

# **Impact of the Oxbowlakes Project on Participant Households**

**Preliminary Report**

First Draft

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**BRAC  
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## Impact of OLP II on Participant Households

### 1. Introduction

This report is produced to present preliminary results of the impact assessment study on the second Oxbowlakes Project (OLP II). Due to time limitation and technical difficulties with computers, the results of only two aspects of the material wellbeing of project participants are reported presently. The results with respect to household expenditure and fish consumption suggest consistent improvements for the licensed fishermen (LFT) households. Both the 'before-after' and 'with-without' analyses indicate positive changes for the LFT households. In addition, 16 percent households out of those who caught fish and 7.3% of Project's target group have been identified as those displaced from fishing as a result of the project.

#### Scope of the report

The final report, which is scheduled for March 1996, will describe the design of OLP II and the methods and material used to make the impact assessment study. The following section describes briefly the methods that are relevant for this report. The third section outlines a brief profile of the licensed fishermen. The fourth section outlines the results with regards the selected indicators. The fifth section assess distribution of households with respect to the indicators. The sixth section makes some preliminary explanations for the results in section four. A preliminary discussion of the 'displacement' caused by the project is outlined in the fourth section.

## 2. Methods and Material

The present report is based on two rounds of household surveys carried out in April-May 1993 and in April 1995. This is done to assess the difference over time. The study was also designed to capture the difference between the project participants and the non-participants. The participants are the licensed fishermen around whom the project is built. In order to locate a group of households which were socio-economically comparable to the fishermen at the initial stage of the project, the RDP member households were considered to be a reasonable group. As both the groups belong to RDP's villave organisations it was assumed that they were comparable.

In addition, a second comparison is done in order to validate the results of difference between LFT and RDP households. As the RDP members receive credit and other support they are also expected to improve their condition overtime. In order to isolate the RDP inputs, a community level comparison is made with 1995 data (no baseline of community data is available). The fisher household is compared with non-RDP target households (land ownership ceiling 0.50 acre) and with the non-target (land ownership floor 0.50 acre) households.

### The indicators

The present reports on only three indicators, viz., the amount of all fish consumed; the amount of carp consumption; and the amount of household expenditure. The first two may be viewed as a proxy for nutritional well being, and all three for material wellbeing.



The data on fish consumption was generated with reference to the Bangla calendar month for the 12 months preceding the interview. For each month the fish types were named to generate consumption (in weight) and price data (Tk/kg or Tk/gram). The fish types that were listed in the questionnaire include small or miscellaneous fish (with their local names), juvenile fish (pona) medium fish (such as koi, magur, etc.), large or major carps, Hilsa, and dried/salted fish. The indicator of all fish is measured by the sum of all fish types in gram per person per month. The big fish measures primarily the carps and includes other large fish but Hilsa is excluded (Hilsa will be analysed separately in a forthcoming report).

The expenditure account as employed presently, contains an yearly account of consumption of food and non-food items including consumer durables and assets. It accounts for both the purchased and the non-purchased items. The latter are items which are consumed at the households but acquired through production, as payment for exchange or as transfers. The non-purchased items are valued at prices prevailing in the market at the time of consumptions, as reported by the respondents.

The expenditure account is a commonly used tool to measure income, when 'savings' is added. The present indicator may be technically slightly inadequate for it to be used to measure income because 'saving' has not been added to it. A note of clarification is needed: 'saving' here refers to that amount which is kept at institutions such as banks, RDP saving fund, and that which is reported by the respondents as a saving. Often assets are indentified by rural households as saving, which is accounted for in the expenditure account. Therefore, the present indicator may be a close but incomplete, estimate of income.

identifies four categories of fishermen: (1) full-time professionals; (2) part-time; (3) occasional; and (4) subsistence. In all, 14.3 percent (or 2.2m. out of 15m) of rural households in the 1980s was involved in the fishery sub-sector. There is disagreement in the literature as to the fisher households' socio-economic status. Some classify the 'fishing community' as a 'underclass' while others do not find much difference for them from other occupational groups. The latter literature assess it to be a heterogenous group.

The OLP II is targeted at the 'genuine poor' fishermen (presence of the 'non-poor' in the fisher community is implicitly assumed). The target group is defined as those who catch fish with own hands and own less than 0.50 acre of land. The wet-hand criteria is to account for the genuiness and the ceiling on land ownership indicates poverty. Targeting effectiveness was considered in the baseline survey that was carried out in May 1993 on a sample larger than the one used for resurvey in 1995.

**Table 1: Distribution of Hhs by the amount of arable land owned**

<b>Amount of Land (dec.)</b>	<b>LFT Hhs</b>	<b>Comparison</b>
0	183 (57.2)	531 (61.6)
01-50	97 (30.3)	176 (20.4)
51-100	24 (7.5)	66 (7.7)
101+	16 (5.0)	89 (10.3)
<b>Total</b>	<b>320 (100)</b>	<b>862 (100)</b>

*Source: Sample survey carried out at 20 lake catchment areas in 1993.*

The table 1 shows that targeting was achieved by just over 87 percent for the LFT. The corresponding figure for the RDP member comparison group is slightly lower. Whether or not this level of achievement is adequate to ensure that the project benefits are not 'captured' by the well-off (as happened with the cooperatives) is open to debate. The benefit (fish catch and costs) sharing system adopted in OLP II ensures equality in

proportion to participation. However, the leadership of the management committees may well be captured by a few who may wish to seek rent. This issue may need to be researched in the near future.

As for genuinness, the table 2 shows, that 'fishing' has been stated to be their occupation for nearly 90 percent of the sample LFT members. This and the land ownership data may be the result of 'strategic behaviour' on the part of the respondent whose awareness of the project rules is fairly high. Questions regarding pre-project fishing activities with regards place of fishing, gear used and type of fish caught may be more objective for the purpose of assessing genuinness (to be addressed in the final report scheduled for March 1996).

**Table 2: Distribution of LMG respondents by their own, father's and grandfather's occupation**

<b>Occupation</b>	<b>Own</b>	<b>Father</b>	<b>Grandfather</b>
Agriculture	3 (0.9)	87 (27.2)	134 (41.9)
Fishing	287 (89.7)	176 (55.0)	139 (43.4)
Trade	13 (4.0)	15 (4.8)	11 (3.5)
Wage labour	6 (1.9)	32 (10.0)	11 (3.4)
Household work	7 (1.9)	-	-
Others	5 (1.6)	10 (3.1)	25 (7.8)
<b>Total</b>	<b>320 (100)</b>	<b>320 (100)</b>	<b>320 (100)</b>

*Source: Sample survey carried out at 20 lake catchment areas in 1993.*

Pending more objective assessment, we may consider the occupation of the LFT members' previous generations, and seek to know the reasons, if any, for the choice of fishing as an occupation. The table 2 shows that the proportion of fishing declines to 55 percent for the father of the LFT members and to 43 for the grandfather. Generational involvement in fishing accounts for between 43 and 55 percent. The LFT members' involvement is to a large extent a present generation phenomenon. This is supported by table 3.

**Table 3: Distribution of LMT respondents by religion and reason's to choose fishing**

Reasons	Religion	
	Hindu	Muslim
Hereditations occupation	139 (93.9)	10 (10.7)
Lack of opportunities	6 (4.0)	69 (40.8)
Relatively higher earning souce	-	43 (27.8)
Nearness of homestead to lake	6 (2.0)	35 (20.7)
<b>Total</b>	<b>148 (100)</b>	<b>169 (100)</b>

*Source: Sample survey carriedout at 20 lake catchment areas in 1993.*

As fishing is a cast occupation of the Hindu community, as reflected in table 3, the new entrants are of the Muslim faith. The reasons indicate that there is a lack of agricultural or other opportunities, as well as the potential of the lake as a resource. With declines in agricultural wages relative to price of rice, the oxbowlakes offered alternative opportunity to the licensed fishermen.

#### 4. Major impact on selected indicators

The preliminary results with respect to the two selected indicators suggest major improvements for the fishermen (LFT) households both 'over time' and in comparison with the non-licensed RDP households. The 'before' (1993) and 'after' (1995) differences for the LFT households indicates a consistent improvement with respect to the selected indicators:

- total fish consumption is greater by 38 percent;
- the consumptions of carp fish is greater by 360 percent;
- the total expenditure (PC/month) is greater by 30 percent.

(Annexed table A1).

The 'with' and 'without' differences, that is the comparison between the OLP II participants with non-participants (members of RDP), support the above finding. For the LFT households:

- total fish consumption is greater by 50 percent, and 59 percent respectively in 1993 and 1995, than the figures for comparison households;
- the consumption of large fish is greater by 282 percent and 283 percent respectively in 1993 and 1995;
- the household expenditure (PC/month) is greater by 12 percent and 35.6 percent respectively in 1993 and 1995 (Annexed Table A1).

The differences with respect to consumption of all fish and of carps in particular, between the LFT and the comparison households indicate a better situation for the former. The differences shown in the table between the LFT and the comparison group for the pre-project indicate a better situation for the LFT households with regard fish consumption. In order to show the impact of the project it is necessary to show that the pre-project difference is not only maintained in the after-project period but it is increased. A simple analysis would be a comparison of percentage differences between the two categories of households in the respective periods. The difference is greater in the after-project period (58.7%) than it is the pre-project period (50%). This may be taken as a simple method to validate the increases in average consumption for the LFT households over time.

A second 'with-without' comparison may be made by comparing the LFT households with community level data that are generated from the non-target (land ownership is >0.50 acre) household by the village census.

For the LFT households:

- total fish consumption is greater by 46 percent than it is for the non-target households;
- consumption of big fish is greater by 71 percent;
- the household expenditure (PC/month) is lower by 30 percent (Annexed Table A2).

The figures of fish consumption indicate that the 'producers consume more than the richer non-target households. This further supports the earlier finding. The higher expenditure level for the non-target households is not surprising. Whether or not continued participation can reduce the gap remains to be seen. However, further analysis is required to ensure that the differences in the average figures are not due to biases in the data for the after project period.

#### Verifying the differences

The average values often hide large variations in the data which can push the mean value in either direction. A commonly used statistical tool, t-test can be made to verify the differences and judge the robustness of the average values.

The test results, in tables A1, and A2 show that the differences in mean values are highly significant. That the 'after project' values of fish consumption for the LFT is strongly likely to be a result of the project are suggested by the t-value. This is further supported by the size of the t-values for the comparison between the LFT households and VO members'

in the respective periods, with respect to the two measures of fish consumption. The difference between the LFT and the VO members are greater in the post-project period (t-values are 12.65 and 12.30 for respectively measures) than these are for the pre-project period (t-values are 8.46 and 5.10 for respective measures). This suggest that the differences in the average values are far stronger than it is suggested by the percentage differences.

As for household expenditure the table A1 shows that the post-project expenditure values for LFT households increased by greater margin (30%) than it is for the comparison group (7.7%). The difference in expenditure between the two groups of household is greater in the post-project period than it is in pre-project. In other words, greater improvements is observed for the OLP II participants compared with the comparison group (see larger t-value for column 1 vs 2 in table A1). The large increase in the consumption of carps for the fisher households in 1995 over 1993 is likely to be an important contributor. The increase in the production (indicated by very large increase in consumption) of higher priced carps, is likely to have caused a reduction in the price. This means other sources of increase are also likely to have contributed to the growth in expenditure. Further analysis, such as Engel's ratio, are planned for the final report.

The increases in the two measures of fish consumption and the household expenditure for the comparison households are less clear cut. The 14% growth in consumption of all fish in 1995 over 1993 for the comparison group is statistically insignificant but the 7.7% increase in expenditure is significant. (Annexed Table A1). If the 1995 expenditure data is adjusted for changes in price levels over 1993, the difference is likely to change This increase in the average value of fish conumptions is likely to be due to a large increase in the consumption of big fish including carps (excluding Hilsa). The growth in consumption

of this type of fish for comparison group in 1995 over 1993 is highly significant ( $t=-6.23$ , annexed table A1). As the focus of the project is on carp production a steady increase in the fish supply, and therefore a reduction in price, is a strong possible explanation. Although average consumption values in 1995 are a less for the comparison households (78 gram PC/month) than it is for the LFT (299 gm PC/month). The OLP II appears to have made small but significant contribution to the wellbeing of non-participant households.

However, a general improvement in the locality or in the livelihood situation of the non-fisher comparison group due to RDP inputs might also be an explanator as judged by the significant increase in expenditure. The RDP factor may be more important as the annexed table A2 shows, that the difference between the RDP member and non-member target group for all fish is insignificant but is significant for carps. The low consumption figures of carps for the non-member target group is surprising as their expenditure level is significantly larger than it is for RDP members (non-fisher).

The apparent difference (percentage as well as t-test result in annexed Table A2) between the LFT and non-target community with respect to big fish (in 1995), hide important seasonal fluctuations. The annexed table A3, shows that the consumption levels for the LFT is infact lower than that for the non-targets in the period June to September (or Ashar to Ashwin). The table A3 tests suggest a better situation for the LFT in other months - particularly January to May (Magh to Baishakh).

These differences indicate that the growth in consumptions of carps for the LFT is due to their participation in the management of the lakes and in benefit sharing. As carp is not



harvested in the period between June and September, which is the stocking and growing season, its consumption is lower for its producers.

### 5. Some explanations for positive impact

In the absence of general village level data on economic dynamism in the localities which may explain some part of the growth in fish consumption, further analysis is required to assess the above observations. Two comparisons are made : overtime differences in fish consumption at locations defined by the size of the lake; and consumption according number of the production cycle(s) completed.

The assumption for the first comparison is that the size of the lakes will positively influence average fish consumption. In other words, the consumption values are likely to be greater for LFT households in the larger sized lake villages. The annexed table A4 shows that consumption of all fish is greater for the LFT households living in the catchment areas of larger lakes than these are at smaller lakes. Similarly, the consumption levels are greater in 1995 (1130 gram/person/month) over 1993 (733 gram/person/month) for LFT households in larger lakes than in the small lakes. These results are not conclusive because the productivity of the water bodies are likely to vary across the lakes thus fish yield is likely to vary. More analysis is required to assess the influence of lake size on the level of fish consumption.

The IFAD Project Appraisal Report estimated that fish yield (kg/ha) will steadily increase over time from 190 kg/ha in the fourth year to 700 kg/ha in the seventh year (Annex 13, IFAD, 1988). In other words, fish production will be greater in the lakes going through increasing member of production cycles. This increasing levels of production is likely to

increase the level of fish consumption for the fisher households. The 'before-after' difference as presented earlier does not shed light on the differences within the fisher group particularly with respect to the number of production cycles. From the various project documents it is clear that the project start-up was delayed, resulting in production activities starting in different years across the 21 project locations.

The present data set - generated by two surveys with a two year interval, allows us to assess the consumption levels of big fish (carps) for the fisher households according to the number of production cycle(s) completed in the sample lakes. The data is divided in to four groups: (a) either no production or one cycle completed; (b) two cycles completed; (c) three cycles completed; and (d) four cycles completed.

**Table 4: Fish consumption for LFT households by the number of production cycles**

Fish Type	No. of production cycle			
	1 (n=99)	2 (n=132)	3 (n=85)	4 (n=14)
Carps	7.2	155	206	382
All fish	613	773	786	1230
Carps as % of all fish	1.2	20	26	31

The table 4 shows large increases on the two measures of fish consumption for LFT households along with increases in the member of production cycles. The share of carps in the consumption basket for fish is also increasing without a corresponding decline in the consumptions of other fish. This indicates either an increase in income, or a decline in the price of carps, or both. Although the data on purchased fish for LFT households is not available, purchase of other, non-carp fish would imply a general improvement.

The results of t-tests in annexed table A5, verifies there increases in fish consumption according to the number of production cycle completed. The decline in-t-values for the difference of 'four-production-cycles' group against the 'one' ; 'two', and 'three' cycles imply that over time the consumption level of fish will stabilise. As fish yield stabilises after increasing in the first few years of the project the benefits accruing to the fisher households would also stabilise (assuming relative prices remain the same).

Now the question is at what yield (kg/ha) level is it going to stabilise, and what effect the expansion in the number of participants in the LFTs, will exert on the level of benefits accruing to individual households.

## 6. Distributional Considerations

There is a debate in the literature on the fisher community in Bangladesh as to the community's position in economic hierarchy. Some argue it to be an homogeneous 'underclass' whereas other find it to be heterogeneous and no less worse-off than comparable occupational groups (see McGregor, 1995; Kremer, 1994). The targeting criteria used in OLP II (land ceiling of 0.50 acre) is likely to make the composition of the licensed fishermen less heterogeneous than the case might be. The equality concept as used in designing the benefit distribution method should further impact their heterogeneity.

In order to assess the possible effect of the equal sharing of the benefits as practiced in OLP II, a simple method may be to construct Lorenz Curves for fish consumption. A reduction in inequality of distribution among the participant group will be reasonable measure of the success of the projects' benefit sharing system.

The annexed figures 1, 2 show that the distribution of fish consumption is unequal for both the LFT and the comparison households, but the post-project curves are closer to equality compared to the pre-project curves. It indicates a reduction in inequality in distribution in 1995 from that of 1993. The expenditure indicator, on the other hand, show the effectiveness targeting. Homogeneity of the fisher and the comparison (VO members) households is strongly reflected in the distribution of expenditure (Figures 6 and 7).

The Figure 3 and 4 shows that the extremely skewed distribution of carp consumption for both household categories, in the pre project period is considerably evened out in the post-project period. Improvements in the distribution of carp consumption for not only the fisher but also the comparison households, are strongly indicated. The location of the Lorenz curve for the fisher households is closer to the equality line reflecting the impact of the benefits sharing system used by the project (Figure 3). The curves for carp consumption for the comparison group in the respective periods, support the earlier finding of improved access to carps for the community at large.

Although improvement is indicated in the post-project period over the pre-project, there appears some concentration at the top end. Thirty percent of the carp consumption for the sampled fisher households is accounted for by the top 10 percent. The Figure 5, suggest that there is a decline in the skewness of distribution over increasing number of production cycles. This decline is a gradual process is suggested by the locations of the curves for 'two' or more production cycles. As production and supply increases over increasing number of production cycles inequality in the distribution of consumption appears to decline.

The community level distribution of expenditure further support the homogeneity of the LFT households. The distribution of expenditure for the LFT households (in annexed Figure 8) shows a pattern similiar to those for the two categories of the target group. The low inequality in distributions for the LFT, is further high lighted by the location of the curve for the non-target households which is more unequal. As noted earlier, the distribution of fish consumption may be related with production leve<sup>s</sup>) of the respective lakes. In addition, individual preferences may also influence choice of fish type for consumption or sale.

## 7. Displacement caused by the Project

### Introduction

Displacement in fishing community is a comprehensive term. If we look at the history of fishing community of this sub-continent, it reveals that the changes in technological, climatic, social, economic, political and institutional conditions have been influencing the fishing community over time. Displacement is an inevitable result of this process of change, which is also a part of long standing social change. Socio-political transition, structural transformation and changing fisheries management policy are the most influential factors of this process of change. Our present study deals only with the displacement caused by the introduction of New Fisheries Management Policy.

### Meaning of Displacement

Although there are several reasons for different types of displacement in the fishing community, the present study deals only with the displacement taken place in course of introducing new fisheries management policy. One of the main objectives of this policy is 'to eliminate the middlemen from the Jalmahals through the gradual adoption of a system of licensing of water bodies to genuine fishermen or groups of fishermen'. (Rahman, 1986). So the displacement of the un-real fishermen and middlemen from the project are expected for the greater interest of the fishing community.

Before enter into further discussion it is necessary to clarify and characterize the term 'genuine fishermen'. Supervision mission of UNDP (1991) recommended a working definition of genuine fishermen as "A person who personally and physically catches fish

for income generation and or household food security. Such a person is generally poor , his poverty being defined as one who owns less than 0.50 acres and has an annual income of less than Tk. 10,000". But present study did not follow such stringent distinction between real and un-real fishers on the basis of land holding in identifying displaced households. That means primarily, we identified the households as fishers' households which were engaged in fishing in the baors before the project, but were excluded from the project. Economically, this household may be either a well-off or a worse-off one.

On the other hand , according to the villagers, before the project, someone or other member of almost all households in the baor catchment areas caught fish in the baor some time or other in a year. Data of BFRSS also indicates that 'an estimated 73 percent of the rural households undertake some sort of fishing within a year.'(BFRSS,1983-84).But our present study only considers those who fished in the baor for their living and take no account of the households which only enjoyed it as a fishing game .

#### Identifying the displaced households

In identifying displaced households the first principle we followed through-out the field investigation was that the household considered as fisher household where at least a single member, (either a household head or a general member ) engaged in baor fishing for their living. Second assumption was that all the LFT members were 'genuine fishermen' who fished in the baor before project intervention. (The information of fishing activities for the LFT members before the project will be reported in the final report). In our analysis we consider all the LFT members as part of the pre-project the fishing community, in determining the magnitude of displaced households. Thirdly, the households involved in pre-project fishing activities in the baor which are still engaged in baor fishing for their

livelihood, are not considered as displaced households. These households are non-displaced non LFT households. Finally, there are some other households which were recently enlisted by the project for licensing. These households are not considered as fishers' households as was done in the case of LFT HHs.

As a natural resource baor has had various uses and users before the project intervention. The UNDP/OPS supervision mission on behalf of IFAD in 1991 raised the question 'The project envisages an intervention into that regime by introducing carp stocking and required infrastructure and technological input for increased productivity to the benefit of a defined target category of people organised in a Lake Management Group. How does that effect the existing uses and users?' The present study is designed to assess displacement with regards to baor fishing, only.

We should explain first the way we followed in determining 'fishing community' and the criteria we used in defining 'wealth class' of the displaced households.

The displaced households are divided in four different groups in according to the nature of involvement in fishing:

1. *Full-time professional fishers' households*: The households identified as full-time fishers' households which, engaged in baor fishing round the year and usually caught large fish in the baor with their large gear and boat.
2. *Full-time subsistence fishers' households*: This study considers the households as full-time subsistence fishers' households which are involved in fishing round the year. They differ from the 'professionals' in that they catch small, miscellenous fish with small, hand held single operator nets and traps, and they themsevles retail their catch at local bazaars.



3. *Part-time fishers' households:* Part-time fishers' households are those households which engage in baor fishing in parts of a year. Usually they depended on baor fishing in the peak season but in the slack season or other time in the year depend on some other activities to earn an income.
4. *Occasional fishers' households:* These households mainly depended on other profession but catch fish in the baor during slack season to eke out their living.

In determining wealth class of the villagers we divided them into six different groups on the basis of their land holding and thereafter pile sorted them into three groups: (a.) non-target households: with more than 1.0 acre of land; (b) semi-target households: with 0.5 to 1.00 acre of land; and (c) Target households: with less than 0.50 acre of land.

#### Magnitude of displacement

It was found that 26 percent households of the baor catchment areas was involved in fishing before project intervention. Of these 16.5 percent (annexed table A7) was displaced from fishing due to the project. Among the displaced households 29.63 percent (annexed table A8) came from non-target Hhs, 12.35 percent from the semi-target households and 58.02 percent from the target households.

When we consider displacement in the context of total fisher households of the area, the rate of displacement among the non-target households is considerably high than it is for the target households. Data shows 25.81 percent (Table A7) household is displaced from the non-target group, 23.81 percent from semi-target and 13.20 percent from target household. So in the community, rate of displacement amid target households is lower compared to non-target HHs. If we want to have a clear picture of magnitude of

displacement, we should look at the non-displaced fishermen of the fishing community. Table (Table A7) shows that 75.37 percent of total households which is continuing baor fishing is from the target households, 7.80 percent and 16.83 percent from semi target and non-target households respectively.

### Real displacement

The issue of displacement can be examined from another point of view. We noted earlier that we categorized the displaced households into four groups on the basis of the nature of their fishing activities before the project intervention. Among the 47 displaced target households, 53.20 percent (Table A6) is from the full time subsistence fisher households, 23.40 percent each from part-time and occasional fisher households.

From the above analysis it is evident that most of the target households involved in baor fishing, took it as a way of earning an income where as the non-target households considered it as a means non essential of supplement for their consumption out their livelihood. The term 'real displacement' more accurately indicates the displacement in the specific context of the project target definition. It is applicable to the full-time professional, full-time subsistence and part-time fisher households of the target group. In view of the above criterion it is found that 36 households were displaced from the project, according to the project's target group definition are the real displaced' households. It is 44.44 percent of the total displaced households and 7.33 percent of the fishing community.

Among the real displaced, 58.33 percent is receiving BRAC support as these households are RDP member households (table-A10). On the other hand one out of the 15 (41.67) non BRAC household is now involved in the activity created by project intervention, as the households head is earning income from rickshaw pulling which was made possible for the road that was constructed as part of the project initiative. So this study shows 14 target

fisher households have no access to RDP inputs or to the opportunities created by the project. They constitute 17.28 percent of total displaced households and only 2.58 percent of the fishing community.

### **Reasons for displacement**

The group discussions in the villages revealed a number of reasons for displacement. We have grouped them under four categories of reasons, which are: landownership above the target definition ceiling; high license fee; no vacancy; and self-exclusion.

#### **1. Landownership :**

It was found that 27 non-target households (33.34 percent of total displaced households) were displaced from the project due to their higher land holding (more than 50 dec.) Among these 27 households 81.5 percent come from non-target households and 18.5 percent come from semi-target households. On the other side, most of these non-target households are not real fishers' households as 74.07 percent of them were involved in occasional fishing in the baor before project.

#### **2. High fishing charge**

On the other hand, three households displaced since they were unable to pay the required amount of money for license fee. All of the three households belong to the target group and two of them were involved in full time subsistence fishing group. These two real fishers were too indigent to pay high fishing charge.

### 3. No vacancy

According to the villagers 18 households (22.2 percent of total displaced households) were displaced as the project already had recruited the required number of LFT members. Most interesting thing is that, all the displaced households in this reason category, belonged to the target households; and in terms of fishing activity they were the real fishers. The informant identified group several factor to explain the exclusion of some who appear to meet the project targeting criteria.

#### i. Multiple membership

Informant group alleged that in some cases project excluded some households from the project who resided in the same homestead land but different households in saying the project is not intended to allow more than two households from a 'bari'. So prevention of multiple membership was one of the reason for displacement.

#### ii. Intra-community conflict

In one of the the baor areas some displacement occurred due to long term feuding between the people from two villages. The displaced who qualified as project target group, alleged that it was due to their rivals from the other village who are in the leadership of the licensed fishermen. These real fishers who number 18, have also been excluded from the new recruitment list.

### iii. Nepotism

Informants group of one baor irrespective of LFT and non-LFT members alleged that some of the influential fishers who were given primary responsibility for selecting LFT members had included their own relatives in the project. The allegation was re-iterated by the name of present president of the baor, who included non-fishers households in the LFT group. On the other hand this study identified four LFT members who were included in the baor from a village far away from the baor catchment area, who are related by marriage to the former president of the management committee. These households were not fishers' households. This type of nepotism included some un-real fishers in the LFT group and result in the displacement of some real fishers' households.

### iv. Inefficient targeting

Group discussions at each baor catchment area identified inefficient targeting as a major cause of displacement. According to the villagers a lot of non-target households were included in the LFT which ultimately displaced some real poor fishers from the project. Data from wealth ranking exercise also support the villagers allegation the proportion of non-target in the LFT stands at 22.59 percent on the whole, and the range is between 17 and 32 percent.

### 4. Self exclusion

One of the predominant reasons for displacement that displaced 29 (35.8%) households is self exclusion. It was found that mainly the poor fishers keep themselves out, as near about 80 percent households belong to the target group displaced by the reason. Present study identified some reasons behind the reason self exclusion which keep the poor fishers out of the project. The reasons are:

1. External pressure: threats from previous lease holders, cooperative leaders, etc;
2. Suspicions about the project: not believing that the lease holders would relinquish control and the fishermen would be able to control the lakes;
3. Reluctance to BRAC membership: fearing that they would be converted to Christianity, that their wives would be taken away, etc.
4. Avoidance of confrontation: a reported internal conflict among LFT members at one location, has discourage a group from joining fearing physical violence.

Here there is an interesting observation that most of the households displaced by the cause of high fishing charge, no vacancy, and self exclusion are related to the full time, subsistence and part time fishers' households. It means some real fishers are being deprived somehow of project's benefits. From the above analysis it is clearly found that displacement taken place in the life of fishers of the different baors due to the two major reasons.

To sum-up it is clear from the above analysis that , the displacement of 16.5% household is apparently high but in view of the socio economic condition of the household most of them are not target fishers . In the context of real fisher the rate of displacement is only 7.33% in the community . Moreover among the displaced target household more than 50% household is recieving BRAC support so , actual displacement from the project is not so alarming .

## 8. Conclusion

From this preliminary analyses the following conclusions may be drawn:

- The project generates the impact on the material well-being indicators for the participating households both over time, and compared with households of similar socio-economic background.
- The improvements measured for the LFT households overtime are greater than that for the comparison households.
- The project may have generated positive results for the locality as a whole by increasing the supply of carps which appears to have increased in the consumption basket for the non-fisher households.
- Given project design for benefit distribution among the participants in equality in fish consumption has been reduced ;
- That the project also creates negative impact is at a small scale and the affected are either capable of weathering the effect of displacement (non-target/landed) on their own directly by participating in RDP activities or indirectly by accessing the opportunities opened - up by the project.
- Although small in magnitude , there appears evidence to suggest that the project might consider devising ways to provide support for those displaced households (of project target group). In addition to the expansion of the LFT's , access to RDP inputs and participation in activities that have been created as a result of overall the projects overall effect, other activities such as pond cultivation may be considered.

**Table A1: Selected indicators, household category (with-without) and survey years (before-after)**

Indicator	Household Category							
	LFT		Comparison		t-values*			
	1993 (n=189)	1995 (n=268)	1993 (n=387)	1995 (n=345)	1 v 2	3 v 4	1 v 3	2 v 4
	1	2	3	4				
All fish (gm/person/month)	720	996	360	411	-4.36	-1.67	8.46	12.65
Carp (gm/person/month)	65	299	17	78	-10.89	-6.23	5.10	12.30
Expenditure (Tk/Person/Month)	395	514	352	379	-7.08	-2.58	3.75	9.46

\* t-values of 2.00 or more are significant ( $P < 0.05$ )

Source : Sample surveys carried out in 1993 and 1995

**Table A2: Selected indicators-comparison of community level data**

Indicators	LFT* (n=423)	VO* (n=702)	TG* (n=519)	NTG* (n=518)	t-values
<u>All Fish</u> (Gm/person/month)	985	523	-	-	5.14
	985	-	454	-	10.05
	985	-	-	674	5.77
	-	523	454	-	0.92
	-	523	-	674	-2.02
	-	-	454	674	-7.39
<u>Carp</u> (Gm/person/month)	286	92	-	-	13.48
	286	-	67	-	15.22
	286	-	-	167	6.43
	-	92	67	-	2.65
	-	92	-	167	-5.66
	-	-	67	167	-7.54
<u>Expenditure</u> (Tk/person/month)	521	448	-	-	5.49
	521	-	489	-	2.20
	521	-	-	679	-2.23
	-	448	489	-	-3.20
	-	448	-	679	-9.57
	-	-	489	679	-6.81

\* t-values of 2.00 or more are significant ( $P < 0.05$ )

\* LFT = Licensed fishermen; VO = RDP members; TG = non-RDP target group; NTG = non-targets

Source: Census of nine villages in the catchment area of three lakes, 1995.



**Table A3: Consumption of Carps by month name and community categories**

Month	LFT	COMP	Non-VO TG	Non-TG	t-values		
	(n=423)	(n=702)	(n=519)	(n=518)	1 vs 2	1 vs 4	2 vs 3
	1	2	3	4			
Baishakh	627	180	43	124	6.41	6.21	10.36
Jaishthya	183	59	46	93	6.76	4.27	1.06
Ashar	101	51	45	108	3.87	-0.39	0.54
Shraban	95	52	45	98	3.22	-0.22	0.68
Bhadra	14	16	41	113	-0.29	-5.88	-3.12
Ashwin	101	55	36	103	3.28	-0.11	1.78
Kartik	182	61	48	129	7.29	2.43	1.03
Agrohayn	395	119	88	230	11.45	5.69	2.09
Poush	439	135	129	267	12.68	5.87	0.29
Magh	458	130	100	266	13.28	6.25	2.00
Falgun	477	137	97	266	12.74	6.44	2.62
Chaitra	364	112	79	208	11.52	6.01	2.20

Source: Census of 11 villages in the catchment areas of 3 lakes, 1995.

\* LFT = Licensed fishermen; VO = RDP members; TG = non-RDP target group;  
NTG = non-targets

**Table A4: Consumptions of all fish, lake size and survey rounds : LFT households**

		Lake size category				t-values
Large	Large	Medium	Medium	Small	Small	
1993	1995	1993	1995	1993	1995	
733	-	-	-	292	-	2.96
-	1130	-	-	-	689	2.85
-	-	826	-	292	-	3.20
-	-	-	867	-	689	-

Source: Sample surveys carried out in 1993 and 1995.

**Table A5: Distribution of fish consumption indicators by the number of production cycles completed**

Indicators	Number of production cycles				t-values
	1 (n=99)	2 (n=132)	3 (n=85)	4 (n=141)	
All fish (gm/person/month)	613	773	-	-	-2.07
	613	-	786	-	-2.20
	613	-	-	1230	-6.99
	-	773	786	-	-0.15
	-	773	-	1230	-5.39
	-	-	786	1230	-4.69
Carps (Gm/person/month)	7.2	155	-	-	-8.28
	7.2	-	206	-	-10.62
	7.2	-	-	382	-11.85
	-	155	206	-	-2.02
	-	155	-	382	-7.03
	-	-	206	382	-4.72

Source: Sample surveys carried out in 1993 and 1995

**Table A6: Distribution of Displaced HHs by Pre-project fishing activities and Land Category**

Land Category	Fishing activities				Total
	Full-time professional	Ful-time subsistence	Past time	Occational	
>100 dec.	1 (4.17)	-	5 (20.83)	18 (75.0)	18 (75.0)
50-100 dec.	-	3 (30.0)	2 (20.0)	5 (50.0)	5 (50.0)
≤ 50 dec.	-	25 (53.20)	11(23.40)	11 (23.40)	11 (23.40)
<b>Total</b>	<b>1 (1.23)</b>	<b>28 (34.57)</b>	<b>18 (22.22)</b>	<b>34 (41.98)</b>	<b>81 (100)</b>

**Table A7: Distribution of Displaced and Continued Fishers Household by Wealth Category**

Land Category	Continue	Displaced	Total
>100 dec.	69 (74.19) (16.83)	24 (25.81) (29.63)	93 (100)
50-100 dec.	32 (76.19) (7.80)	10 (23.81) (12.35)	42 (100)
≤ 50 dec.	309 (86.80) (75.37)	47 (13.20) (58.02)	356 (100)
<b>Total</b>	<b>410 (83.50)</b> <b>(100)</b>	<b>81 (16.50)</b> <b>(100)</b>	<b>491 (100)</b>

**Table A8: Distribution of displaced HH by wealth (land) and reasons for displacement**

Land category	Present Occupation of the displaced HHs					Total
	Land > 50 dec.	High fishing charge	No-vacancy	Self exclusion	Other	
>100 dec.	22 (81.48)	-	-	1 (3.45)	1 (33.3)	24(29.63)
50-100 dec.	5 (18.52)	-	-	5 (17.24)	-	10(12.35)
≤ 50 dec.	-	3 (100)	19(100.0)	23 (79.31)	2 (66.7)	47(58.02)
<b>Total</b>	<b>27(100)</b>	<b>3(100)</b>	<b>19(100)</b>	<b>29 (100)</b>	<b>18 (100)</b>	<b>81(100)</b>

**Table A9: Distribution of displaced HHs by their present occupation**

Lnd Category	Present Occupation of the displaced HHs					Total
	Migrated	Fishing elsewhere	Wage labour	Crop cultivation	Other T & T	
>100 dec.	-	-	1(4.17)	21(87.5)	2(8.33)	24(100)
50-100 dec.	-	-	2(20.0)	6(60.0)	2(20.0)	10(100)
≤ 50 dec.	-	-	26(55.32)	7(14.89)	14(29.79)	47(100)
<b>Total</b>	-	-	<b>29 (35.80)</b>	<b>34 (41.98)</b>	<b>18 (22.22)</b>	<b>81(100)</b>

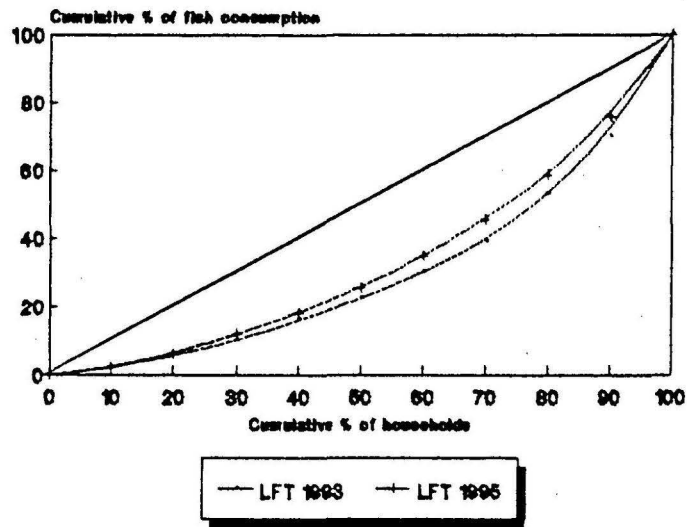
**Table A10: Distribution of real displaced HHs by BRAC member and Non member**

Total real displaced HHs	BRAC member HHs	Non BRAC member HHs
36 (100)	21 (58.33)	15 (41.67)

**Table A11: Distribution of displaced HH by Pre-project fishing activities and reasons for drop out**

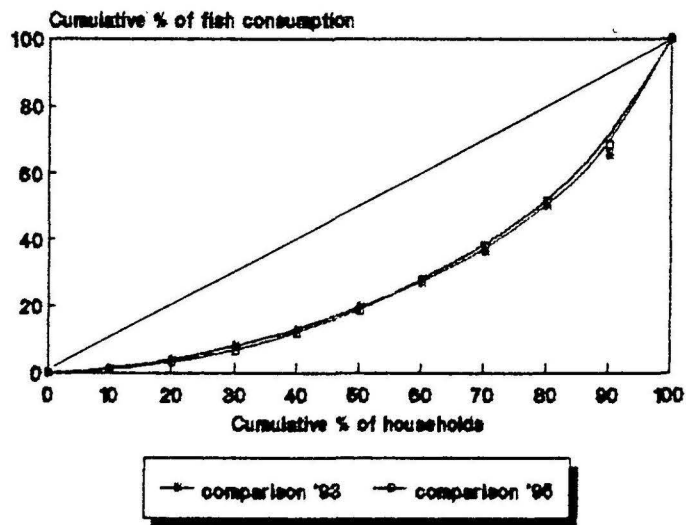
Reasons for displacement	Pre-project fishing activities of the displaced households				Total
	Full-time Professional	Full-time subsistence	Seasonal/ Parttime	Occational	
Land > 50 dec.	-	-	7 (38.9)	20 (58.8)	27 (33.3)
High fishing charge	-	2 (7.1)	-	1 (2.9)	3 (3.7)
No vacancy	-	11 (39.3)	7 (38.9)	1 (2.9)	19 (23.5)
Self exclusion	-	13 (46.4)	4 (22.2)	12 (35.3)	29 (35.8)
Other s	1 (100)	2 (7.1)	-	-	3 (3.7)
<b>Total</b>	<b>1 (100)</b>	<b>28 (100)</b>	<b>18 (100)</b>	<b>34 (100)</b>	<b>81 (100)</b>

**Fig: 1 Lorenz curve for fish consumption  
'before-after' - LFT households**



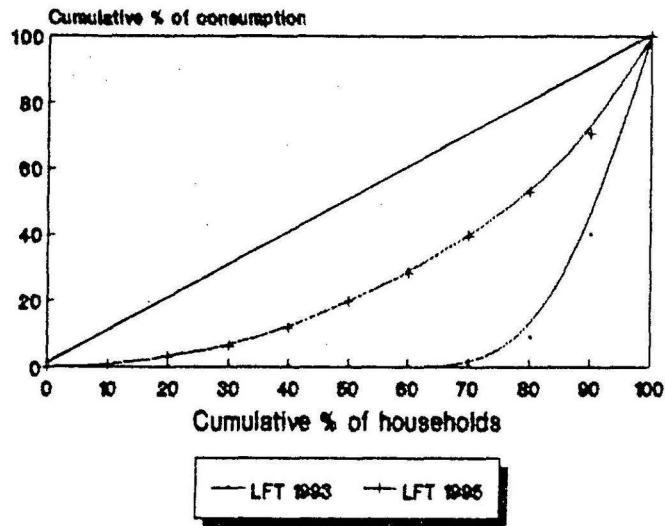
source: surveys in 1993 and 1995

**Fig:2 Lorenz curve for fish consumption  
'before-after' - Comparison households**



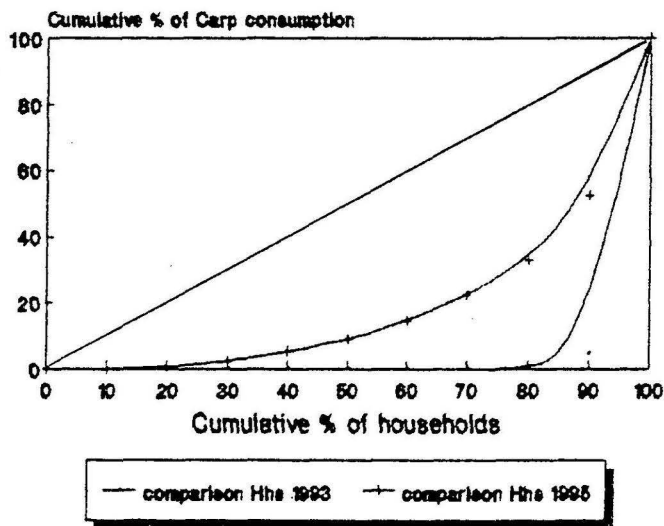
source: surveys in 1993 and 1995

Fig:3 Lorenz curve for Carp consumption  
'before-after' - LFT household



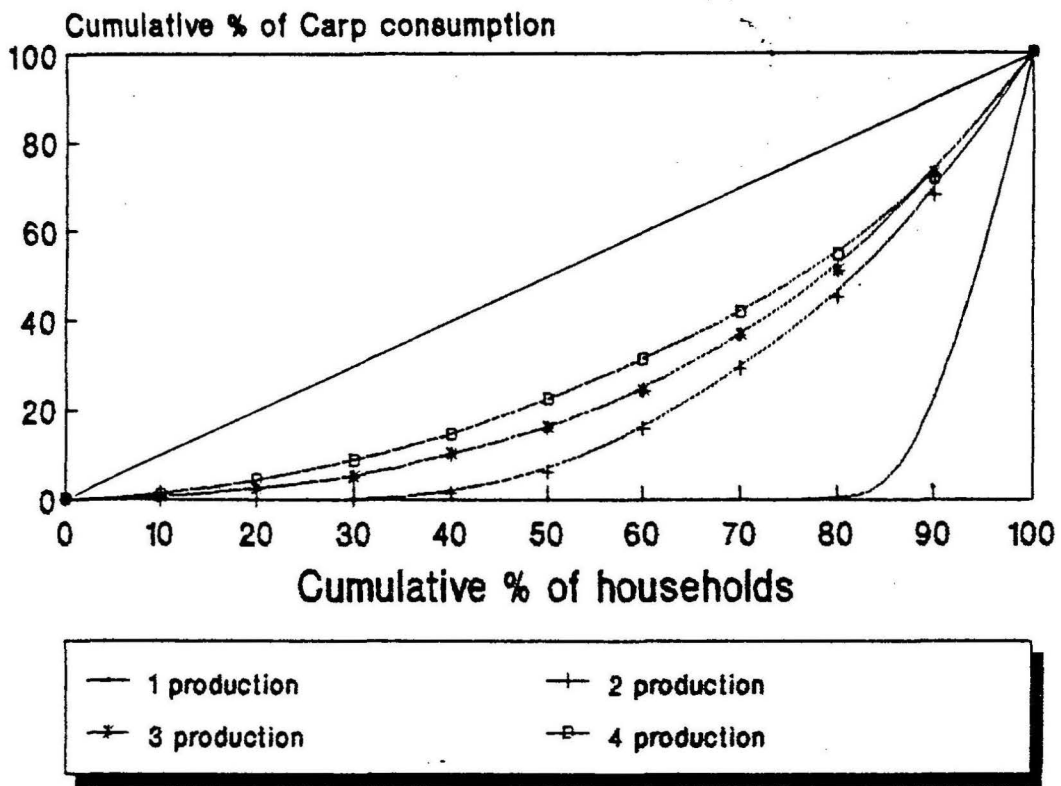
source: surveys in 1993 and 1995

Fig:4 Lorenz curve for Carp consumption  
'before-after' - Comparison households



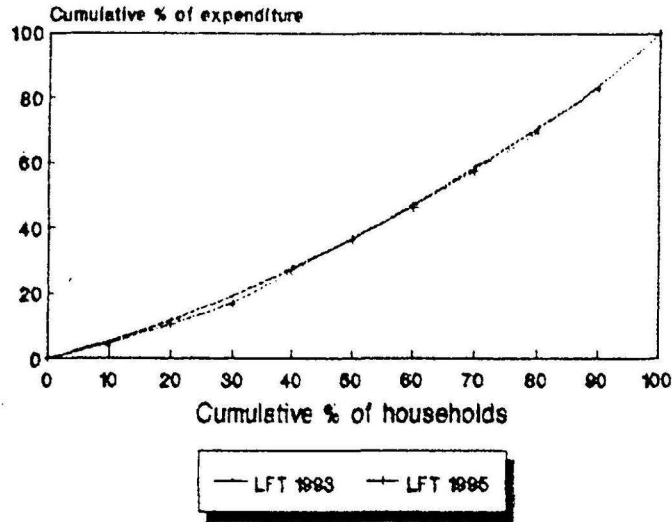
source: surveys in 1993 and 1995

**Fig:5 Lorenz curve for Carp consumption  
number of production cycle**



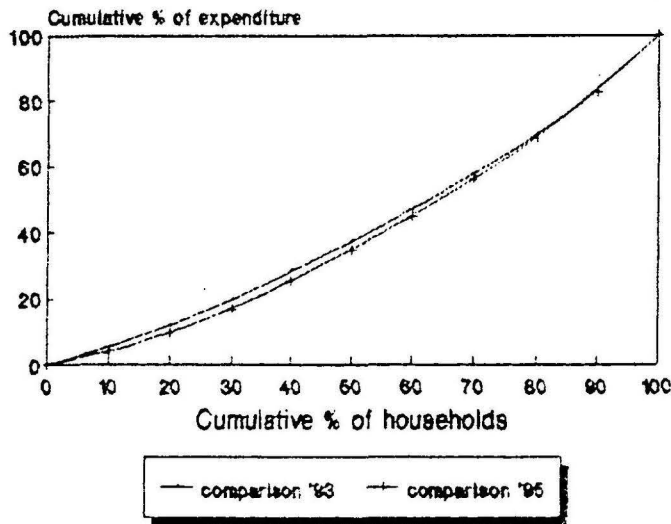
source: surveys in 1993 and 1995

Fig:6 Lorenz curve for Hh expenditure  
'before-after' - LFT households



source : surveys in 1993 and 1995

Fig:7 Lorenz curve for Hh expenditure  
'before-after' - comparison group



source : surveys in 1993 and 1995