles

In a final series of exercises, an attempt was made to explore the respective roles performed by men and women in relation to production activities going on in and immediately around the BZ area. Men and women were consulted separately in Haji *para* and a composite picture produced where their views differed. In Jalpaitala they sat together as a single group (see *Figure 8*).

With regard to field crops, there are only minor variations between the results from the two *para*. Men take major or exclusive responsibility for land preparation, irrigation, pest management and marketing. Other activities are more likely to be shared, with women doing rather more of the dike vegetable cultivation and dike cropping, men performing the greater share of inter-cultural operations, and processing more or less evenly divided. Sowing and transplanting is more of a male activity in Haji *para*, and more likely to be done by women in Jalpaitala. This part of the figure omits to mention the vital function of seed storage, but experience from elsewhere suggest this is likely to fall under the control of women.

In the case of rice-fish culture, which only commenced after the CARE intervention, men are exclusively responsible in both *para* for site preparation, fish seed stocking, and seed preservation. Women are involved to a limited extent in rice harvesting and take major responsibility for supplementary feeding. Pond fish culture exhibits a similar pattern, with women mainly taking on the additional task of guarding and sharing the seed preservation work in Haji *para*. Finally in the case of the BZ, nearly all work is performed by men, although women from Jalpaitala are involved to a limited extent in fishing.

In an overall sense, these results understate women's role because no account is taken of cooking. Even so, it is apparent that, with the exception of vegetable production, both the former and the new activities promoted by CARE fall very much within the male domain. The implications of this are considered as a part of the recommendations discussed in Section 5 below.

2.2 The Intervention

2.2.1 The Farmer Field School

CARE's GO-IF project, as it then was, first made contact with people in the area in the year 2000 as a part of a survey being conducted to determine where its activities should be located. It had already been decided to try to target Santal communities and an offer was made shortly afterwards to the people of Jalpaitala to establish an FFS. People were initially sceptical, fearing that the project was being used as a cover for an attempt to convert them to Christianity. But after some further re-assurance they agreed to go ahead, although some were reluctant for their names to be formally registered. Activities duly commenced in June 2001 as part of the first cycle of GO-IF's operations. One male and one female school were founded, each with 21 members. Two-thirds came from Jalpaitala itself, with the remainder being drawn from other Santal households in the immediately adjoining Mohun and Malani *para*. At the same time, a further 67 associate or 'buddy' members were recruited from a wider range of local communities (see Table 8). Male and female Community Organisers (COs) were selected and members of the Jalpaitala elite, from the middle farmer class, were included among the full membership.

The scattered nature of the membership as a whole made it difficult to carry out exercises to determine their economic class precisely. Well-being ranking conducted in the main *para* suggested a predominance of small farmers, with a handful of households from the middle farmer, marginal and landless categories. A ranking carried out earlier by CARE staff, based on rather different criteria, and covering a wider area, created a somewhat different picture, with 11% of members drawn from the poorest of five categories, 81% from the next poorest, and only 8% of middle status.

Once the decision to go ahead had been made, rice-fish and vegetable-based FFS activities, of the broad type the various predecessors of GO-IF had promoted over the previous decade, then proceeded over the next three seasons, up until the end of December 2002 (see Figures 9 and 10). Some adjustment from earlier practice was however required, since only a handful of households had paddy fields with dikes suitable for vegetables. To overcome this obstacle, the FTs helped members to gain access to previously unused areas alongside the road and the DTW channel. Rice-fish culture itself could only be conducted on three plots, and even in these instances things did not proceed smoothly. FFS members included only one STW owner among their number and thus found it difficult to flood the plots to a sufficient depth, and were further hampered by the poor water retention capacity of the soil. The problem was, however, eventually overcome by a combination of measures involving the green manuring of the soil to improve retention, re-stocking from pond fish seed, and early harvesting.

As these other activities were going on, FTs also started to offer advice to full and buddy members about pond aquaculture, with a considerable amount of effort being devoted to helping some of the most powerful actors discussed earlier in section 2.1.5 (see also Figure 6).

In addition to all this, FFS members were drawn into a range of other activities that had been launched under the new Rights-Based Approach. These included: assisted access to different service providers; marketing; livestock vaccination and poultry training; sanitation and hygiene; and group savings.

2.2.2 Preparing the ground

Over and above all of the activities described in the previous section, FFS members were consulted at an early stage as to whether there was anything else that they would like to pursue. It was out of these preliminary exchanges that the possibility emerged of an initiative that would extend rice-fish technologies to the BZ and turn the present open access regime into a co-operatively managed common property resource.

Starting from August 2001, when the matter was first raised, a process was set in motion that has continued up until the present. The various steps that had been taken up until November 2003, when our own fieldwork began, are laid out in detail in Figure 10. This also shows who the key actors were at each stage and how much time they contributed. The summary account that follows draws on these materials, on related exercises looking at the problems that were encountered, and on the co-operative's own cost and production records.

FFS school members from within the three Santal *para* first discussed among themselves how they should proceed and decided immediately to approach Wahed Ali, the leader from the *para* of the same name, to assist them. He was an ex-UP

member who retained a lot of influence in the area and who, as we have already seen in Section 2.1.5 above, maintained good relations with both dominant factions in the area, as well as with members of both leading religious groups. As a substantial BZ land owner and a *ghoto* owner, he also had a significant personal interest in what was being proposed, and agreed to offer his help.

Next, a list of the other key people from surrounding *para* whose support would need to be enlisted was drawn up. These included Md. Abdus Sattar (the present chairman from Balia Union), Afaz Uddin Ahmed and Afaz Uddin Bhuiyan (the two former chairmen from Singia *para*). Leading local elites with a direct personal interest - Haji Md. Sulaiman Sarker (Haji *para*), Kamini Babu (Hindu *para*), Md Hazim Uddini (Molani *para*), Md Khairul Islam (Khairul *para*), and Mozammel Haq (Haji *para*) – were also identified. Both FTs then devoted a considerable amount of time in October 2001 building rapport with members of the group, which was partly achieved by offering them advice on how to manage their own domestic ponds more effectively. This was followed by a feasibility study in which all the key actors participated, by discussions with a wider circle of members of the elite, and by *para* meetings in all of which the core of leaders played a central role.

These initial attempts to bring others into the process met with quite a lot of resistance. The concept was a new one and there was a widespread feeling that it would not be manageable. In particular, those fishing in the BZ already were afraid that their existing rights would be taken away and that they would receive nothing in return. The meetings went at least some way towards addressing these fears. Earlier successes in other locations were described and the approach to be followed was laid out as clearly as possible. By February 2002, sufficient support had been mobilised to take the proposal to the Union council. A number of CARE staff were involved at this stage, and approval was duly obtained.

A second round of interactions now began with the purpose of convincing major landowners of the need for Santals to be involved. By and large, members of this class saw Santals as people of low status and little knowledge, and did not believe that it would be possible for them to make a useful contribution. At the same time, they were suspicious that the co-op would be used by the Santals to gain control of the asset, and that they would use their new position to engage in widespread poaching. Meetings organised by the FTs in each *para* and supported by the elite representatives were used to counteract these fears.

With this taken care of, a general meeting and a series of further *para* meetings were held in March 2002 to discuss in more detail what was going to happen. At this point Lalit Sen (Hindu *para*) and Habibur Rahman (Khairul *para*) were added to the core elite group that had been formed some months earlier. Out of this process, a clearer set of ideas about who should be able to participate began to form. By the end of the month, with the assistance of the FTs and other CARE staff, the elites had organised themselves into Executive, Marketing, Guard and Advisory committees, which would oversee activities in the first season.

2.2.3 Forming the co-operative

The time had now come for a co-op to be launched. A total of 132 people drawn from all of the main *para* around the water body elected to become members. Details of the households who had fished in the BZ previously but who now decided not to join the co-operative appear in Table 6.

It was agreed that each participant should contribute BDT 200 to meet the expenses for the first season. The size of the payment was however a problem for poorer households, who found it difficult to raise the money. Over and above this, they feared that their weak position in local society would enable predatory landlords and other powerful people to appropriate all of the returns for themselves and to deny them access to their rightful share; a belief that was fuelled by the existing fishing interest, who sought for their own reasons to obstruct the initiative. The approach followed by FTs here in the first instance again involved meetings convened in each community to talk through the various concerns with all interested parties present. A system of point people was established – whereby trusted representatives in each *para* were identified to collect subscriptions. Finally, poorer households were allowed to make payments by instalment to ease the financial burden.

Over and above this, a number of guards were appointed from the Santal community, who would receive some payment, but who would also be given two free shares each in return for their contribution. Several committee members were subsequently to take responsibility for overseeing their work (see *Figure 11*), with the male CO, the two leading members of the elite from Jalpaitala, and Wahid Ali making the largest individual contributions.

With the initial subscriptions collected, work was able to begin in April 2002. The first step was to make certain essential repairs and improvements in the structure of the water body. Crumbling brickwork around the three inlets and outlets was repaired and bamboo fences (*chai*) constructed in each location, which allowed fish to pass into the water body, but prevented them from leaving once inside. A little later, two sheds were constructed for the guards, who would be responsible for ensuring that no fishing took place in the water body until the controlled catch at the end of the season (see *Figure 2 for locations*). Certain materials had to be purchased for these purposes and a little labour was hired (see *Table 9*). But most of the labour needed was supplied free of charge, mainly by members of the Santal community, some of whom were compensated by being given free shares in the co-operative.

The next step was for members of the marketing committee to agree the harvesting fees with the *ghoto* owners. These were duly set at a figure close to their pre co-op level, with a similar provision for an additional in kind payment equivalent to 15% of the overall catch. At the same time, contact was initiated with fish seed suppliers.

2.2.4 Procuring fish seed

Fish seed came from two sources. The first was private traders, who co-operative representatives approached themselves and with whom orders were placed for seed in proportions suggested by CARE. These included two exotic species – silver and common carp; together with four indigenous species that had largely or entirely disappeared from the BZ – *catla*, spotfin swamp barb (*puti*), *ru*, and *mrigal*. Further details appear in *Table 10*. It was agreed with the suppliers that any seed losses would be made good, and when this occurred the arrangement was honoured.

The seed were released in several different batches from May to July as the flood waters rose. The release would generally take place at 10.00 in the morning with all members of the marketing committee in attendance. Abuses of the type that have sometimes occurred elsewhere, where for example seed may be misappropriated for private use, appear not to have arisen in this instance. It was, however, subsequently to become apparent that some of the seed was grass carp rather than silver carp, which was undesirable because the fish would sometimes feed off the

rice crop, and that some seed of the ordered species was of rather low quality (see Section 2.2.8 below).

A little later, in September, a TO was able to arrange for additional seed to be donated to the co-op by the Department of Fisheries stocking programme. The species were the same, and although precise information could not be obtained, it is thought that the proportions would have been similar to those suggested by CARE. The total weight on this occasion was 179 kilograms (kg), which means that the overall total of seed released amounted to 367.5 kg. The committee were again present and the event was also observed by representatives of the tender committee, including the District Commissioner, the District Fisheries Officer, the Thana Fisheries Officer and the Magistrate. Although the quantity actually made available fell a little short of the 200 kg that had originally been promised, the release itself once more appears to have been conducted in a transparent fashion with no misappropriation taking place.

2.2.5 Vatia fishermen break the rules

Under the new regime, with one or two very marginal exceptions, all fishing was supposed to stop during the monsoon. But several people who had previously fished in the BZ were unhappy with the restrictions imposed by the new co-operative arrangements. Feelings on the issue ran especially high in Vatia *para*, the relatively poor community immediately adjoining the more deeply inundated and productive area to the east of the water body. The people here had suffered most from the ban, and had no elite member sitting on any of the committees, although Wahid Ali has many relations in the *para* and sometimes represented its interests.

Matters came to a head in August 2002, when for a period of seven to eight days, a group of 10-12 fishermen from Vatia *para*, most of whom were not co-op members, used illegal current *jal* nets to catch a substantial quantity of fish. This quickly came to the attention of co-operative members in other *para* and evoked an immediate response. A village level *shalish* was convened in the presence of the UP chairman. This sat several times and finally ruled that the nets that had been used should all be destroyed. The decision was implemented shortly afterwards with a total of 20-25 nets, each worth between BDT 800 and 1000, being taken away from their owners and burnt. This proved to be one of a series of incidents of a similar nature. Others, where the precise timing cannot be clearly determined, are summarised in Section 2.2.8 below.

2.2.6 Catch by professional fisherman

In October, members of the marketing committee arranged for an early catch so that they could make a preliminary survey of demand and prices in the local area. Accompanied by an FT, two committee members visited Thakurgaon and sold the fish for BDT 7,000. This gave a benchmark and it was then decided to negotiate with *pikers* for “water edge” prices set, on average, at BDT 40 per kg, BDT 5 below those that they had been able to obtain directly by themselves.

The fishermen taking the contracts to harvest the *ghoto* were in most cases the same as those who had previously leased from the individual owners. Sometimes they would oversee the catch in pairs and on other occasions by themselves. One individual, Mobarak, eventually accounted for 42% of the total catch by himself, with three others bringing in most of the remainder. Full details appear in Table 11.

The first catch involving the *pikers* began in the second week in November, with harvesting then taking place on at least a few days each week until almost the end of January. Within this 11 week period, however, production was heavily concentrated into two weeks: the last week in November, where 14% of the total was caught, and the third week in December, corresponding to Eid, when almost 40% of the overall catch was taken. A bank account was established in November and the income deposited. At the very end of the season, pumping equipment and fishermen were hired to empty the final water and gather the last fish remaining in the *ghotos*.

2.2.7 Record keeping and the misappropriation of fish

Even before the catches began, it had become apparent that the co-op lacked the basic skills required to keep proper records. Meeting minutes were not being adequately maintained, and neither were expenditure records. An already difficult situation became worse still as the professional *pikers* began to catch fish from the *ghotos* as the season drew to a close. The FTs sought to address this by drawing together all the individual records that were being kept and providing some basic instruction to key individuals as to how these could be combined into a coherent set. This was to some extent successful, producing a set of figures that could, with some difficulty, be used to put together at least a partial picture of what had been going on. This however still fell very far short of what would ideally be required for purposes of simple accountability to the membership. Record keeping may therefore be highlighted as an area where considerably more support will be required in future if there is to be a serious prospect of co-ops being turned into efficiently administered, independently sustainable organisations.

One effect of the poor record keeping and accountability was that considerable abuses were to arise in the distribution of the catch. In addition to the open and perhaps excusable “abuse” by Vatia people described above, a number of instances of catches which were rightly the common property of the co-op being quietly siphoned off by individual parties were witnessed:

- On one occasion, a guard entered into an arrangement with some fishermen that enabled them to catch and take away fish to an estimated value of BDT 18,000. No action appears to have been taken and it must therefore be assumed that this took place with the knowledge and collusion of powerful local interests.
- Frequently, when the *pikers* caught the fish some would be “sold” directly to local people without the money passing through the *pikers’* hands. The trouble with these sales was that most were actually on credit, and in most instances that credit was never repaid. About BDT 5,600 worth of fish were lost in this way.
- Committee members took an estimated BDT 3,000 worth of fish for their own use.
- The son of a committee member personally appropriated about BDT 2,000 worth of fish from the final harvest when the *ghoto* were pumped out.

Although there are clearly some examples of outright abuse and dishonesty here, it would be wrong to regard all of these instances as simple cases of theft. As the earlier account has shown, some committee members put a considerable amount of time into setting up and organising the co-op, for which no formal payment was ever offered or made. As such, some of the “misappropriation” outlined above might more properly be regarded as informal payment in compensation for services rendered. The difficulty with this is that it appears to have been left to individuals to determine

for themselves what the appropriate level might be. In a well administered and sustainable co-op there would ideally be a clearly agreed understanding of how much work was involved in the performance of different roles, and how much the co-op should pay for these services in return.

2.2.8 Output by fish species

The breakdown of the sales by species to *pikers* as recorded in co-op accounts appears in Table 11. This excludes the private sales and various diversions of catch described elsewhere, the species composition of which may well have been quite different, but the results are never-the-less still striking. From a total value of about BDT 82,500, 56% comes from the introduced species and 44% from those entering the water body by themselves. Of the introduced species, by far the greater part (46%) is contributed by three exotic species, with silver carp (28.4%) by far the most important. When output figures are compared with seed input (see Table 10), it is clear that silver carp performs much more strongly than would be expected on the basis of input alone, and common carp somewhat more strongly. All other species under-perform. Returns in some cases, such as *catla* and *puti*, fail even to meet the cost of purchased fish seed, which itself was only a part of the total seed released.

The underlying reasons for this are not altogether clear. It is possible that *catla* suffers by having to compete for the same food as the dominant silver carp; that *puti* is adversely affected by a shortage of the rotting vegetation on which it feeds and in addition competes with grass carp, which was released mixed with other species; and that *rui* and *mrigel* have low vitality as a result of in-breeding of seed. Species entering the BZ by themselves appear, by contrast, to do relatively well, perhaps because these are predominantly bottom and middle level feeders, whereas most introduced species feed at the surface.

At the very least, all this makes it clear that the question of species mix requires further investigation. But unless there is something wrong with or misleading about the figures that have been presented here, it is also clear that a very different combination of seed may be required on subsequent occasions.

2.2.9 Overall costs and returns

By January, with the catch completed, co-operative members were able to calculate their costs and returns. Table 9 summarises the main cost data from their co-op records. Table 13, in which many of the figures are highly approximate, tries to pull all the production data together in summary form. In outline, fish to the value of approximately BDT 164,000 appears to have been caught, an increase of BDT 98,000 over the assumed previous catch, and equivalent to some 3.7% of the gross value of crops produced from the same land. Some 62.4% of this finds its way into co-op funds, with the remainder dividing between payments to *ghoto* owners (13.5%) and various more or less legitimate diversions into private pockets (22.1%). When costs of some BDT 55,000 are deducted, this leaves a profit of BDT 308 per share after the guards have been paid – a figure a little lower than the value of the assumed average catch in the pre-co-op period. A further benefit is an assumed increase in *boro* production of 50 maunds, which at BDT 195 per maund would produce BDT 9,750, plus savings on pesticides and fertiliser of BDT 22,000 – giving a total additional benefit of BDT 31,750.

2.2.10 The second season

When fieldwork was being conducted the second season was underway but harvesting had not yet begun. With no data to report on the most vital part of the operation, there is little point in going to what has happened at this stage, beyond noting one or two key events.

The first is the withdrawal from the co-operative of most of the former members from *Vatia para*: a development that seems likely to create further problems in future. The second concerns a flash flood occurring in June 2003, in which the protective fencing (*bana*) constructed at the lower end of the BZ was destroyed and the fish were able to start to escape. Since this had formed a barrier between the water body under consideration and its neighbour to the south a question now arose, as to who was responsible for re-construction, that the parties concerned were unable by themselves to resolve. The FTs once again stepped in, arranging a meeting between the two committees and helping to secure agreement that the two co-ops together would carry out the necessary repairs. Other developments are summarised in Figure 13.

2.2.11 Individual time inputs

The foot of Figure 13 provides an approximate indication of the total time devoted by key actors to work on the co-operative. Among CARE staff, the male FT, with an input of some 33 days, made the largest individual input. The female FT contributed a further 18 days, whilst others, including the TO marketing, TO advocacy, PM and PC together devoted a total of 14 days, giving an overall total of 55 days.

The largest contributors from the community side were the various members of the Santal community, most notably the male CO and one member of the elite (31 days each), a second member of the elite (22 days) and the female CO (7 days). Wahid Ali (19 days) and Kamini Babu (17 days) made the largest inputs from other elite groups, with several others devoting approximately 10 days each. The picture is completed by small 1-2 day inputs from the District Commissioner, the District Fisheries officer and the Union Fisheries Officer.

Most of these figures seem likely to err on the side of under estimation, since they only represent the sum of direct time inputs made and make no allowance for time spent travelling to meetings. In addition, it is important to remember that many more people, whose time use has not been recorded here, have been involved in attending meetings and other activities, a part of which must have had at least some opportunity cost.

2.3 Impact

2.3.1 Winners and losers

An attempt to identify the main winners and losers from the intervention is made in Figure 12, and more detailed analysis of the impact on fishing households appears in Table 6. Both abstract from reality by identifying positive or negative implications for different individual roles (e.g. "Santal labourer") under circumstances where many, if not all households will combine multiple roles (e.g. big land owner, *ghoto* owner and former subsistence fisher). The overall picture should nevertheless remain reasonably clear.

The most obvious winners are 15 large land owners who are believed to have increased their crop yields by 10-15% through technical advice from the FTs and 10 pond owners whose returns are believed to have risen by an average of 30% for the

same reason. The *ghoto* owners, most of whom are at least moderately wealthy, are also likely to be substantially better off. Committee members as a category have become more influential in community affairs, have gained respect, and have built closer relations with the local administration, all of which they may be able to translate into more direct material benefits at a later stage.

Non-elite co-op members, who account for the majority of the 132 households who have joined, will mainly have benefited on a more modest scale, although the small minority who fished relatively extensively before the co-op may actually be at least a little worse off in purely material terms. Poorer members in general now have a forum in which they can sit with their richer and more powerful counterparts, where their voice is rather more likely to be heard than hitherto, and where they perhaps command a little more respect than was previously evident. The co-operative has also helped to bring members of different factions and religious groups together.

Among the poorer and less influential, the Santals have gained the most. The ten whose services have been engaged as guards and labourers now on average enjoy an extra 20-25 days employment each year. Their leader is now able to sit with influential people from other *para* and has gained recognition from beyond the immediate area of the BZ, as representatives from further afield come to consult him about the initiative.

Other winners include eight bamboo sellers who have enjoyed profits averaging BDT 600, and the four nursery owners who between them profited to the tune of some BDT 3,500 from the supply of fish seed. All continuing present and future users of the BZ will benefit from the increased diversity of fish species, the conservation of naturally occurring fish species, the reduction in cultivation costs, and the improvement in soil fertility and yields arising as a consequence of the new technology that has been introduced.

The main losers are former fishers who have not joined the co-operative. For reasons discussed earlier, the precise numbers are difficult to determine, varying according to different estimates from as few as 50 to as many as 90 households, and including between 4 and 11 households who fished on a regular and commercial basis. These would have included a few Santals and a few other poor landless and marginal families, although these would only have comprised a fairly small minority of the overall total.

Some, like the group from Vatia, have largely disregarded the new rules and continue to fish, but the loss of their nets following the *shalish* judgement means that they have been by far the biggest losers. Others, who have continued to fish quietly and on a more modest scale, have probably seen their total catch fall to about a third of its previous level, with consequent negative effects on nutrition in the hungriest time of the year.

Some, who are more under the control of local elites, now fish in other BZ, but this typically involves a walk of between one and three kilometres. This has inevitably led to a reduction in the number of days that people fish and their overall catches are thought now to be only about 75% of what they were before. There may also be a negative impact on those people who were previously fishing in the places to which individuals displaced by the co-op now go. These direct and second order problems will clearly intensify if, as seems very likely, more BZ are brought under co-operative management. One slight mitigating factor is that when a flash flood occurs and water rises around people's houses they are allowed to catch the fish.

Finally, the implications for CARE's own staff should be considered. The main responsibility has fallen upon the FTs, and they have clearly benefited in a number of ways. They have gained experience in facilitation and negotiation on a much wider stage and built skills that were not required when work was confined simply to working with FFS. Their activities have made them much better known in the area and their profile has been further strengthened by media exposure. All of this has helped to build acceptance and a platform upon which future activities can more readily be built. Other project staff who have been more marginally involved have gained similarly by building a better understanding of local social and political relationships, and forming closer relations with the local administration. The demand for CARE services as a whole in the area has grown.

On the negative side, the burden on FTs has grown, with the new responsibilities that have been taken on not being compensated for by any officially sanctioned reduction in other work. They now put in much longer hours and often need to work at weekends. They are sometimes called upon to sit on *shalish*, and find the negotiations which they need to conduct with different parties drain their energy. More routine work often suffers as a result. FTs often have to reach into their own pockets to buy tea when meeting influential people.

2.3.2 Sustainability

In conclusion, it is important to consider how sustainable the positive outcomes reported here might be. At this relatively early stage, it is only possible to speculate, but a number of important indications are already available.

One advance that does seem very likely to be sustained is the shift to lower input and hence lower cost agriculture in the BZ area. This, in turn, should improve soil fertility and future yields. It should also create a more favourable environment for fish to reproduce and grow, although whether this would be sufficient to counteract negative forces at work in the wider environment is more difficult to determine. In the very long term, it is likely that siltation will lead to the increasing marginalisation of fishing as an activity and to its ultimate elimination, at least in its present form.

Beyond this, the key factor in establishing the co-operative and keeping it going so far has clearly been the support of the CARE FTs and other staff. Their time input, both as providers of technical support and as mediators, has been considerable (see *Figure 11*) and they have also helped to secure free inputs in the form of fish seed.

The preceding account has shown that the financial returns that have been achieved from the co-operative so far are fairly modest, both in relation to the investments of time and money expended, and to the other main use of the same land for paddy cultivation. Unless productivity can be substantially increased by some of the means discussed above, and in the absence of continuing support, it might in future be difficult for people to continue to find the motivation to keep quite a complicated institution running.

This is particularly likely to be the case under circumstances where different factions with a previous history of conflict are present, and where there have in the past also been a number of conflicts on a smaller scale between members of the same faction. With the input of a CARE staff member and the interest generated by a new initiative, it has, until now, been possible for these tensions to be contained. But if that support were to be removed, factionalism might well begin to re-assert itself and lead to institutional collapse.

Similarly, the presence of the FT has so far helped the Santals to gain a foothold in the management of the BZ and in local society more generally that they previously lacked. But whether these positions could be maintained in the absence of FT support is at least open to question, and there must be a risk that the Santals would be pushed aside by more powerful interests re-asserting their former position. It would most probably take several years of help and perhaps the presence of a wider federation before they were strong enough to stand up for their own interests, and it is not clear that CARE would be in a position to provide this type of extended support. It might also be necessary for more central roles for the Santals to be developed, perhaps as breeders of fish seed, before elite perceptions could change to the point where support would no longer be required.

The recommendations presented in Section 5 below take a view on how these potential dangers might be addressed.

3. THE MEDIUM SIZED BILANI ZAMIN

The second and smaller of the two BZ was less well documented prior to our own work and has a longer and more complex history. In addition, feedback received in the workshop conducted at the end of the fieldwork suggested that it was rather unusual. Ultimately it does not add very much by way of understanding of the issues arising to the story of the first water body presented above. Our account here is rather more speculative and much briefer, attempting only to highlight the main differences that distinguish it from the other case.

3.1 Before the intervention

The BZ is only 30 acres in size. It is fed by two rivers and an adjoining pond that overflows during the rainy season. The hydrology and associated fish movements have again been influenced by road construction and other infrastructural developments. Siltation here has been more rapid and a similar pattern of changes in species composition in the pre co-op catch has been noted. Catch technology has evolved in response to ecological change and new, more efficient methods have also been adopted in some instances.

For the time being, however, the water body remains much deeper than its larger counterpart, with sections being inundated for almost the entire year. Cultivation, as a result, is much less intensive, with much of the area only suitable for seedbed cultivation and only relatively narrow strips to other side lending themselves to *boro* or *amon* paddy cultivation. Some jute and a smaller quantity of groundnuts are also grown, sometimes in rotation with paddy. People have consequently been able to fish for longer and to catch more. The relative importance of fishing *vis-à-vis* agricultural land uses has thus been somewhat greater.

Most of the land under the BZ is owned by residents of the neighbouring Bil *para*, whilst a smaller portion in the south-eastern corner falls under Majha *para* and a smaller part still by people from Member *para*, which lies a few hundred metres away to the south. Residents of other *para* own smaller fragments still, together with some of the deeper portions or *ghoto*, to which fish retreat as flood waters recede. The situation is completed by the presence of two ponds dug in the centre of the area under the auspices of Caritas. These are being sold to poorer local people but their management seems to be separate from and not to affect the arrangements governing the greater part of the area.

Influential residents of Bil *para* dominate the local economy, with Majha *para* representing a smaller local power centre. A third and more significant centre, which rivals Bil *para*, is located in Bochapukur *para*, some distance away from the BZ to the south.

Power relations are more polarised than in the large BZ. Again here there are two main factions, aligned to dominant individuals who have for a generation contested the UP chairmanship. Influential people from Majha, Member and Sarder *paras* line up on one side and from Bochapukur on the other. The critical Bil *para* splits down the middle, with the cleavage actually dividing brothers who are currently engaged in a bitter dispute over fishing rights for which a *shalish* is pending. What is different in this case is the absence of leading actors enjoying relations to both camps who are able to mediate when disputes arise.

Attempts at co-operative management predate CARE's involvement by one year. 45 households participated. A rather different set of institutional arrangements, which reflected the longer period of inundation, were devised here. Both *ghoto* and other BZ land owners received compensation, in proportions reflecting the relative productivity of the land in question. Members were drawn from both factions, but one was more heavily represented than the other. For reasons we have not been able to probe into very far, but which may well be related to factional tensions, this initiative was not very successful.

3.3 The intervention

As in the previous case, CARE's intervention again came via its prior involvement in a FFS that began in June 2001. This was located in Member *para*, with a smaller number of households being drawn from the smaller neighbouring communities of Kashem and Sangbadik *para*. One of the members owned a significant area under the BZ, and had joined the co-operative. It was largely at his instigation that the CARE staff agreed to get involved.

A reformed co-op was duly established. This included a few FFS members, all of whom owned land under the BZ, together with a handful of significant local actors who owned no BZ land themselves. The process was completed much more quickly than in our earlier case. Rather than all members receiving equal shares, certain households who were in a position to do so purchased larger numbers. Fences were again constructed and at inlets and outlets, guard sheds built, and attempts made to procure fish seed. These, however, broke down, and at this point the leading member from Member *para* stepped in and provided all the fish seed himself, in return receiving 80 shares. The outcome was quite successful, with a return of BDT 340 for each BDT 100 invested. Some difficulties arose, however, with individuals from the minority faction, some of whom had not joined the co-operative, continuing to fish.

The co-op duly re-formed at the start of the second year and carried out some necessary repairs on a dike, but continuing disagreements made the arrangement impossible to sustain. It was therefore decided to lease the entire area out to an individual from an outside community. This was duly done with the arrangement remaining in place to the end of the season, and all land and *choka* owners being paid as agreed. The returns were relatively good and in the most recent season, nine former members, who include only one FFS representative, have re-activated the co-op. All are drawn from the large, medium and small farmer classes. The other land and *ghoto* owners are happy to see this continue but have no wish to become directly involved themselves.

Whilst precise details are not available, it would appear that this group of nine, together with the other BZ land owners, are the main winners. The most any poor person will have gained is some employment as a guard. Whilst a complete ban in fishing during the monsoon has not been imposed, the main losers are clearly those who fished before. Numbers could not be obtained, but these would clearly have included some poor people. The initiative may prove to be sustainable in its present form, but those who CARE seeks to target are no better off, and some may actually have lost.

4. THE KHAS POND

4.1 Background

Our final case study concerns an initiative involving a *khas* (government) pond. The pond in question falls under Kahoral *thana* in Dinajpur district and is about five acres in area. It lies some three miles to the east of the Upazilla in Ramchandrapur Union and a short distance to the west of the Dhapa River, a tributary of the Atrai. The immediate area is predominantly Hindu, but forms part of a Union with a sizeable Muslim presence.

Like the first BZ, the initiative has assumed show-case status, being visited by a string of senior CARE staff from within and beyond the country. It has also previously been written up as a case study for use in workshops and other fora, and has as a result already begun to enter the organisation's folklore. Because time to conduct the overall study was so short, we decided to use it again here, taking advantage of what was already known to shorten our own investigation – although the picture emerging proved both to be more complex than had previously been imagined and to have evolved somewhat since earlier investigations, and now appeared rather less positive from CARE's point of view than had previously been supposed.

A number of specific difficulties were encountered in attempting to reconstruct what had happened.

- o CARE's involvement had its origins in a dispute arising between rival groupings over rights of access to the resource and this had generated conflicting perceptions and representations of key events.
- o The dispute, in turn, had arisen out of shifting and quite complicated bureaucratic rules and procedures governing access rights which were often less than fully clear to key actors, including the officials who were meant to implement them.
- o As with the BZ, enquiries were again hampered by the very poor quality of record keeping, which among other things made it all but impossible to reconstruct balance sheets or determine the financial viability of operations at different stages in the evolution of the management system.

All of this means that the account which follows is less than totally reliable, although any inaccuracies or uncertainties that it contains are unlikely to be serious enough to affect the overall conclusions regarding how CARE might seek to engage in such activities in future.

4.2 Earlier developments

4.2.1 Fishing for indigenous species before the 1980s

There has been a pond on the present site for as long as anybody can remember. Formerly, in colonial times, it appears to have been a simple naturally occurring depression that was replenished each year by the rising floodwater. Indigenous species of fish, brought in with the floods, remained in the pond after the water receded, and could then be caught by anybody under an open access regime.

The situation changed at independence in 1971 as the Fisheries Department assumed control of all *khas* water bodies. It seems that some excavation took place at this time under its auspices, and that the pond was then leased out to individuals under a system administered by a committee with representatives from the Union Parishad and the Upazilla.

This arrangement continued up until 1981, when an individual named Tarapado from Shahpara (see Figure 1) held the lease. He was a private primary school teacher, whose wife was also a teacher, and owned 12 acres of land and two STW's. Whilst not a particularly powerful actor in local affairs, he sat on both the *para* and the village *shalish*. He also enjoyed a close relationship with the Roy household, Awami League supporters who held the UP chairmanship during part of the 1970s, and who subsequently regained control through Monindra Nath Roy, the son of the earlier incumbent, from 1993-2003.

4.2.2 The shift to aquaculture under the Bangladesh Rural Development Board (1981-1995)

During 1981, direct responsibility for *khas* ponds passed to the Bangladesh Rural Development Board (BRDB). Under the new regime, embankments were constructed for the first time. These kept out the floodwaters whilst retaining a substantial volume of water throughout the year, and the capture of naturally occurring indigenous species now gave way to managed aquaculture, with introduced fish seed. At the same time, the practice of leasing to individuals was abandoned in favour of a co-operative system.

Tarapado responded by forming the Daksin Nayabad Krishok Samobay Samity (DNKSS). This had 45 members, the largest number of whom came from Shaha *para* itself, and Tarapado made sure that the executive committee was dominated by representatives of his own *gushti*. These included a trio of middle farmers who were due to inherit larger areas of land when their fathers died: *Geden Roy*, who sat on the *para shalish* and owned a STW; *Citra Roy*, a small businessman; and *Visvanath Roy*. Most of the other members were also comparatively well off, but 10, who served mainly as guards and labourers, were from the landless and marginal groups.

The new society stocked several species of fish in the pond. The most important were bighead, silver carp, *ruhu* and *katla*, with smaller amounts of mirror carp, *marka*, Japanese *ruhu*, grass carp and Thai *sarputi* also being kept. Harvesting was carried out by hired fishermen who retained 25% of the value of the larger species and 50% of the value of smaller species as payment. Members were also allowed to catch smaller quantities for their own use. The total value of the catch was said typically to be about BDT 50,000 per year, but no records of expenditure for this period were available.

BRDB provided individual loans to members and the co-op operated a system whereby BDT 1,000 of each such loan would have to be deposited with it. The money was then loaned out again at quite high rates of interest, and this also contributed to co-op finances. Over the years the lease had to be renewed a number of times. Tarapado was able to manage this without too much difficulty, although on one occasion a bid from a rival grouping first had to be overcome.

4.2.3 Attempting improved access for the poor under the Youth Development Department (1995)

Around 1995, overall administrative control of *khas* ponds switched from BRDB to the Youth Development Department (YDD), with direct decisions about the awarding of leases now being vested in an Upazilla-level Committee comprising the Nirbahi Officer, the Engineer and the Land, Co-operatives and Fisheries Officers.

YDD had been created to offer training, credit and employment opportunities to young people from poorer households, and DNKSS clearly did not meet these criteria. It was therefore only with considerable difficulty, and after paying a substantial bribe, that Tarapado and his associates were able to renew the lease when it next expired. At around the same time, and perhaps as a way of strengthening their claim, a substantial sum was also invested in re-enforcing and planting crops on the embankments. The total expenditure required to renew the lease and make these improvements is said to have amounted to about BDT 130,000, and this left the committee short of money to run the pond. BDT 22,000 had to be borrowed at a high rate of interest from a local money lender in order to purchase the fish seed for re-stocking and to meet other expenses for the next season.

4.2.4 The formation of Nayabad Bekar Jubo Unnayan Samiti (1998)

While this was going on, in 1998 another co-operative was established nearby, under YDD auspices. This took the name of Nayabad Bekar Jubo Unnayan Samiti (NBJUS) and had 42 members drawn from several *para*. Most came from the poorer households targeted by YDD, but as is normally the way, a nucleus of wealthier and more powerful actors were also recruited. Five, in particular, were to play a significant part in later events:

- o *Shaymol Chandra Roy* of Jola *para*, who became *samity* chairman. Whilst not wealthy in his own right, his father was closely connected to the then UP Chairman, who had in turn given Shaymol the responsibility of identifying households in his area who were qualified for relief services.
- o *Krishna Kanto Roy*, a fellow *gushti* member. He is the son of Obinash, who owns 15 acres, a fertiliser business and a power tiller, and again enjoyed close relations with the UP Chairman, whilst not being politically active himself.
- o *Jogen Chandra Roy*, who was also from Jola *para* and became secretary. He is a homeopath with a practice in a busy centre and frequently provided the Chairman with information about local developments.
- o *Sushil Chandra Roy* from Sushil *para*, which takes its name from him as the dominant individual. He only enjoys middle farmer status but has represented the ward on the UP for several years and was another close associate of the Chairman. He also sits on the *para* and village *shalish*.
- o *Azharul Islam* from Haji *para*. He is the only Muslim in the leading group and serves as cashier. He only possesses a small area of land, but benefits from connections with his brothers, one of whom works as an Administrative

Officer in the Dinajpur District Office and another of whom is a land official in Panchagaor.

4.2.5. NBJUS attempts to gain control of the pond (2000)

The initial focus of NBJUS was on training, which continued through most of 1999. As this drew to a close, possible activities started to be reviewed. One member, an unemployed graduate and the first group secretary, who subsequently found a job with Proshika, was aware that *khas* resources were supposed to be administered on behalf of the poor by the YDD and persuaded others to explore the possibility of tendering for the Nayabad pond. Aided by the Youth Development Officer, members made enquiries about the status of the pond, and having familiarised themselves with the relevant procedures, decided to tender when the lease next came up for renewal in April 2000. Drawing on a YDD loan of BDT 110,000 and additional resources raised by members themselves, they were able to outbid the financially weakened DNKSS and eventually secured the lease for BDT 155,000.

Tarapado was furious at the outcome, which both denied him a significant source of income and diminished his standing in the area. Acting in concert with other leading members of the *samity* from Sushil *para*, he attempted to sabotage operations by pumping out water from the pond, taking the fish and uprooting banana plants growing on the banks. As a consequence, production was brought to a halt for the first year, in turn precipitating a crisis for the successor *samity*, by denying it the minimum income required to make its lease repayments.

Negotiations now began in an attempt to resolve the matter. Whilst it was widely recognised that Tarapado and his associates had acted quite improperly and had no legitimate continuing claim to the resource, the group retained links to the UP chairman and the local administration and could not easily or immediately be dislodged.

4.3 CARE's intervention and what has happened since

4.3.1 The Farmer Field School

It was at this point that CARE became involved. A Farmer Field School (FFS) had been established independently in the neighbourhood, but given the small size of the local *para*, it was not possible to follow the normal procedure of recruiting all members from a single location. Full members, of whom as usual there were 25, were themselves therefore somewhat scattered, and when it came to recruiting the 25 additional associates or "buddies" (*bondo sasaya*), the net was thrown even wider, with representatives drawn from a large number of different *para*. The buddies included Shaymal Chandra Roy, the new *samity* chair from Jolapara, and Jatish, the then UP member for the ward, among their number.

Shaymal and Jatish initially approached the CARE Field Trainers (FTs) for technical advice about the management of the *khas* pond, but as the crisis broke, they then sought their assistance as mediators. The team agreed and duly embarked on what was to prove a rather lengthy process.

4.3.2 CARE's role in the dispute over access to the pond

First, a meeting was convened with the *samity* members to form an impression of the key local actors among the population at large and within the administration, and to formulate a strategy. Next a series of discussions were conducted with local

residents to elicit their views on the specific issue of the pond and what might be done about it. This was followed then by consultations with a number of key actors from the administration to gauge their position, leading in turn to an agreement that they should attend a community meeting. Discussions were also held with the chairman and other UP members, at which it became apparent that they were now leaning towards NBJUS. In part this seemed to be as a result of the justice of its case, but it had also now become apparent that general opinion was now in favour of the new *samity*, making it a more promising source of votes than its increasingly isolated rival. When a meeting bringing all of the parties together was finally convened, Tarapado found himself heavily outnumbered and was left with little alternative but to concede control and agree to make no further attempts to disrupt operations.

4.3.3 Other actors

Whether or how quickly a similar outcome might have been achieved without CARE's intervention is difficult to say, but it is clear that they were not the only, or perhaps even the most significant party in bringing matters to a conclusion in favour of the new *samity*. At least three other interventions seem to have been to have had some bearing on the outcome.

- o Jatish Member played a central part in mediating between Tarapado and NBJUS.
- o Azharul Islam, the cashier, appears to have arranged for his brother from the District Office to be present when the TNO first visited Nayabad in connection with the matter, and this individual, who was known to the TNO, was then able to introduce Azharul to the TNO as a member of NBJUS and to solicit his support in the securing of the lease. This expression of interest by a relatively senior official would have been difficult for the TNO to ignore, and his position would, in turn, have been quite influential.
- o Suren Master, a teacher, larger landowner and popular *shaliskar* from Shaha *para* also played a significant part. He was disturbed by what he saw as the immoral behaviour of Tarapado, and also had a direct interest in the new *samity* through his step-son, who was a member and lived in Jola *para*. His opposition to Tarapado, and the split this created within Shaha *para*, assisted in the process of isolating Tarapado and making it difficult for him to continue on his chosen course of action.

Finally, whilst it cannot be proved, it must at least be possible that Jatish's and Shaymol Chandra Roy's initial motivation in becoming buddy FFS members may have had rather more to do with securing CARE's support than with any direct interest in rice-fish culture. In other words, whilst CARE staff's might have perceived themselves to have been directing events, it is also possible that they were subject to subtle manipulation by local actors taking advantage of their presence.

An overview of the key actors playing a part in the dispute and their interrelationships is provided in Figure 2, whilst a summary of key events in the longer term evolution of the management of the pond appears in Figure 3.

4.3.4 NBJUS gains control and moves on

With the business with Tarapado finally resolved, NBJUS was able to assume proper control of the pond around the end of 2001. Details of what happened thereafter are fairly sketchy, but an attempt has been to chronicle the main events in Figure 4 and to summarise what is known about the main costs and returns arising in Figure 5.

Fish seed was the major production cost, with the co-op mainly using silver carp and *katla*, which together made up 60%, followed by *rui* (20%), grass carp (10%) and *mrigel* and common carp (5% each). A considerable amount was also spent on feed and guards were hired from the second year onwards. When it was time to harvest, members hired nets and did the work themselves before transporting the fish to market for sale. Cultivation also began on the embankments once re-stocking had been completed. Papaya, country bean, yard long bean and ladies finger have been the main crops, with the Department of Agricultural Extension providing seed and fertiliser.

Available accounts are not good enough to form a clear overall picture of what has been achieved thus far, with the situation being further complicated by the continuous year round exploitation of the resource, which makes it difficult to link particular inputs to specific sales. One estimate suggests a gross income of BDT 70,000 in the first full year of production, whilst another indicates a net operating profit of BDT 20,000 by the time the research was carried out at the end of 2003. These are modest figures which would be likely to be substantially exceeded in subsequent years if the co-op were able to continue, and become more technically and managerially proficient.

Whilst a sizeable question mark remains against the immediate financial viability of the enterprise, events taking place in the first two years of uninterrupted operations have nevertheless suggested a high degree of commitment amongst the membership and enduring support in the wider community. One member, Krishna Kanto Roy, gave an interest free BDT 5,000 towards the purchase of fish seed, and Suren Master provided similar help. Akharul Islam, with help from Krishna Kanto Roy and Jatish Member, was able to mobilise his brothers' support to approach the TNO so that lease payments, which the *samity* could not otherwise possibly have met, could be made by instalments. Jatish, in addition, helped the *samity* secure the lease, at a cost of BDT 34,000, of a nearby ferry, thus diversifying its income base. NBJUS has also secured a longer-term lease from the UP to cultivate trees along a 1.2 kilometre stretch of roadside and has received free saplings from the Upazilla forestry office.

4.3.5 Recent difficulties

All of this seemed to provide a promising foundation upon which the co-op might in future build, but more recently there has been a serious setback, from which it may not be able to recover. This has arisen through the convergence of two initially unrelated series of events. The first has been yet another change in the administration of *khas* ponds, which in 2003 passed from YDD to the newly formed Barind authority.

The lease came up for renewal in the final months of the previous regime but the bidding process was then repeatedly cancelled. The reason for this has not been determined, but may perhaps have reflected unwillingness on the part of the YDD to make a decision on a matter that would extend beyond its period of jurisdiction. Again for reasons that have not been determined, NBJUS was then precluded from the bidding process initiated by the incoming Barind authority itself, although no other party has so far been awarded a lease either. The immediate consequence is that nobody now has the right to fish the pond.

This impasse has been sustained by a shift in the local balance of power, following the 2003 UP elections. For the previous decade, as noted earlier, Mohindra Nath

Roy had held the chair, drawing on the support of the Hindu Community and a pro-Awami League Muslim minority. On this occasion, however, two other Hindus, one of whom was Jatish, who had previously represented the local ward, both decided to run against their former ally. This split the Hindu vote and let in Atowar Rahman, the leading Muslim, whose father had held the position some years earlier.

It will be recalled that Mohindra's support had two years previously helped NBJUS to secure control of the pond from Tarapado, and had he continued in power, it seems likely that he would have been able to help obtain a new lease for the *samity*. Atowar, as the leader of a rival political camp, could clearly not be expected to offer the same kind of assistance. Indeed, far from helping to mediate, he is said to have exploited the resource for his own personal gain, refusing a request that the remaining fish to be taken for distribution to poor Hindus at the Durga Puja festival and arranging instead for them to be caught one night by his own associates, and then pocketing the proceeds himself.

4.4 Impact

4.4.1 Winners and losers

These recent developments make it impossible to arrive at a definitive overall assessment of who has gained and who has lost from the intervention. All that can be done is to take stock of who would have been in these positions if the *samity* had been able to continue operating the pond (see *Figure 6*).

Winners and losers seem to be roughly equally balanced, with those gaining most probably coming from the rather better off part of the membership, as was the case with the BZ. The gains of the winners appear on balance to amount to a little less than the losses of those who have suffered, but against this, it appears likely that the winners are, on average, somewhat poorer than the losers.

4.4.2 Issues arising

The case that has been considered raises a number of important questions for CARE:

1. To what extent do poorer households really benefit from an initiative like NBJUS? Richer and more powerful actors have, at least to some extent, to be involved to ensure the viability of the institution, but what is then to prevent them from appropriating most or all of the benefits for themselves?
2. To the extent that this really is a poor-focussed intervention, would it, in future, be reasonable to encourage households from this group to enter into such relatively large financial commitments in an uncertain environment that they did not control? At the very least, it would appear necessary for CARE, or an NGO partner, to retain a presence in the area, and a capacity to offer support, for a far longer period than the 18 month life-span of the farmer field school.
3. Like the others that have been considered, this case again demonstrates that local politics are complex, fluid and hence difficult for the outsider to understand. Under such circumstances, is there not a danger that CARE itself becomes the unwitting tool of groups whose interests differ from those that it seeks to promote? To what extent is CARE actually able to control events, or at least shape them sufficiently for a significant increase in benefits for its intended target group to follow in the longer term?

4. Even if this is possible, can it be done a) without the expenditure of disproportionate amounts of time and b) without an unacceptable diversion of resources and energy from other activities that the organisation is perhaps better equipped to pursue?

Raising these questions does not imply that the answers will necessarily be negative. It does, however, suggest that it would be wise to embark on a process of very careful consideration of a small number of cases before attempting to move forward on a wider front.

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FIGURES AND TABLES
BILANI ZAMIN

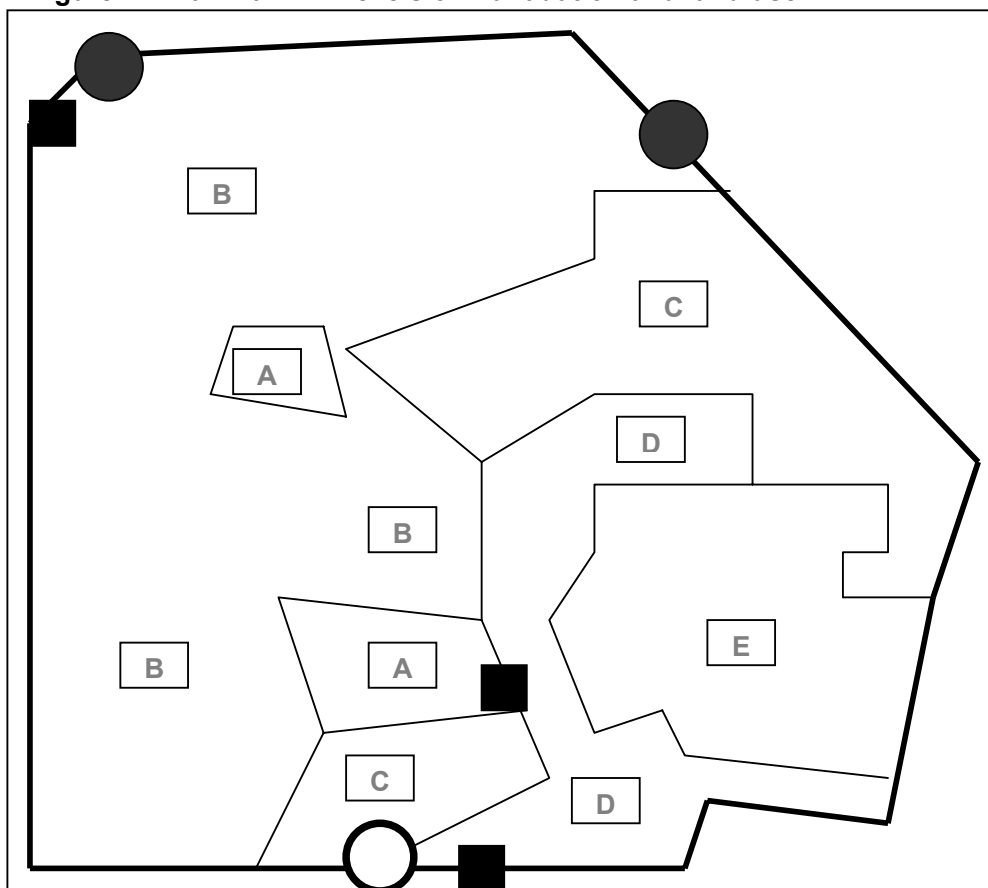
Figure 1: Research methods

METHOD	HOW USED	DIFFICULTIES ENCOUNTERED
Technology card sorting	Gear used in past, immediately pre- and post-intervention. Reasons for changes	Informants sometimes found it hard to distinguish immediate pre- and post- intervention periods
Fish card sorting	Species found in past, immediately pre- and post-intervention. Ranking of present species by relative importance. Reasons for changes	Some small fish hard to identify. Exercises should have been repeated with different classes to capture variations in perception and experience
Hydrology map	Blow up from thana map showing flows of water and fish movements into/out of bilani zamin	None
Para map	Blow up of mouza map showing residences and agricultural land of para with an interest in the water body	Few people have good knowledge of situation beyond own para so several interviews required
Water body map	Blow up of mouza map showing water depths, crops grown and construction work carried out in bz area	Complex topography and cropping patterns difficult to capture in a quick investigation
Seasonal calendar	Seasonal pattern of activities undertaken as a part of and/or affected by interventions	None
Well-being ranking	Subjective and BBS based rankings of households in key para plus info on earlier fishing activities, coop and FFS participation	Informants commonly lack detailed knowledge of FFS and coop membership even within own para
Production relations matrix	Cross-para patterns of labour hiring and tenancy relations for wealthiest households	None
Power relations interviews	Livelihoods and political allegiances, and mutual inter-relationships of key actors	Situation complex and constantly evolving. Heavy reliance on FT who was often unaware of details of disputes and Union level actors.

Research methods (continued)

Gender roles scoring	Present & past divisions of responsibilities between men/women for activities undertaken as part of/affected by interventions	Men and women in same group cannot agree and have to be separated: time required therefore increases
Time line	Sequence of key developments around water body preceding the CARE intervention	Constructed by team members from other data. They sometimes lack knowledge to fill gaps & interpret causal relationships
CARE monitoring	GO-IF data on uptake of practices promoted by project by location	None
Meeting Minutes	CO-OP records of issues discussed and people attending meetings	Often "lost". Of poor quality where available.
Catch data & accounts	Day by day records of sales of fish by species, piker purchasing and price; records of "public" sales	Not available in one instance. Lack of systematic recording elsewhere, which complicates processing
Production flow chart	Main activities undertaken under intervention, parties involved in each, time inputs, problems arising and how addressed	Initial FT suspicion about reasons for data collection. Subsequently problems of recall and isolating/estimating inputs to individual activities
Cost & return analysis	Data on inputs (and by whom provided), outputs (and how distributed between different parties)	Often "lost". Lack of systematic recording where available.
Loser identification	Number of commercial/subsistence fishers by community pre-intervention, whether incorporated in coop	Heavy dependence on FTs who may be unwilling to acknowledge that some people lose
Impact case studies	Pre and post-project comparisons of fish catch, consumption and income for selected households	Many questions. Serious recall problems. Inconsistency between answers so much checking required. Informants suspicious about use of data.
Photographs	The project environment and the key actors	None

Figure 2: Bilani zamin. Levels of inundation and land use



	Months Inundated	Boro		Amon	
		Crops	Maund/acre	Crops	Maund/acre
A	0	<i>(uncultivated high land)</i>			
B	1-2	China	50-60	BR 11,31,32 Ind.Paijam	35-40
		Wheat	16-20		
		Jute	12-16		
C	4	China	50-60	BR 11,31,32 Ind.Paijam	35-40
D	5	China	50-60	Local T.Amon	25-30
E	5	China	50-60	B.Amon (enda)	20
		Jute	10-12		

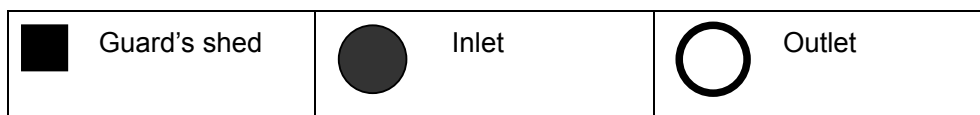


FIGURE 3: CHARACTERISTICS OF MOST COMMONLY USED FISHING TECHNOLOGIES: NETS

	Description	How used	When used	Where used	Note
Seine (<i>ber jal</i>)	Rectangular. Floats on head rope, weights on ground rope. Typically 30 x 4-8 m, but varies with location and targeted species. Large and small mesh variants.	6-12 fishermen encircle a water area. 2 ends of net drawn together, ground rope hauled up from centre of water body	Smaller mesh tend to be used throughout the year, large from December to June but much variation	In floodplains, ponds rivers	
Gill (<i>fandi</i>)	Rectangular. Floats on head rope, weights on ground rope. Net is monofilament nylon twine. One piece 10/25 x 0.5/1m. Large and medium mesh variants.	Number of piece set together, usually in morning, then checked each hour		Set in paddy fields or open parts of flood plain, often on migration routes	Highly efficient, but declared illegal because tends to catch young of large species and damage fish resource
Cast (<i>fika</i>)	Circular with weights along edges and string at apex. Made of thick cotton or nylon twine. 4-9m diameter. Large and small mesh variants.	Thrown from bank or boat. Sinks to bottom then pulled up slowly to catch fish	Smaller mesh tend to be used throughout the year, large late monsoon and early dry season.		
Lift (<i>chatka jal</i>)	Rectangular. 4 corners attached to two split bamboo handles crossing each other as arches. Rope may be used to operate. 3.5x3.5m 5-10mm mesh	Fisherman dips net in water, pushes it forward along bottom, then abruptly lifts it up	In daytime throughout year	Shallow areas in floodplain or canal (khal) where current gentle	
Push (<i>Thela jal</i>)	Small triangular with bamboo frame. 0.75 – 1.5 m at sides. 0.5 – 1 m at front. Mesh 5-10 mm	Operator wades in shallow water, pushing the net on bottom or under water hyacinth, then hauls up to catch fish. Commonly used by women & children	Some places late monsoon, others throughout the year	Shallow water	Ocha push basket same shape and use

CHARACTERISTICS OF MOST COMMONLY USED FISHING TECHNOLOGIES: TRAPS, HOOK & LINE AND SPEARS

	Description	How used	When used	Where used
TRAPS				
Dugair (<i>Jalenga</i>)	Parabolic, with two doors set one behind the other. Made of split bamboo sticks tied with creeper or cane. 2x0.4/.75 m 10-15 mm gap between sticks.	Set in evening and hauled up in morning	In monsoon in some places, throughout year in others	Along banks of canal (khal) or shallow part of floodplain
Vair (<i>Duari deri</i>)	Long box-like with door extending from base to apex. Made of split bamboo sticks tied with creeper or cane. Small variant: .75x.5mx.5m with 5-10mm gaps. Large variant: 1.25x1x1m with 50 mm gaps	Set in shallow water in evening and hauled up next morning. Small opening at apex for removing fish	Monsoon and early dry season	Shallow water
Polo (<i>Polai</i>)	Bell shaped with open bottom and small gap at top	Fisherman presses trap in mud bottom and puts hand through top to remove fish. Usually a large group operate together	Dry season Dec-May	Shallow water
HOOK/LINE				
Borshi (<i>Ketai</i>)	Hook and line with piece of cork, water hyacinth or light wood as float. Earth worm or shrimp as bait	Fisherman operates up to 250/day. Uses small boat to set in daytime, then checks every 2-3 hours	Varies by location and level of inundation	Paddy fields
---- (<i>Chipp</i>)	Hook tied to nylon or cotton twine and attached to bamboo pole with float and bait	Commonly used by women and children	Seasonal in some places through year in others	
SPEAR				
Fulkuchi (<i>Kocha</i>)	Bunch of 12-22 sharply pointed steel wires at end of bamboo pole		Seasonal in some places through year in others	
Aikra (<i>Guchi mara</i>)	Single detachable barbed point and bamboo handle.		December to June	

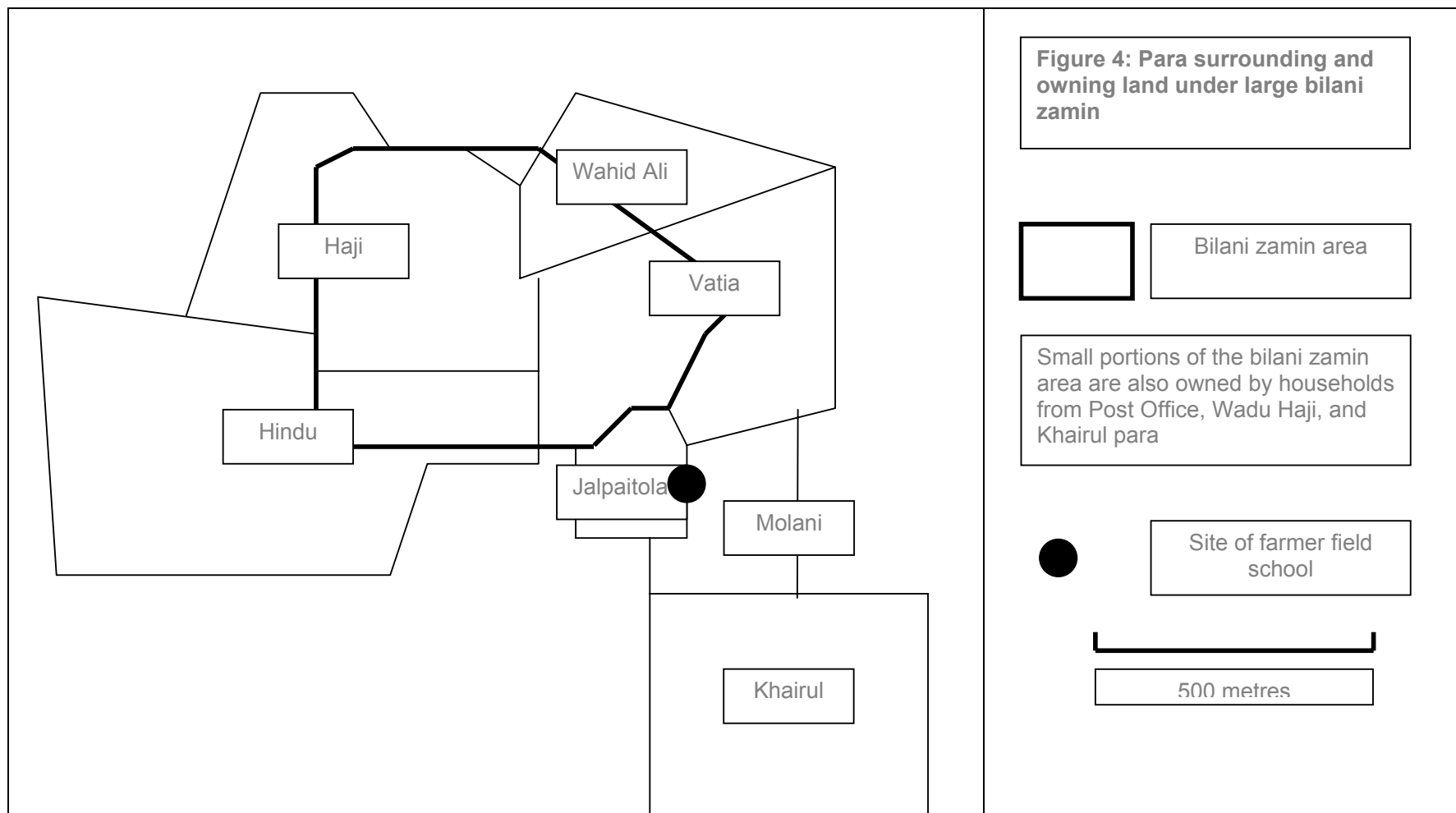


Figure 5: Large bilani zamin: khua owners

No	Name	Para	Rel	BZ acre	No kua	Kua dec
1	Kamini Sarker and Haladhar Sarker	Hindu	H	15	4	18
2	Lolit Sen, Prafulla Sen, Monoranjan Sen	Hindu	H	15	4	15
3	Baikuntha Sarker, Jatindra Sarker	Hindu			1	
4	Mofizuddin Sarker	Hazi	M	20	2	33
5	Solaiman Sarker	Hazi	M	15	2	22.5
6	Tomizuddin Ahmed, Ramjan Ali	Hazi	M		1	
7	Zahirul, Dulal	Hazi	M		2	12
8	Tofazzel Hossain/Sahidul Islam/Samsuddin	Post office	M		1	10
9	Afazuddin Ahmed	Wadu Hazi	M	7	2	30
10	Wahid Ali	Wahid Ali	M		1	
11	Noren Hemrom	Vatia			1	
12	Hozibuddin	Molani			2	
13	Khairul Islam, Alam, Azad	Khairul	M		4	40
14	Hobibar Rahman, Dobirul	Khairul	M		2	
15	Ranjen Hazada, Dobe, Motilal, + brother	Jolpaitola	S		1	

Figure 6: Big Bilani Zamin: power relations, land holdings and engagement with CARE activities

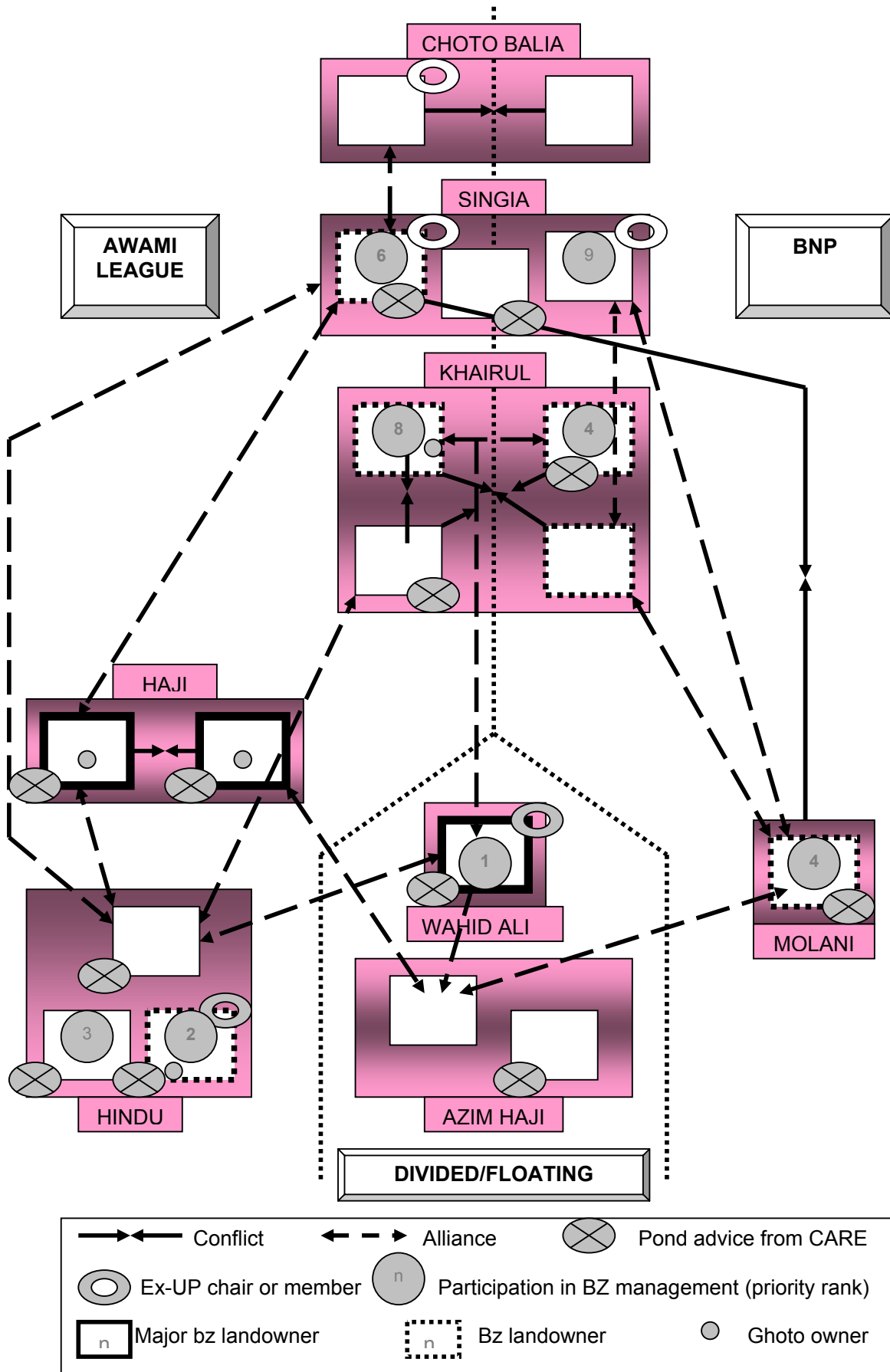
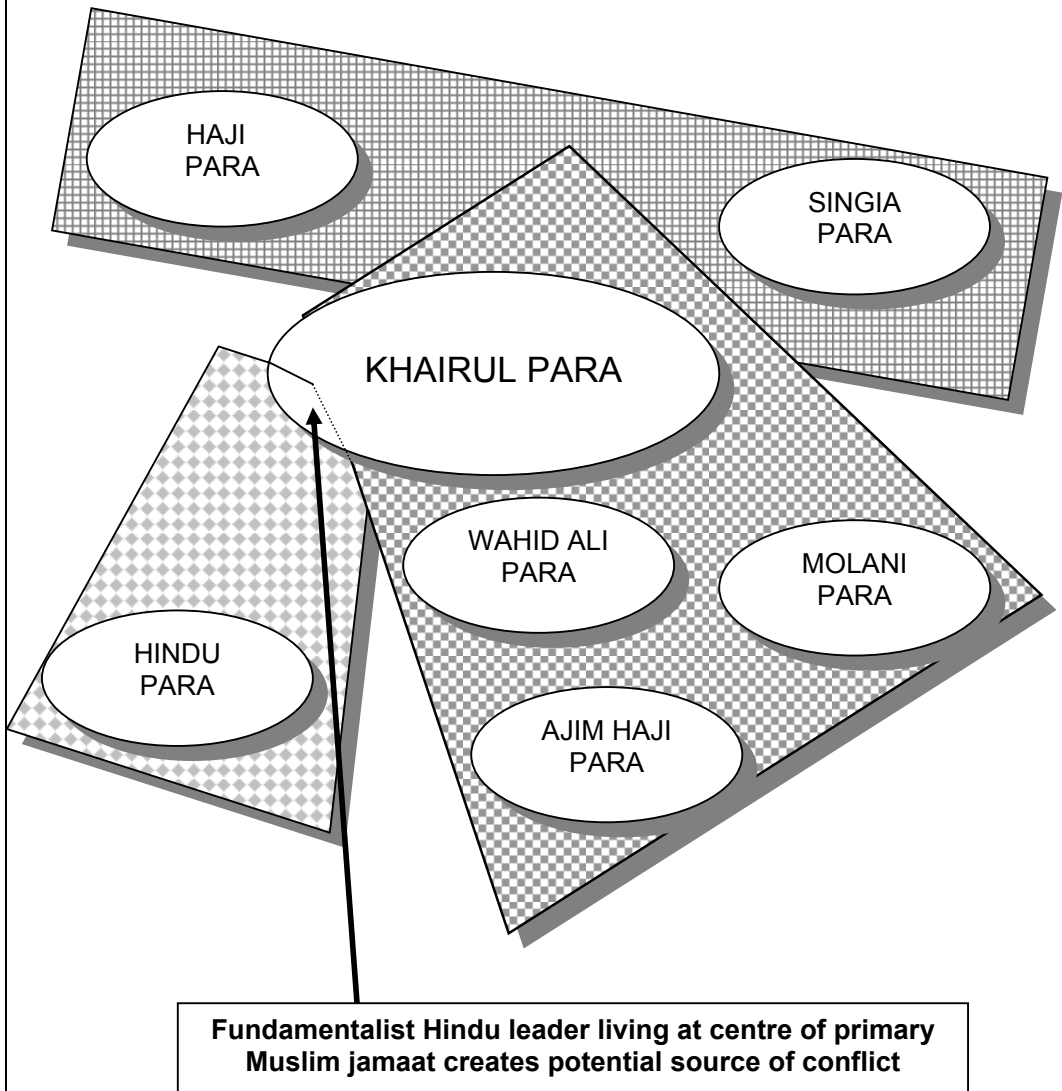


Figure 7: Big Bilani Zamin, religious affiliations and linkages



	Hindus
	Cross para jamaat centred on Khairul mosque
	Wider Muslim grouping supporting Khairul madrassa and orphanage

Figure 8: Gender roles

	Haji para (Muslim)		Jalpaitala (Santal)	
	Men	Women	Men	Women
Field crops				
Land preparation*	9	1	10	0
Sowing/transplanting	7	3	4	6
Vegetable cultivation*	3	7	3	7
Dike cropping* (a)	3.5	7.5	3	7
Inter-cultural operations*	7	3	8	2
Irrigation*	8.5	1.5	8	2
Pest management	10	0	8	2
Processing*(b)	4.5	5.5	5	5
Marketing	10	0	10	0
Rice-fish culture				
Prepare infrastructure	10	0	10	0
Fish seed stocking	10	0	10	0
Supplementary feeding	4	6	0	10
Rice harvesting	8	2	7	3
Seed preservation	10	0	10	0
Marketing	10	0	10	0
Pond fish culture				
Embankment preparation	10	0	10	0
Fish seed stocking	10	0	10	0
Guarding*	3.5	6.5	5	5
Supplementary feeding*	4.5	5.5	0	10
Harvesting*	7.5	2.5	8	2
Seed preservation	6	4	10	0
Marketing	10	0	10	0
Bilani zamin fish-culture				
Fencing/dike preparation	10	0	10	0
Fish seed stocking	10	0	10	0
Guarding*	9.5	0.5	10	0
Open water fishing	10	0	8	2
Catch from ghotos	10	0	10	0
Marketing	10	0	10	0

Rankings given in separate exercises by men and women in Hajipara differed. Figure represents the average of the two scores.

(a) Women did not engage in this activity five years ago

(b) Women's role more prominent five years ago

Figure 9: Balia main events

	2000	2001					2002					2003																		
	X	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
FARMER FIELD SCHOOL																														
Season		FIRST					SECOND					THIRD																		
Select area	X																													
Interact with wider community		X																												
Select FFS/Buddies/CO		X	X						X																					
Plan, monitor, evaluate			X				X	X						X	X														X	
Build/maintain infrastructure			X				X	X	X										X											
Learning/support sessions				X	X					X																				
Fish seed release/harvest				X			X				X																			
Vegetable plant/harvest/sell				X	X		X			X									X	X										
Visits and cross visits						X								X	X															
Interact with wider community							X								X														X	
Other activities (see key)							1	2				3	4	5																
Accessing outside services											X	X	X						X	X	X	X	X	X						
BILANI ZAMIN																														
Season							FIRST					SECOND																		
Local/member discussions		X	X	X		X	X	X	X					X	X						X	X				X	X	X	X	
Assess feasibility					X																									
Recruit members/committees									X										X	X	X									
Finances									X	X						X					X								X	
Build/maintain infrastructure									X	X											X									
Stock/harvest/market										X	X	X		X	X	X	X	X			X	X								
Deal with problems														X	X										X					
	X	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
	2000	2001					2002					2003																		

1 Marketing systems 2 Sanitation, hygiene 3 Savings group 4 Assisted access to service providers 5 Livestock vaccination, poultry training

Figure 10: Bilani zamin, time inputs by person and activity (hours)

		CARE							SANTAL				UP				ELITE				OFFICIAL									
Preliminaries (Aug 2001 - Oct 2003)		MONTH	TOTAL	Female FT	Male FT	PO	TO Marketing	TO advocacy	PM	PC	Female CO	Male CO	Lantu Tudu (elite)	Saba Kisku (elite)	Wahed Ali (ex.mem)	Afaz Uddin Ahmed	Afaz Uddin Bhuiyan	Md Abdus Sattar (chair)	Hazi Md S'man Sarker	Kamini Babu	Md Hazim Uddini	Md Khairul Islam	Mozammel Haq	Lalit Sen	Habibur Rahman	Md Samsuddin	District Commissioner	Union Fisheries Officer	District fisheries officer	
	FFS members initial discussion	Aug	110	21	21						10	15	15	8	20															
	List key people to involve in discussions	Sep	27								4	5	6	10	2															
	Discuss/build rapport with key people	Oct	65	30	35																									
	Feasibility study	Nov	43	8	8						2	2	2	2	3	2	2	2	2	2	2	2	2	2						
	Discuss with elites from surrounding para	Dec	35	5	5						3	4	5		7	3	1		2											
	Parawise discussion and interaction	J/Fe	94	5	5						6	10	10	7	11	14	1		6	10	5	2	2							
	Seek support from UP	Feb	10	2	2	2	2	2																						
	Explore Santal role with bz landlords	Feb	35	3	4						2	2	8	2	3	3			2	3		1	2							
	Set up general meeting	Mar	45	2	5	2	2	2	2		2	2	2	2	2	2	2		2	2	2	2	2	2	2	2			2	
	Parawise meetings	Mar	128	5	20	2	2	2				20	16	10	14	10			6	6	3	10	2							
	Agree membership criteria/how to include poor	Mar	18	1	1						1	1	1	1	1	2			1	1	1	1	2	2	1					
	Form cttes./make appointments/agree subs	Mar	13	1	1	1	1	1			1	1	1	1	1	1	1													1
Total			528	83	107	7	7	7	2		17	42	45	25	42	37	7	2	21	24	13	18	12	4	3				3	

Figure 10: continued

First season
(April 2002 – Jan 2003)

	MONTH	TOTAL	CARE				SANTAL				UP				ELITES				OFFICIAL													
			Female FT	Male FT	PO	TO Marketing	TO advocacy	PM	PC	Female CO	Male CO	Lantu Tudu (elite)	Saba Kisku (elite)	Wahed Ali (ex.mem)	Afaz Uddin Ahmed	Afaz Uddin Bhuiyan	Md Abdus Sattar (chair)	Hazi Md S'iman Sarker	Kamini Babu	Md Hazim Uddini	Md Khairul Islam	Mozammel Haq	Lalit Sen	Habibur Rahman	Md Samsuddin	District Commissioner	Union Fisheries Officer	District fisheries officer				
Collect subs/start accounts/infrastructure	Apr	213	15	20					4	20	30	30	15				8	40	5	3	1	20	2									
Agree ghoto harvesting prices/collect seed	May	71	6	18						21	3	4	2	1	1		2	6	1	2	1	1	1	1	1							
Fish seed stocking	M/Jul	125	11	18	2	2	3	2	2	1	18	26	10	4	2	2	3	5	3	3	2	4	2									
Build shed/prepare guard roster	Jun	36								15	15		2				1		1	1		1										
General meet.: report progress/deal disputes	Jul	50	4	6					6	12	3	3	6	2			1	2	1	1	1	2										
Build awareness/impose & enforce restrictions	Aug	47	3	4					3	5	5	4	3	4	2		3	5	1	2	1	2										
Fish fortnight rally	Aug	42		5		5	2		5	5	5	5	5															5	5			
Government fish seed release	Sep	80	5	8	4	3	3	4	2	5	8	8	8	2	1	2	1	2	1	1	2	2		1	2	3	2					
Observation/discussion/protection	S/Oc	39	4	4			3			3	4	4	3	2	1		1	1	1	1		2		1		1						
Market survey	Oct	53		8	1	12				8	12	9						2														
Negotiate price with pikers	Nov	26		2	2	2				2	2	2	2	2			2	2		2		2		2								
Harvesting begins	N/Ja	100	6	16	2	4	4			16	16	16	3				5	6	2	2		2										
Open bank account/start deposits	Nov	20		4						4	4		4				4															
Sell at market	Dec	42		3	3	3	3	3		3	3	3	3					3	3	3	3		3									
Analyse cost-benefit/deposit cash	Jan	144	4	16					4	16	16	16	16	4	4	4	4	4	16	4	4	4	4	4	4	4	4	4	4	4		
Total hours		1088	58	132	17	31	16	11	4	31	157	152	113	64	17	11	38	78	35	25	12	46	9	9	2	3	17					

Figure 10: continued

Second season
Jan-Oct 2003

			CARE				SANTAL				UP				ELITES				OFFICIAL									
	MONTH	TOTAL	Female FT	Male FT	PO	TO Marketing	TO advocacy	PM	PC	Female CO	Male CO	Lantu Tudu (elite)	Saba Kisku (elite)	Wahed Ali (ex.mem)	Afaz Uddin Ahmed	Afaz Uddin Bhuiyan	Md Abdus Sattar (chair)	Hazi Md S'man Sarker	Kamini Babu	Md Hazim Uddini	Md Khairul Islam	Mozammel Haq	Lalit Sen	Habibur Rahman	Md Samsuddin	District Commissioner	Union Fisheries Officer	District fisheries officer
Re-organise management & committees	Jan	32		2						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
Brief new UP and secure support	Jan	7		1								1	1							1				1				
Re-org. follow up/choose new point people	F/Ma	24	2	5							3	3							3	1	1		1					2
General meeting/re-organise committees	Mar	30		2						2	2	2	2					2	2	2	2	2	2	2	2			2
New members/fix ghoto prices/ santal pay	Mar	14		1							1	1	1					1	1	1	1	1	1	1	1			1
Link other rice-fish groups to fix piker prices	Apr	9		1							1		1						1		1	1	1					1
New guard roster/re-build sheds and fences	Apr	82		4							20	20	18					2	1	1	4	2	4					
Fish stocking	A/Ma	24		2							2	2	2					2	2	2	2	2	2					2
Sign board & calculate initial cost	May	42		2							4	4	4					4	4	4		4	4					4
Dispute resolution/re-build sheds & fences	Jun	45		3	3						3	3	3					3	3	3	3	3	3	3	3			3
Regualr observe, more guards, small meets	J/Se	120									10	10	10					10	10	10	10	10	10	10	10			10
Marketing sub-group collect information	Oct	20									2	2	2					2	2		2	2	2					2
Total hours		449	2	23	3					4	51	50	35					28	32	26	28	29	33	18	29			

Figure 11: Total time inputs by activity

MONTH	CARE								SANTAL				UP				ELITES				OFFICIAL						
	TOTAL	Female FT	Male FT	PO	TO Marketing	TO advocacy	PM	PC	Female CO	Male CO	Lantu Tudu (elite)	Saba Kisku (elite)	Wahed Ali (ex.mem)	Afaz Uddin Ahmed	Afaz Uddin Bhuiyan	Md Abdus Sattar (chair)	Hazi Md S'iman Sarker	Kamini Babu	Md Hazim Uddini	Md Khairul Islam	Mozammel Haq	Lalit Sen	Habibur Rahman	Md Samsuddin	District Commissioner	Union Fisheries Officer	District fisheries officer
(Aug 2001 - Oct 2003)																											
Preliminaries	528	83	107	7	7	7	2		17	42	45	25	42	37	7	2	21	24	13	18	12	4	3				3
Season 1	1088	58	132	17	31	16	11	4	31	157	152	113	64	17	11	0	38	78	35	25	12	46	9	9	2	13	7
Season 2	449	2	23	3	0	0	0	0	4	51	50	35	45	10	2	1	28	32	26	28	29	33	18	29	0	0	0
Total hours	2065	143	262	27	38	23	13	4	52	250	247	173	151	64	20	3	87	134	74	71	53	83	30	38	5	13	7
8 hour day equivalents	258	18	33	3	5	3	2	1	7	31	31	22	19	8	3	0	11	17	9	9	7	10	4	5	1	2	1

Figure 12: Big Bilan Zamin – winners and losers

Category		No.	Type of benefit/loss	
General	Specific		Direct material	Other
Winners				
Elite	Big land owners	15	Major	Access to new knowledge
	Pond owners	15		Access to new knowledge
	Ghoto owners	12		
	Committees	30	Minor	
Non-elite	Co-op members	132		Increased social interaction
	- Santal FFS	33		Greater social integration
	- Labourers			
Suppliers & buyers	Bamboo	8	Signif.	
	Fish seed	4		
	Pikers	8		
Other	Santal leader	1		Greater acceptance as leader
	Ex-UP chair	2		Increased role in community affairs and external connections
	UP members	3		
Losers (non-co-op)				
Subsistence fishers	"Illegal"	15	Major	
	Other	66	Signif.	
Commercial fishers	Non-co-op	11	Signif	

Table 1: Returns from paddy production

Land Category	A	B	C	D	E	Total
Area in acres	10	80	50	30	30	200
Amon						
Main crop		Paijam	Paijam	Local amon	B. Amon	
Yield (maunds/acre)		37.5	37.5	27.5	20	
Price per maund (taka)		375	375	400	400	
Total value (tk)		1125000	703125	330000	240000	23987125
Boro						
Main crop		China	China	China	China	
Yield (maunds/acre)		55	55	55	55	
Price per maund (tk)		195	195	195	195	
Total value (tk)		858000	536250	321750	321750	2037750
Grand total (tk)		1983000	1239375	651750	561750	2398125

Table 2: Main fishing technologies

Type	Bangla name	% of catch	Price (taka)	
			Minimum	Maximum
Nets				
Seine	<i>Ber jal</i>	20	5000	7000
Gill (current jal)	<i>Fandi</i>	15	500	900
Cast	<i>Fika</i>	10	500	900
Lift	<i>Chatka</i>	4	40	70
Lift	<i>Nafi</i>	3	40	70
Push	<i>Tela jal</i>	3	30	40
Sub-total		55		
Traps				
Dugair	<i>Jalenga</i>	6	40	70
Vair	<i>Duari deri/Darki</i>	4	30	70
	<i>Tepai</i>	3	30	50
Polo	<i>Polai</i>			
Sub-total		13		
Hook and line				
	<i>Nofa</i>	5	3	10
Wheel		4	200	250
Borshi	<i>Ketai</i>	4	10	20
	<i>Chhip</i>	4	3	10
Sub-total		17		
Spear				
Fulkuchi	<i>Kocha</i>	3	40	70
Aikra	<i>Guchi mara gol</i>	2	20	50
Sub-total		5		
Barrier	<i>Dewai</i>	10		
Total		100		

Table 3: Priority ranking of species by local people around big Bilani Zamin

Origin	Family	Species (<i>local name</i>)	Feeds*	Cms.	Rank	
					(a)	(b)
Exotic	Carp	Bighead (<i>brigid</i>)	S	?	10	13
		Common (<i>hungari mirror</i>)	B	?	11	3
		Silver	S	?	12	1
		Scale © (<i>carpio</i>)	S	?	13	-
		Grass	S	?	15	9
		Nile Tilapia (<i>nilotica</i>)	S	?	16	-
Indigenous	Carp	Mrigal (<i>mirga</i>)	B	84	1	12
		Catla (<i>catal</i>)	S	120	6	6
		Rohu (<i>rui</i>)	S	94	7	11
		Black rohu (<i>kalibaas</i>)	B	71	8	-
		Olive barb (<i>sarputi</i>)	S	42	9	-
	Snakehead	Striped (<i>shol</i>)**	S	90	2	2
		Climbing perch (<i>koi</i>)	S	18	3	-
		Spotted (<i>taki/sati</i>)**	S	24	(24)	8
	Catfish	Stinging (<i>shing</i>)	B	28	4	-
		Walking (<i>magur</i>)	B	30.2	5	10
		Tengra (<i>bish tengra</i>)***	S	6.2	(19)	5
	Knifefish	Grey featherback (<i>foli</i>)**	S	36	14	-
	Small ***	Spotfin swamp barb (<i>puti</i>)	S	12.2	(20)	7
		Other				4

Rankings (a) as given by local people (b) on basis of coop sales by market value

Figures in italics in column (a) show these species are only ranked as of “medium importance” by local people

*S(surface) B(ottom) ** Predator

*** May be sold mixed with other species. All other species sold individually

Table 4: Households by class

	Big	Middle	Small	Marginal	Landless	Total
Para						
Hindu	6	8	15	3	5	37
Haji	4	13	23	6	8	54
Jalpaitala	0	5	16	3	6	30
Total	10	26	54	12	19	121
<i>Percentages</i>						
Hindu	16	22	41	8	14	100
Haji	7	24	43	11	15	100
Jalpaitala	0	17	53	10	20	100
Total	8	21	45	10	16	100

Table 5: Approximate land holdings of leading individuals

No	Name	Para	Land (acres)		No. of ghoto
			Overall	BZ	
I	Ansarul Chowdhury	Choto Balia	50		
II	Dalim Chowdhury	Choto Balia	60		
a	Azim Uddin Haji	Azim Haji	50		
b	Dobirul Islam	Khairul	18	1	1
01	Afaz Uddin Ahmed	Singia	50	7	
02	Lolit Babu	Hindu	12		3
03	Khairul Islam	Khairul	35	4	
04	Hazim Uddin	Molani	40	8	1
05	Habibur Rahman	Khairal	35	2	1
06	Wahed Ali	Wahed Ali	30	15	
07	Soleiman	Hazi	40	15	3
08	Kamini Babu	Hindu	12	5	1
09	Ram Babu	Khairul	15		
10	Mofiz Uddin	Hazi	50	13	2
11	Alim Uddin	Singia	36		
12	Abdul Jabbar	Azim Haji	45		
13	Bai Kuntha Master	Hindu	5		1
14	Afaz Uddin Bhuiyan	Singia	50		
15	Shamsuddin	Post Office	30	4	

Table 6: Effect of co-op on those previously fishing in bilani zamin
(based on estimated by field trainer)

Number of fishermen	Haji	Vatia	Wahed Ali	Jolpatola	Hindu	Khairul	Molani	Vadu Haji	Mohon	Other*	Total	%
Stopped fishing												
<i>Co-op members</i>												
Subsistence	12	4	10		1		5		1		33	19
Occasionally sold fish	5			4			2				11	6
Professional	4	7		4	1	2		1			19	11
Sub-total	21	11	10	8	2	2	7	1	1	0	63	35
<i>Non co-op members</i>												
Subsistence	18	15		8	6	7		2	2		58	33
Occasionally sold fish	10		10				2	1			23	13
Professional										11	11	6
Sub-total	28	15	10	8	6	7	2	3	2	11	92	52
<i>Overall</i>												
Subsistence	30	19	10	8	7	7	5	2	3		91	51
Occasionally sold fish	15		10	4			4	1			34	19
Professional	4	7		4	1	2		1		11	30	17
Sub-total	49	26	20	16	8	9	9	4	3	11	155	87
Still fishing												
<i>Non-co-op & subsistence</i>												
		9	7		7						23	13
<i>Overall</i>												
Subsistence	30	28	17	8	14	7	5	2	3		114	64
Occasionally sold fish	15		10	4			4	1			34	19
Professional	4	7		4	1	2		1		11	30	17
Total	49	35	27	16	15	9	9	4	3	11	178	100
Co-op members	21	11	10	8	2	2	7	1	1		63	35
Non co-op members	28	24	17	8	13	7	2	3	2	11	115	65
Total	49	35	27	16	15	9	9	4	3	11	178	100

*Kumarpur village in Balia Union and Munshirhat village in Debipur Union

Table 7: Pre- co-op costs, returns and fishing activities

Accruing to 15 kua owners

Total value of lease	19200
plus c 15% in kind	8823
Total	28023
<i>Average per owner</i>	<i>1868</i>

Accruing to professional fishermen*

Total value of sales (a)	50000
Lease	19200
Expenses (b)	7500
Net return	23300
8 Hour days worked ©	551.25
Return/day	42

Subsistence & commercial fishing*

	Subs	Comm	Total
Number of households	67	7	74
Av. No. days fished mid-June - mid-August	15	15	
Av. No. days fished mid-August - mid-Oct	30	30	
Total average number of days fished	45	45	
Av. Daily catch/household (kgs)	0.25	2	
Av seasonal catch/household (kgs)	11.25	90	
Av. Value/kg	30	30	
Av seasonal value of catch/household	337.5	2700	
Total value of catch for group	22613	18900	41513
FT' estimate without doing calculation			23000
Total value of production		%	
Kua holders value in kind	8823	9	
Professional kua fishers' sales	50000	50	
Other professional catch	18900	19	
Small/partime fishers' catch	22613	23	
Total	100336	100	

* Field trainer's estimate

(a) Sometimes sell to retailers sometimes direct to market

(b) Comprises STW hire, net hire and transport.

© 45 days x 7 men x 1.75 hours over 6 week period late November to early January

Table 8: Full and associate (buddy) member households of the Jalpaitala FFS by para

Para	Full members	Buddy members	Total	%
Jalpaitala	14	2	16	18
Molani	6	3	9	10
Mohon	1		1	1
Hazi		15	15	17
Wahed Ali		11	11	13
Hindu		9	9	10
Vaduhazi		6	6	7
Bhatia		6	6	7
Khairul		4	4	5
Ram Babu		2	2	2
Azim Hazi		1	1	1
Post Office		1	1	1
Other		7	7	8
Total	21	67	88	100

Table 9: Co-operative costs**1. Construction and maintenance (?)**

%

Materials

Bamboo for fences	4580
Signboard	500
Sub-total	5080

Labour

Bana construction	2163
Bana installation	300
Jalenga construction (with bamboo)	200
Bamboo transport by van	450
Sub-total	3113

Kowya Cost	16700
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Total	24893
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2. Fish seed purchase (see table 10)**3. Fish "harvesting" expenditure**

%

Equipment hire and purchase

Shallow machine rent (1000+4000)	5000	67.9
Machine	100	1.4
Net purchase	80	1.1
Net hire (three occasions)	133	1.8
Weighing set	50	0.7
Torch battery	30	0.4
Notebook/pen	20	0.3
Sub-total	5413	73.6

Labour

Daily hired labour	1395	19.0
Night guards (2)	200	2.7
Drum beating	12	0.2
Sub-total	1607	21.8

Sundries

Snacks	178	2.4
Kerosine	21	0.3
Cigarettes	24	0.3
Van fare	16	0.2
Diesal	100	1.4
Sub-total	339	4.6

Total	7359	100
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Table 10: Fish seed purchases
(over a period of a month from late April 2002)

Species	Kg	Tk/kg	Value(tk)	%	% catch by value
Silver carp (a)	52.0	90	4680	21.9	28.4
Catla	40.0	125	5000	23.4	4.3
Spotfin swamp barb (<i>puti</i>)	34.0	140	4760	22.3	3.3
Common carp (a)	24.0	160	3840	18.0	13.9
Rui/mrigel	38.5	80	3080	14.4	3.2
Total	188.5		21360	100	53
Donated by Fisheries Department					
Silver carp (a)					
Spotfin swamp barb (<i>puti</i>)					
Catla					
Mrigal					
Rui					
Total	179.0				
Grand total	367.5				

(a) exotic species

Table 11: fish sales by species and dealer (taka)
(assumes equal division of catch where two fish together)

	Mobarak	Tosir Vandi	Hazrat	Mifiz	Amir	Hbi	Jatibhanga	Total
Silver carp	10026	5431.5	2297.5	4514	1169.5			23438
Striped snakehead (<i>shol</i>)	5373	4876	3491	1880	620	520		16760
Common carp	4237	2955	1982	620	1195	300	210	11499
Small indigenous species (SIS)	4019	878	2017	1134	135		262	8445
Tengra (<i>bish tengra</i>)	4012		540	480		260	190	5482
Katla	1362.5	1362.5	195	390	195			3505
Spotfin swamp barb (<i>puti</i>)	1240	568	135	602	135			2680
Spotted snakehead (<i>shati</i>)	1155	255	330	630	90	150	70	2680
Grass carp	1614.5	126.5	836		96			2673
Magur	640		1360	60				2060
Rohu (<i>rui</i>)	320	320	277	335	120		60	1432
Mrigal (= mirga?)	182.5	437.5	97.5	90	97.5	246	60	1211
Bighead (<i>bringed</i>)	584							584
Total	34765	17210	13558	10735	3853	1476	852	82449
%	42.2	20.9	16.4	13.0	4.7	1.8	1.0	100

Table 12: Total catch by value (taka)

		%
<i>Exotic from fish seed</i>		
Silver carp	23438	28.4
Common carp	11499	13.9
Grass carp (a)	2673	3.2
<i>Sub-total</i>	37610	45.6
<i>Indigenous from fish seed</i>		
Catla	3505	4.3
Spotfin swamp barb (<i>puti</i>)	2680	3.3
Rohu (<i>rui</i>)	1432	1.7
Mrigal	1211	1.5
<i>Sub-total</i>	8828	10.7
<i>Indigenous species already in bz</i>		
Striped snakehead (<i>shol</i>)	16760	20.3
Small indigenous species (SIS)	8445	10.2
Tengra (<i>bish tengra</i>)	0	0.0
Spotted snakehead (<i>shati</i>)	2680	3.3
Magur	2060	2.5
Bighead (<i>bringed</i>)	584	0.7
<i>Sub-total</i>	36011	43.7
Total	82499	100

(a) Not recorded as released but can only have come from this source

Table 13: Total value of production

	Tk	%
Accruing to coop		
Initial direct sales by committee members	7434	5.0
Sales through pikers	82449	55.4
Payment received from direct sales to public	2888	1.9
Sales from final harvest after pump out	9500	6.4
Sub-total	102271	68.7
Accruing to other parties		
In kind payment to kua owners	6970	4.7
"Stolen"/poached (estimates)		
Major theft with guard's collusion	19200	12.9
Private sales by committee members	3000	2.0
Poached by local fishers	9800	6.6
Stolen by ctte member's son	2000	1.3
Outstanding from direct sales to public	5606	3.8
Sub-total	46576	31.3
Total value of production	148847	100.0

**KHAS POND
FIGURES**

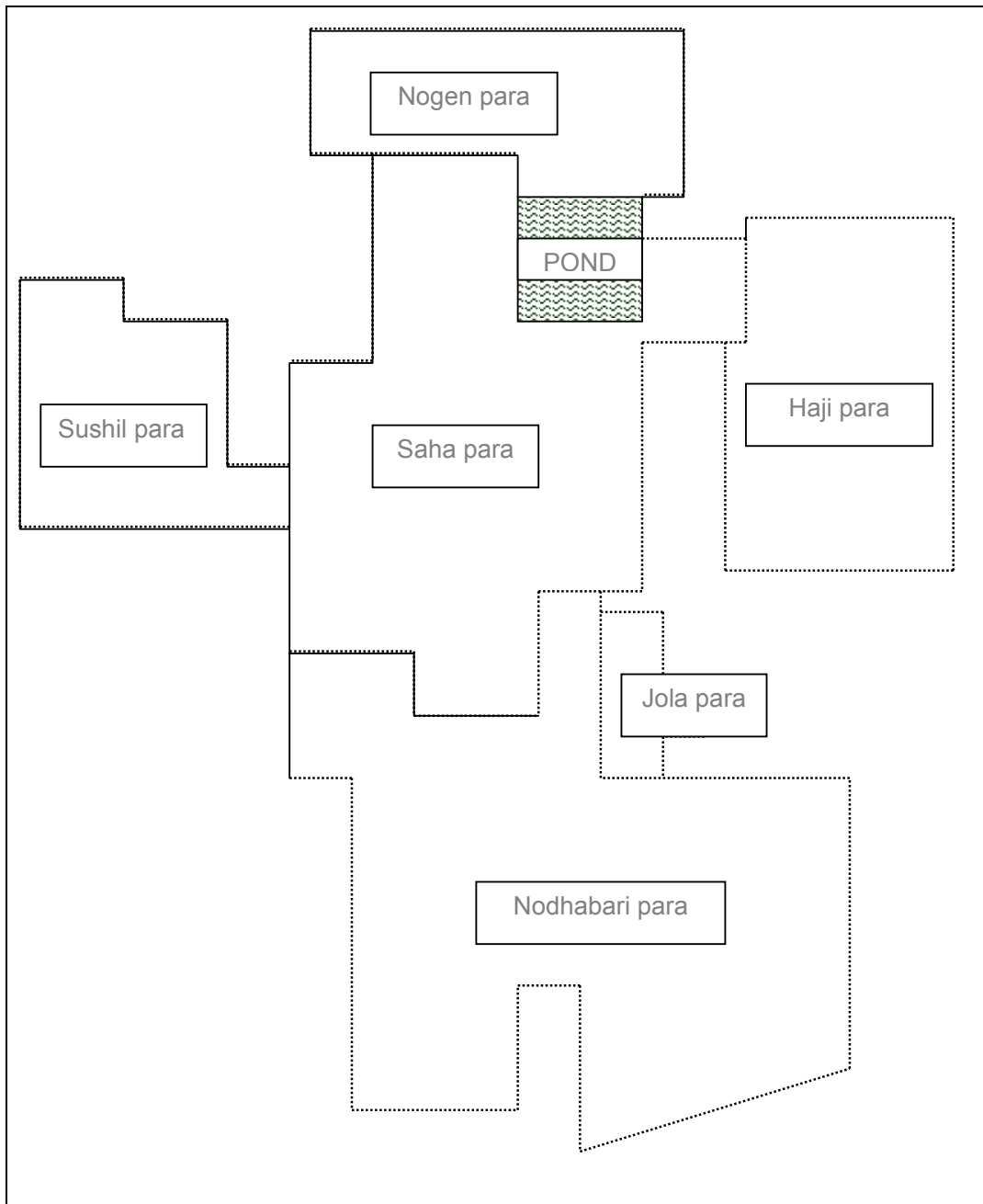


Figure 1: Main para surrounding and participating in khas pond management

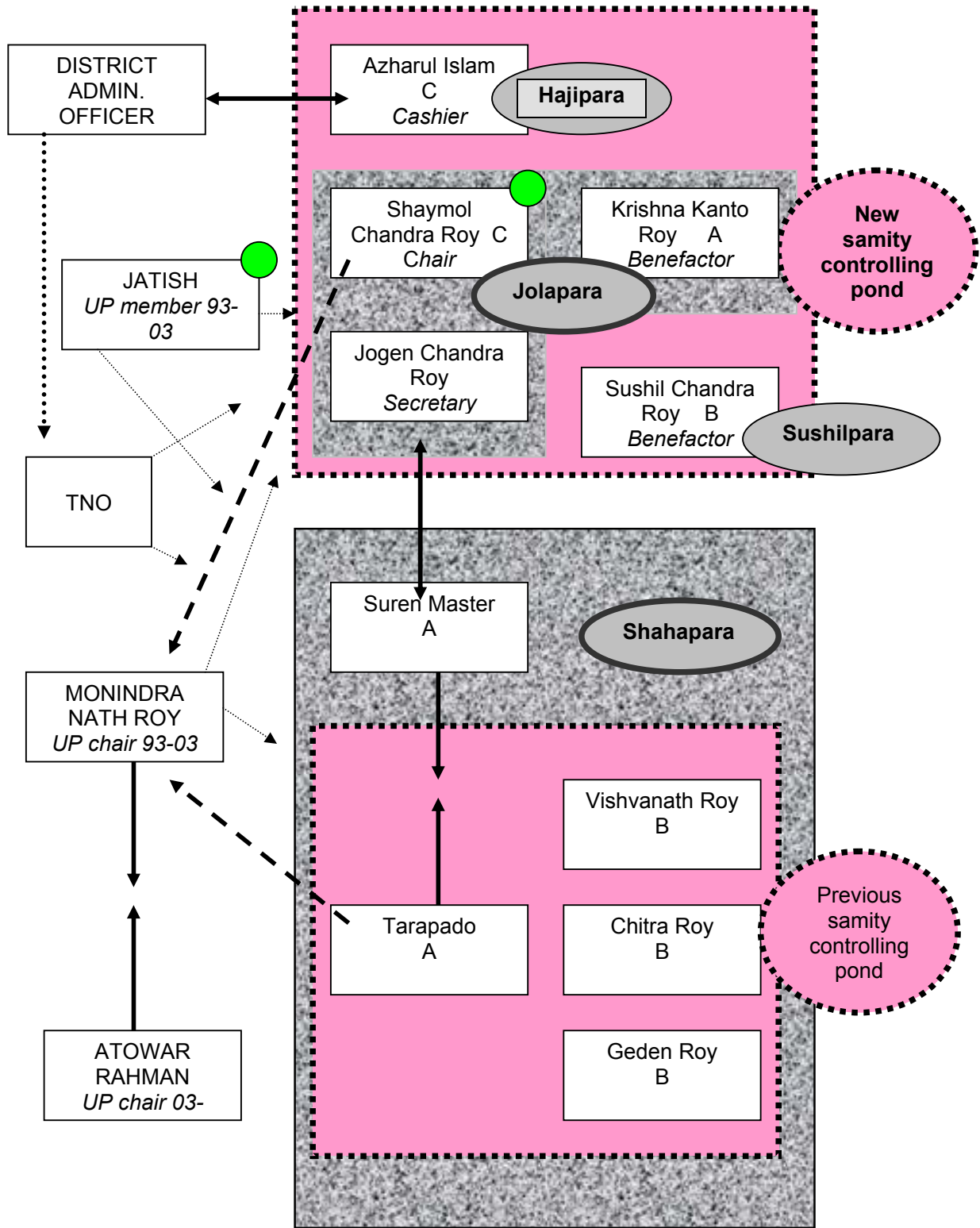


Figure 2: FFS membership, coop participation, and political allegiances affecting khas pond



Figure 3: Nayabad khas pond: management and control from the colonial period to the present

Period	Mode of exploitation & infrastructure	Administrative arrangements & management system	Other key developments
Colonial	Annual floods bring indigenous species	Open access	
1971		Fisheries Department working through a joint UP and Upazilla committee takes control and leases to individuals	
1981	Embankments constructed. Fish culture replaces harvesting of indigenous species Re-construction of embankments and plantation established by DNKSS. Outlet constructed by LGED	Control passes to Bangladesh rural development board which leases to cooperatives. Daksin Nayabad Krishok Samobay Samity formed and wins lease	One other samity bids against DNKSS when initial lease expires but is unsuccessful
1995 (?)		Youth Development Department assumes control. DNKSS again secures lease.	
1998			Substantial bribes paid to administration by DNKSS to retain lease. Nayabad Bekar Jubo Unnayan Samiti (NBJUS) formed
2000		NBJUS bids successfully for lease	Sabotage by DNKSS leader and allies disrupts production in first year FFS formed . CARE helps to resolve dispute
2003		New tenders invited but none are accepted. Barind authority assumes control	New UP chair alleged to have appropriated fish

Figure 4: Khas pond, main events

	98	99	2000						2001						2002						2003				
	Se		JF	MA	MJ	JA	SO	ND	JF	MA	MJ	JA	SO	ND	JF	MA	MJ	JA	SO	ND	JF	MA	MJ	JA	
KHAS POND (a)	PRELIMINARIES			CYCLE 1						CYCLE 2						CYCLE 3									
Samity founded	X																								
Training/familiarisation		X																							
Secure credit			X																						
Bidding for lease					X																	X	X	X	
Collect subs/pay install.					X										X		X								
Fish stocking					X	X					X					X	X				X				
Harvesting										X					X	X	X				X				
FARM. FIELD SCHOOL											SEASON 1			SEASON 2			SEASON 3								

(a) Unlike the bz cultivation takes place throughout the year, so cycles overlap to some extent

Figure 5: Khas pond. Time input by person and activity (8 hour days)

	MONTH	TOTAL	Samity	Samity EC	Para people	Suren Roy (IP)	Obinash (IP)	Tarapado (IP)	Youth Dev Officer	Upaz Khas Cite	UNO	Admin off DC office	Ex-UP chair	Jyotish (ex UP)	FTs (2)	PO	PO	TO advocacy	Other
PRELIMINARIES (Sept 1998 - July 2000)																			
	01. Nayabad samity officially established	Sep	251	236	6	6	0.4		1										1.5
	02. 30 members trained by Youth Dev. Dept.	98	2139	2070	0	0	0	0	69	0	0	0	0	0	0	0	0	0	0
	03. Samity informed about khas pond	99	4	0	3				1										
	04. Members collect info about pond status	99	19	0	9				7	3									
	05. Find out about govt. leasing procedures	99	16	0	11				2	3									
	06. Members decide to bid for pond lease	Jan	5	5	0		0.1	0	0	0									
	07. 20/30 trained members get credit from YDD	Feb	11	10	0		0	0	1	0									
	08. Bid for lease	May	7	5	1		0.3		0	0			0.3						
	09. Acquire 3 year lease	Jun	3	0	2				0	2									
	10. School teacher sabotages initiative	Jul	0	0	0			0	0	0									
	12. Members' contributions collected	Aug	16	9	6														
	11. First installment lease money paid	Sep	13	8	4				1	1	0.1								
	Total		2484	2343	42	6	1		81	9	0.1		0.3						1.5
FIRST CYCLE (August 2000 - June 2001)																			
	13. Fish seed stocking	Aug	8	6	2														
	14. Fish feed purchased	Sep	1	0	1			0.3											
	15. Net rented, harvesting, sales	Jun	19	11	9														
	Total		28	16	12		0.3												

Figure 5 continued

SECOND CYCLE (June 2001 - May 2002)

	MONTH	TOTAL	Sanity	Samity EC	Para people	Suren Roy (IP)	Obinash (IP)	Tarapado (IP)	Youth Dev Officer	Upaz Khas Ctte	UNO	Admin off DC office	Ex-UP chair	Jyotish (ex UP)	FTs (2)	PO	PO	TO advocacy	Other
16. Fish seed stocking	Jun	26	18	8															
17. Collection of members' contributions	Jun	18	14	4															
18. Refund credit to YDD	Jun	7	4	3					0.3										
19. Fish feed purchased	Jun	2	0	1											1.0				
20. FFS formed	Jul	10	4	0	0										5.0	1	0.3		
21. Pond identified as key resource by FFS	Jul	11	1		8.8										1.8				
22. Samity seeks GO-IF help with khas crisis	Sep	10	2	2	5.5	0	0	0	0.0	0	0	0	0	0	0.0	0	0	0	0
23. FTs agree to work on pond	Oct	1	0												0.3	1	0.1	0.4	
24. Samity members explain position to FTs	Oct	18	14	2											2.0	1	0.3		
25. FGD with para residents to seek views	O/N	3	1		1.5										0.5	1	0.1	0.3	
26. Discussion with school teacher	O/N	1	0	0	0.0	0	0	0.4	0.0	0	0	0	0	0	0.9	0	0	0	0
27. Discussion with Upazilla khas ctte	N/D	12	0	11	0.0			0.0	0.2		0.1			0	0.8	1	0.3		
28. Inform teacher of ctte decision	N/D	0	0					0.1							0.3	1	0.1		
29. Communication with UP bodies	O/N	8	4	1	0.0	0.3	0.0						0.4	0.4	1.0				
30. Discuss with local elites and IPs	O/N	14	4	4	4.4	0.3	0.0							0.6	0.8	1	0.1	0.5	
31. Inform teacher of ctte decision	O/N	2	0	0	0.0	0.3	0.3						0.2	0.2	0.4	1	0.1		
32. General meeting with school teacher	Nov	3	1	1	0.8	0.0	0.0	0.0	0.0	0.1	0	0	0	0.3	0.5	1	0.3	0	0
33. Samity gains full control over pond	Dec	5	4	0	0.3	0.1	0.0			0.1				0.1	0.3	1	0.1	0.1	
34. Net rented, harvesting, sales	Jan	13	8	5	0.0		0.0	0.0	0.0	0.0	0								
35. Fish feed purchased	Jan	1	0	1	0.0		0.1	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
36. Ask Upazilla to delay lease repayments	Feb	6	0	4				0.1	0.5	0.1	0.1				0.8	1	0.3		
37. Refund credit to YDD	Mar	2	1	1	0.0			0.0	0.1	0	0	0	0	0	0.0	0	0.0		0
38. Aquaculture/veg TA from GO-IF	Mar	92	60	25											5.0	1	0.6	1.3	
39. Samity gets free inputs from DAE	Apr	23	15	6											0.5				0.8
40. Net rented, harvesting, sales	M/M	63	39	24															
41. Refund credit to YDD	Apr	2	1	1					0.1										

Figure 5 continued

SECOND CYCLE (June 2001 - May 2002)

- 42. Samity defaults on lease repayment
- 43. Discuss pay extension with Land Sett Auth
- 44. Agree extension to Dec with Kanungo
- 45. Pay guard

MONTH	TOTAL	Samity	Samity EC	Para people	Suren Roy (IP)	Obinash (IP)	Tarapado (IP)	Youth Dev Officer	Upaz Khas Ctte	UNO	Admin off DC office	Ex-UP chair	Jyotish (ex UP)	FTs (2)	PO	PO	TO advocacy	Other
Apr	0	0																
Apr	14	6	4					0.4	1.5		0.1			0.8	1	0.3	0.1	
A/M	3		0					0.1	1.0	0.1	0.1			0.8			0.1	
May	1		1															
Total	368	200	107	21	0.9	0.1	0.9	1.3	3.2	0.2	0.3	0.6	1.5	23		2.7	0.0	0.0

THIRD CYCLE (June 2002-)

- 46. Fish seed stocking
- 47. Sell vegetables
- 48. Lease 2 kheyas ghats from UP
- 49. Refund credit to YDD
- 50. Fish feed purchased
- 51. Agree with UP on roadside plantation
- 52. Rent net/harvest/sell fish
- 53. Fish seed stocking
- 54. Discuss with khas land distribution ctte
- 55. Rent net/harvest/sell fish
- 56. Sell vegetables
- 57. Ctte promises further & cheaper lease
- 58. 1st bid contest cancelled
- 59. 2nd bid contest cancelled
- 60. 3rd bid contest cancelled
- 61. Khas responsibility from gov to Borendra proj
- 62. No participation in 1st bidding under Borendra

M/J	12	7	4.7											0.5			0.1	0
Jun	31	19	11	0	0	0	0	0	0	0	0	0	0	0.8			0.0	0
Jul	12	8	1.9		0.9								0.4	0.3	0.5		0.3	0
Aug	2	1	0.9	0	0	0	0	0.0	0	0	0	0	0	0.0			0.0	0
Aug	0	0	0.4	0	0	0.1	0	0	0	0	0	0	0	0.0			0.0	0
Aug	9	4	3.8									0.4	0.5	0.5	1	0.1	0.1	0
S/D	26	13	13	0	0	0	0	0	0	0	0	0	0	0.0			0.0	0
Jan	10	5	3.8	0	0	0	0	0	0	0	0	0	0	0.5			0.1	0
J/F	13	3	6.6					0.4	1.5		0.1			0.5	1	0.1	0.1	0
Jan	37	24	13	0	0	0	0	0.0	0.3	0	0	0	0	0.0			0.0	0
F/M	13	9	3.9	0	0	0	0	0.0	0.0	0	0	0	0	0.3			0.0	0
M/A	8	0	5.3	0	0	0	0	0.4	1.0	0.1	0.1	0	0	0.5	1	0.0	0.1	0.1
M/A	13	7	4.7					0.1	0.3	0.1	0.1	0	0	0.5	1	0.3	0.1	0
M/J	3	1	1.1					0.1	0.3	0.1	0.1	0	0	0			0	0
Aug	2	1	0.8	0	0	0	0	0.3	0.0	0	0	0	0	0			0.0	0
Aug	1	0	0.0	0	0	0	0	0.5	0.1	0	0	0	0	0			0.0	0.1
J/A	1		0.6															0.1
Total	192	101	76		0.9	0.1		0.9	3.8	0.6	0.3	0.8	0.8	4.5		0.5	0.9	0.3

Figure 5 continued
SUMMARY

	Sanity	Samity EC	Para people	Suren Roy (IP)	Obinash (IP)	Tarapado (IP)	Youth Dev Officer	Upaz Khas Ctte	UNO	Admin off DC office	Ex-UP chair	Jyotish (ex UP)	FTs (2)	PO	TO advocacy	Other
Preliminaries	2343	42	6	1	0	0	81	9	0	0	0	0	0	0	0	2
Cycle 1	16	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cycle 2	200	107	21	1	0	1	1	3	0	0.3	1	2	23	3	0	0
Cycle 3	101	76	0	0.9	0.1	0	0.9	3.8	0.6	0.3	0.8	0.8	4.5	0.5	0.9	0.3
Overall Total	2661	237	27	3	0.4	1	83	15	0.9	0.6	2	2	28	3	1	2

MINOR CONTRIBUTIONS

- Social welfare officer (1) (1 person x 8 days x 1.5 hours)
- Social welfare officer (57) (1 person x 1 day x 1 hour)
- Present UP chair (51) (1 person x 1 day x 1 hour)
- DAE officials and BS (39) (1 person x 5 days x 1 hour = 5 hours)

Figure 6: Nayabad costs and returns ('000 taka)

	August 2000	Sept 2000	June 2001	Jan 2002	March 2002	April 2002	May 2002	June 2002	July 2002	Sept 2002	Nov 2002	Dec 2002	Jan 2003	Feb 2003	March 2003	Total
Lease	180															180
Members' contributions	90		8.6													98.6
Youth Dev Dept. loan	110															110
Costs																
Fish seed	15		15				3.8	1				2.4				37.2
Fish feed		5	4	1.6		2.5										13.1
Labour											0.4					0.4
Guard & maintenance							6.8									6.8
Pump & fuel											12.4					12.4
Net rent			4	0.8		6.4					0.4					11.6
Harvesting						1.4						0.3			13	14.7
Total	15	5	23	2.4		10.3	10.6	1			13.2	2.7			13	96.2
Income			71.2		34	18.3	4.3			0.6		7.8	19.2	1.4	1.5	154
Loan repayments			40		22.5	6.1			10						6.8	85.4
Balance	-15	-5	8.2	-2.4	11.5	1.9	-10.1	-1	-10	0.6	-13.2	5.1	19.2	1.4	-18.2	-27.2

Figure 7: Khas pond: winners and losers

Category		No.	Type of benefit/loss	
General	Specific		Direct material	Other
WINNERS				
Coop members	Executive Committee	3	Minor	Increased status & interaction with GB/other service providers
	Members	42	Minor	Access to CARE, YDD DAE fertiliser & vegetable seed Forest department saplings Fisheries Department training Upazilla Coop credit UP ferry lease, roadside plantation & relief goods Greater political leverage Increased interaction with other para
Other	Pond owners	15	Significant	Access new aquacultural knowledge
	Non FFS coop wives			Access new aquacultural knowledge
LOSERS				
Former coop	Members	45	Significant	Unable to bid for lease Decreased status
	Teacher	1	Major	As above plus damages