

Call - 616
FAP-17

FAP 17

Fisheries Studies
and
Pilot Project (29)

BN-494
A-616(1)

FINAL REPORT

(Draft)

JUNE 1994



Special
Study

Supporting Volume
No. 22



2632

AQUACULTURE DEVELOPMENT USING NGOS AND TARGET GROUP APPROACH

ODA

Overseas Development Administration, U.K.

FAP-17

BN-494

A-616(1)

C-1

BN-6



Special Study



FAP 17

FINAL REPORT

SUPPORTING VOLUME NO. 22

** Draft **



Aquaculture Development Using NGOs
and Target Group Approach

A-47

FAP 17
FISHERIES STUDIES
AND PILOT PROJECT

MA-9/09
902
C-1

June, 1994

Funded by ODA in conjunction with the Government of Bangladesh

TABLE OF CONTENTS

	Page No.
ACRONYMS	iv
1. INTRODUCTION	1
1.1 Introduction	1
1.2 Scope of the Study	1
1.2.1 Background	1
1.2.2 Working with Target Populations	3
1.2.3 NGOs and Fisheries Development	4
1.3 Objectives	5
1.4 Approach and Methods	5
1.4.1 NGO Selection	6
1.4.2 Group Selection	6
1.4.3 Respondent Selection	8
1.4.4 Data Collection	8
1.4.5 Data Analysis	8
2. TARGET GROUP SELECTION AND THE GROUP FORMATION PROCESS	9
2.1 Rangpur Dinajpur Rural Services	9
2.2 Caritas-Bangladesh	10
2.3 Bangladesh Rural Advancement Committee	12
2.4 Proshika	13
2.5 Gono Unnayan Procheta	14
2.6 Banchte Shekha	16
2.7 Group Formation Problems	16
3. CHARACTERISTICS OF GROUPS AND THEIR MEMBERS	19
3.1 Group Member Characteristics	19
3.2 Member Participation	20
3.3 Capital Formation and Participation	22

CG

TABLE OF CONTENTS (Contd.)

	Page No.
4. FISH PRODUCTION AND MANAGEMENT	25
4.1 Pond Ownership	25
4.2 Pond Size	28
4.3 Fisheries Technology	28
4.4 Hatchery Programmes	28
4.5 Nursery Programmes	29
4.6 Pond Fisheries	29
4.7 Economics of Pond Fisheries	31
4.8 Profit and Benefits Sharing of Pond Fisheries	32
5. EFFICIENCY AND EFFECTIVENESS OF TARGET GROUPS	35
5.1 Group Participation and Effectiveness	35
5.2 Group Capital Formation and Effectiveness	35
5.3 Group Efficiency on Pond Fisheries Projects	36
6. CONCLUSIONS	39
REFERENCES	43

LIST OF TABLES

Table No.		Page No.
1.1	Selection of NGOs for intensive study	7
1.2	Sample groups selected for intensive study	7
3.1	Study NGO group member characteristics	19
3.2	Study NGO group member occupational characteristics	20
3.3	Study NGO group organisational characteristics	21
3.4	Study NGO group capital and investment in income-generation projects	22
4.1	Tenurial status of NGO ponds	27
4.2	Study NGO pond sizes	28
4.3	Pond fisheries technology adopted by study NGO target groups	30
4.4	Pond fishery fingerling sources	31
4.5	Size of fingerlings stocked in ponds	31
4.6	Pond fish production costs in study NGO target groups	32
4.7	Gross margin analysis of study NGO pond fisheries	33
4.8	Pond fisheries benefits earned by group members	33
5.1	Effectiveness of study NGO target groups	35
5.2	Capital formation and target group effectiveness	36
5.3	Pond fisheries investment and target group efficiency	36
5.4	Pond fisheries efficiency and group member benefits share	37

LIST OF FIGURES

Figure No.		Page No.
2.1	RDRS group formation process	10
2.2	Caritas group formation process	11
2.3	Groups formation growth trend, BRAC, Manikganj	13
2.4	Proshika group formation process	14
2.5	GUP group formation process	15
3.1	Capital and investment in pond fisheries	23
4.1	Distribution of pond fish production costs	32
5.1	Average benefit group members received from pond fisheries	34

ACRONYMS

ADAB	Association of Development Agencies in Bangladesh
BARD	Bangladesh Academy for Rural Development
BBS	Bangladesh Bureau of Statistics
BRAC	Bangladesh Rural Advancement Committee
BRDB	Bangladesh Rural Development Board
BS	Banchte Shekha
CARE	Center for American Relief Everywhere
CIRDAP	Centre on Integrated Rural Development for Asia and Pacific
DoF	Department of Fisheries
FAO	Food and Agricultural Organisation of the United Nations
FAP	Flood Action Plan
FCD/I	Flood Control, Drainage and Irrigation
GAT	Ghandni Ashram Trust
GKK	Gono Kallayan Kendra
GoB	Government of Bangladesh
GUP	Gono Unnayan Prochesta
HEED	Health Education and Economic Development
ICLARM	International Centre for Living Aquatic Resources Management
IRDP	Integrated Rural Development Programme
ITDG	Intermediate Technology Development Group
JC	Jagorani Chakra
JTS	Jatio Tarun Shangha
MCC	Mennonite Central Committee
MOFL	Ministry of Fisheries and Livestock
NGO	Non-government Organisation
ODA	Overseas Development Administration, UK
PROSHIKA	Proshika Manobik Unnayan Kendra
PUK	Palli Unnayan Kendra
RDRS	Rangpur Dinajpur Rural Services
SC	Save the Children (USA)
SMUK	Seva Manobik Unnayan Kendra
TMSS	Thengamara Mohila Sabuj Shangha
UNDP	United Nations Development Programme
US	Unnayan Shangstha
USHA	Unit for Social and Health Advancement
WFP	World Food Programme
VPKA	Voluntary Paribar Kallayan Association

1. INTRODUCTION

1.1 Introduction

This study is continuation to the baseline study of NGO fisheries activities documented in Annex C of the Interim Report (FAP 17, 1993) which has itself been reissued as Draft Final Report, Supporting Volume No. 25. The baseline study examined the range and extent of past NGO experience nationwide in the promotion of aquaculture. Through the evaluation process used in that study, six NGOs were identified for more intensive study. This report presents the findings of a detailed investigation of the six NGO group approaches to pond fisheries development and evaluates the effectiveness and efficiency of their programmes.

This document is one in a series of socioeconomic studies by the Fisheries Studies and Pilot Project (FAP 17) of the Bangladesh Flood Action Plan. FAP 17 is funded by the British Overseas Development Administration (ODA) together with the government of Bangladesh (GoB). The national implementing agency for the Fisheries Studies is the Department of Fisheries (DoF) of the Ministry of Fisheries and Livestock (MFL). FAP 17 also reports to the Flood Plan Coordination Organisation (FPCO) of the Ministry of Water Resources.

1.2 Scope of the Study

1.2.1 Background

The first use of multipurpose cooperative groups to advance rural development in Bengal date from 1948 (Solaiman, 1990). These informal groups, first created by the Integrated Rural Development Programme (IRDP) and replicated by the Bangladesh Rural Development Board (BRDB) since 1971, consisted of small numbers of participants with similar occupations. Since the 1971 Independence of Bangladesh, NGOs have gradually expanded beyond their initial relief operations to assume a greater role in the rural development process. As they have done so, they have also adopted the group approach to development and become an indispensable adjunct to public sector development efforts.

Private agencies (NGOs) have important advantages over government agencies in their ability to work creatively with the rural poor. Their bureaucratic structure is often less rigid and better able to respond quickly and creatively to emerging opportunities to help the poor. Moreover, since they operate independently of the local political elite, they can target their resources more effectively than government agencies. Perhaps the greatest strength of NGOs



lies in their ability to work intensively and directly with villagers, a capacity rarely demonstrated by government agencies (Sultan, 1991). The government, on the other hand, has much greater reach than any NGO. When it is successful in mobilizing the resources at its command, the government can have a considerable impact on welfare in poor communities and on the development of rural resources.

Extension services, whether provided by the public or private sector, are considered a potent and critical force in aquaculture development. Such services assist their beneficiaries by providing education that helps them improve methods and techniques, increase production efficiency and income, better their economic status and lift the general social and educational standards of rural life (Maunder, 1973).

Large government extension programs generally attempt to distribute technology as widely as possible. NGOs, on the other hand, cannot afford such broad-based distributions and consequently are more selective in their approach, targeting specific populations and locations for their work. Lewis (1992) claims that, despite the limited overall coverage of NGOs, their targeted approach to development offers advantages that might be drawn upon to strengthen or even replace government efforts at agricultural extension and group formation.

A single, identifiable NGO approach to aquacultural extension does not exist. Rather, NGOs' services are established on the basis of their organisational philosophies, policies and premises (Abed, 1991), and they vary accordingly. All, however, use socioeconomic characteristics to define and select a specific population to which they provide assistance. In general this assistance relies heavily on credit services and focuses on helping particular locations and populations. This "targeting" allows the NGOs not only to direct their resources to areas of greatest need but also to plan programmes around the particular requirements of a population living under specific circumstances and with a defined set of resources. The people NGOs typically target in Bangladesh are small and marginal farmers and landless or assetless (*bittahin*) male and female heads of household.

Because of their working methods, NGOs have an understanding of local problems and opportunities that enables them to gain the confidence of their target populations. According to the World Bank (1983), the degree of confidence that NGOs achieve is due to their familiarity with, and presence at, the grassroots-level of development. It is perhaps for this reason that donor agencies sometimes make a group approach a precondition for NGO funding.

2

Despite its advantages, the target group approach is controversial and often sparks emotional debate. In its review of aquaculture extension methods, UNDP/FAO (1989) noted that the selection of target groups generally is determined by government policy, which too often fails to represent prevailing social attitudes and philosophies. Based upon its review, UNDP/FAO recommended that:

- aquaculture technology must be adapted to local conditions;
- extension workers must be well trained and personally dedicated;
- aquaculture programmes should emphasize extension;
- feedback mechanisms must be established;
- selection of extension workers should be tailored to the target group;
- the programme must have government support;
- the programme must be stable;
- reputation can be valuable to the programme or agency;
- the primary goal of aquaculture extension is education.

1.2.2 Working with Target Populations

The baseline study reported that NGOs use three approaches to target populations: individual contact, informal groups and formal groups. In the individual contact approach, the NGO addresses its activities to individual households or persons. In the informal group approach, which is most commonly used, the NGO creates village-level organisations to bring its target population together in a cohesive unit. Formal groups are registered with the Directorate of Local Government and Cooperatives and usually have to conform to specific norms established by law. This gives them certain advantages, like access to such institutions as banks, but it also limits their flexibility.

Unlike formal groups, informal groups can be more flexible in their organisation and procedures. Such groups may be formed either to carry out aquaculture activities as a group and take on group management of the activity, or they may simply form a contact group for extension workers. A major advantage of the group approach is that it can deliver a development message to a large audience in a short time. This approach can result in faster growth and more rapid development for landless and assetless families, as well as for the group to which they belong.

The NGO conception of the group approach embraces not only collective income generation but also stresses the value of collective solidarity on a broad range of issues. NGOs use the

20
approach as a delivery system for a variety of programmes including informal institution building, income generation, the provision of social services and the empowerment of targeted segments of the population (Wood 1984). One use to which the group approach has been put is the development of pond fisheries.

1.2.3 NGOs and Fisheries Development

The Bangladesh Bureau of Statistics (BBS) estimates that the country has 1.8 million ponds covering a total area of about 147,000 hectares. There also are an estimated 700,000 smaller water bodies, locally called borrow pits, *doba*, *maital* or *pukur*, that have a total area of some 1,500 hectares. Fewer than half (43%) of all these ponds and water bodies are used for low-intensity aquaculture. The underdevelopment of this inland water resource has provided a rationale for using them in NGO programmes.

The baseline study found that NGOs engaged in nine different types of fisheries programmes. The most common of these was pond fish culture, which in some cases was supported by hatchery or nursery projects. These three project types are the subject of this study.

FAP 17's study of NGO approaches to aquaculture development in Bangladesh is intended to assist planning for the compensation of negative flood control impacts on fisheries. It is clear that the control or restriction of free flooding has a negative impact on many important fish resources and on the fisheries they sustain. Improving the productivity of existing fish ponds and encouraging the development of new ones is perceived to be an important means of replacing some of this lost production. The replacement of even a part of this production would require an increase in the extent and productivity of aquaculture in rural areas that is beyond the capabilities of government extension services alone. The extensive network of NGOs in the country, some of which already have experience in promoting aquaculture, could therefore provide an important mechanism for improving the effectiveness of compensation techniques through aquaculture development.

The distribution of benefits from such developments is clearly a problem. The reduction of open-water fisheries may disproportionately affect the poorer sections of the rural community. This is particularly true of the landless, for whom fishing is a source of food and supplementary income at a time of year when little else is available. The fishing communities who would suffer most clearly from a reduction of open-water resources also tend to be landless. On the other hand, aquaculture is an activity that uses land resources and has generally tended to benefit landowners most. Many NGOs in Bangladesh have been

attempting to develop models of aquaculture development that would enable the poor and the landless to participate more fully.

A 1993 workshop conducted by ADAB in conjunction with the Intermediate Technology Development Group (ITDG) identified major technical and socioeconomic constraints to fish culture development in Bangladesh. The technical problems consist of fish seed supply, feed cost and availability, underusage and high cost of fertilizers, poor water quality, unidentified disease and the slow growth and high mortality rate of cultured fish. The socioeconomic problems are lack of capital for production inputs, theft, multiple ownership of ponds, fair price and marketing, lack of credit, religious conflicts, lack of security or ownership and aquaculture management under group situations.

FAP 17's intensive study of the methods used by six NGOs therefore evaluates the economic efficiency of their programmes in terms of their return on capital invested as well as the distribution of benefits to group members. The study also examines the effectiveness of the programmes, that is, the level of participation and commitment they achieve with their members and their ability to meet savings and capital formation goals.

1.3 Objectives

The broad objective of this study was to review and evaluate the group approaches to fisheries development in six NGOs. Its specific objectives were to:

- determine the effectiveness of the NGOs' target groups in pond fisheries programmes;
- assess the economic efficiency of the pond fish culture promoted by the NGOs; and
- suggest policy measures for the compensation of FCD/I fish losses through pond fisheries development.

1.4 Approach and Methods

According to the Association of Development Agencies in Bangladesh (ADAB), 724 NGOs operate in rural Bangladesh. Of these, 107 (14%) have fisheries or aquaculture programmes, most of them using target groups to develop pond fisheries. These agencies were categorized as "local," those working within a limited geographic area of Bangladesh; "national," those

22
working throughout Bangladesh; and "international," those working in Bangladesh and other countries and managed by foreign personnel.

With so many agencies active in fisheries, a complete census was impossible, so a sample of study NGOs was selected based on:

- the length of their involvement in fisheries and the nature of their fisheries programmes;
- the beneficiaries of their fisheries programmes; and
- their connection and coordination with ADAB.

The baseline study (FAP 17, 1993) of 21 NGOs was used as the basis for the intensive study described in this report. The data on which this study is based came from primary and secondary sources.

1.4.1 NGO Selection

In the first stage of the study, FAP 17 used available sources to compile a list of local, national and international NGOs working with fisheries. These NGOs were then studied to determine: the nature of their participation, the length of their fishery programmes, the nature of those programmes, their approaches to fish culture, the personnel involved in their programmes, the ratio of target groups to field workers and problems encountered with the groups or their pond fisheries. This process identified six NGOs, which were then subject to intensive study. The six consist of two local NGOs, Banchte Shekha (BS) and Gono Unnayan Prochesta (GUP), two international NGOs, Rangpur Dinajpur Rural Services (RDRS) and Caritas-Bangladesh, and two national NGOs, Proshika Manobik Unnayan Kendra (Proshika) and Bangladesh Rural Advancement Committee (BRAC). The matrix in Table 1.1, from the baseline study, summarizes the relative scores of the original 21 NGOs.

1.4.2 Group Selection

In the second stage, the study developed a list of groups connected with each of the six selected NGOs. From this list a total of 56 groups was selected by simple random sampling. The distribution of the sample groups among the selected NGOs is shown in Table 1.2.

Table 1.1 Selection of NGOs for intensive study

NGO	Experience (>mean)	Fisheries Activities (>mean)	Group Approach	No. of Groups (>mean)	No. of Beneficiaries (>mean)	Worker/ group Ratio (<mean)	Total Score
RDRS	**	**	**	**	*	**	11
Caritas	**	**	**	**	**	*	11
CARE	*	**	**	na	na	na	5
MCC	*	*	**	*	*	*	7
HEED	*	*	*	*	na	**	6
SC	*	*	*	*	*	*	6
BRAC	**	**	**	**	**	**	12
Proshika	**	*	**	**	**	*	10
SMUK	*	*	*	*	**	**	8
GKK	*	*	**	*	**	**	9
JC	*	*	**	*	**	*	8
VPKA	*	*	*	*	**	**	8
USHA	*	*	**	*	*	**	8
US	*	*	**	na	na	na	4
TMSS	*	*	*	*	**	**	8
BS	*	**	**	*	**	**	10
GAT	*	*	**	*	*	**	8
GUP	**	*	**	*	**	**	10
Uttaran	*	*	**	*	**	*	8
JTS	**	*	**	na	na	na	5
PUK	**	*	**	na	na	na	5
Total Mean	28 -	26 -	37 -	21 -	27 -	28 -	167 8

Source: Baseline Study, FAP 17

** Greater than mean is considered first priority for intensive study (Score 2 = **)

* Mean and below considered second priority (Score 1 = *)

Table 1.2 Sample groups selected for intensive study

NGO	No. of Groups	Location(s)
BS	10	Jessore
GUP	9	Madaripur
RDRS	11	Kurigram
Caritas	11	Moulvibazar, Barisal, Dinajpur
BRAC	8	Manikganj, Pabna
Proshika	7	Barisal, Manikganj
Total	56	

fb

1.4.3 Respondent Selection

Respondents for the study were either NGO executive committee members, such as the secretary or chairperson of the group, or field workers. The chairperson or secretary provided data on the organisation and the characteristics of the group members. Field workers provided information on group formation, problems and prospects for expanding the number of groups in similar social and ecological environments and fisheries technology. The variables examined included the year the group was formed, beneficiary participation, meeting frequency, group member savings and group investments in fisheries. Member characteristics, such as average farm and family size, social status, literacy and pond fish culture, also were included in the analysis.

1.4.4 Data Collection

Data were gathered using both a checklist and a formal questionnaire that had been pre-tested in the field.

1.4.5 Data Analysis

The information and data collected from all sources were analyzed using descriptive and inferential statistics.

2. TARGET GROUP SELECTION AND THE GROUP FORMATION PROCESS

Understanding the group formation processes NGOs use is essential to comprehending their operation. As previously noted, there is no single NGO approach, so perceptible differences between them, combined with an analysis of their effectiveness and efficiency, can illuminate methods that work. This chapter therefore describes the group formation process used by each of the six study NGOs and discusses some of the problems encountered during group formation.

2.1 Rangpur Dinajpur Rural Services (RDRS)

RDRS, one of the largest rural development NGOs in Bangladesh, works in six districts of the North West Region. Its target beneficiaries own less than one acre (0.40 hectares) of land and the majority (80%) live at or below the critical poverty line. The members of its groups are from both farm and nonfarm households.

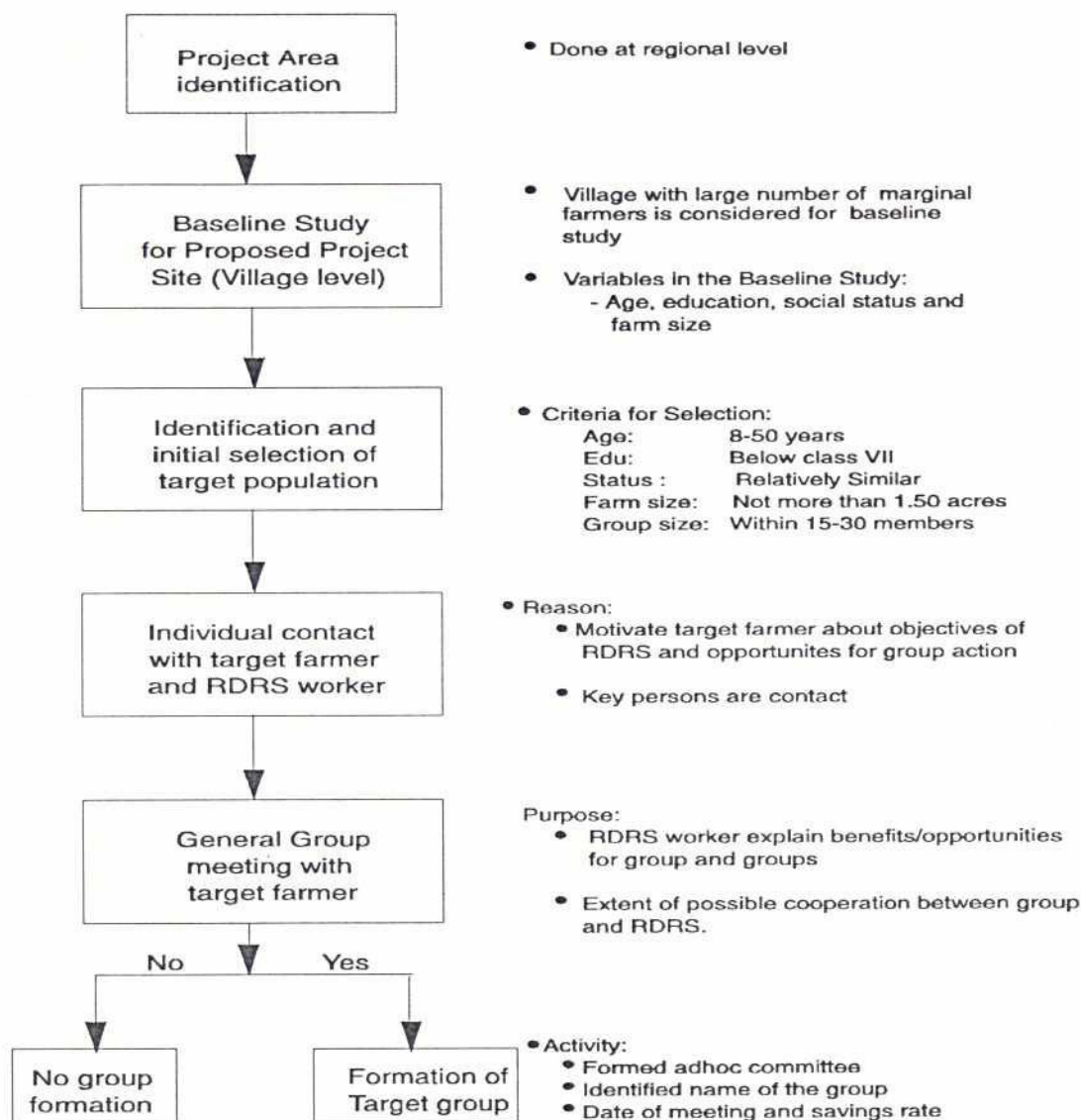
RDRS follows four steps to group formation: a baseline study of the proposed area, preliminary identification of a target population, individual contact and informal motivation, and group formation through a meeting (Figure 2.1).

The NGO's workers take about 30 working days to identify a village for group formation. Newly formed groups remain under observation for about three months and receive such assistance as credit services or World Food Programme (WFP) Food-for-Work wheat to re-excavate ponds. During this observation period, RDRS field workers monitor the number of regular meetings, membership savings, meeting attendance and mutual cooperation. They also provide motivational training for the village.

Initially both men and women were included in RDRS group makeup, but, according to field workers, male members dominated decision-making in these groups. The NGO therefore switched to an all-male group structure. In recent years it has also created all-female groups. A similar process was followed for the formation of the women's groups, but it differs in several respects. The female groups, in most cases, receive assistance earlier than the male groups. Field workers in Rajarhat also reported that the women had better meeting attendance and savings records than their male counterparts.

The RDRS fisheries programmes include pond fisheries, hatcheries and nurseries and rice-fish integrated culture. In 1992, a total of 662 target groups cultured 1,096 seasonal and perennial ponds and ran 39 nursery ponds.

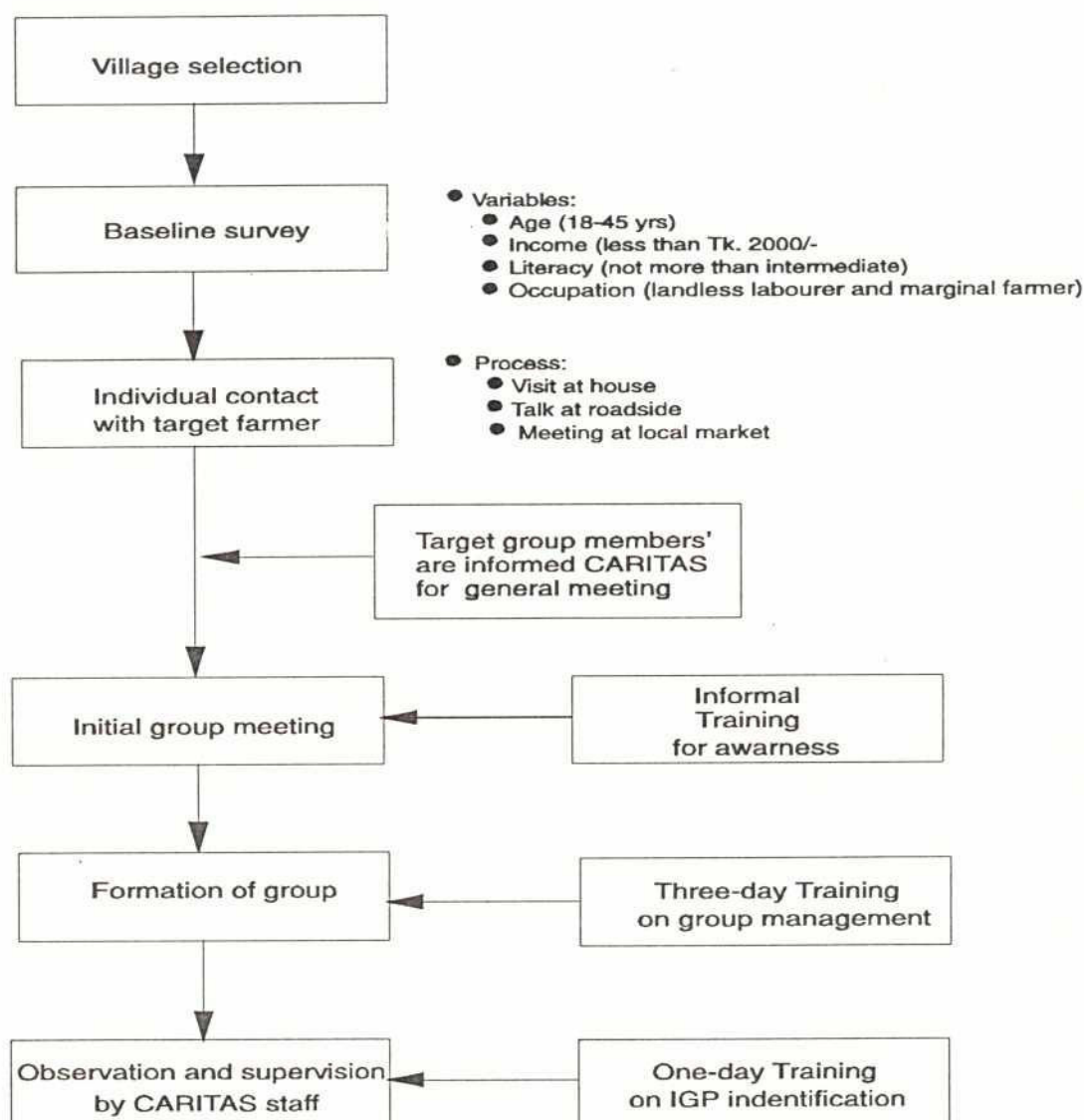
Figure 2.1 RDRS group formation process



2.2 Caritas-Bangladesh

Caritas established itself in Bangladesh prior to liberation under the name CORR-Caritas (Christian Organisation for Relief and Rehabilitation). Although generally assumed to favour the development of Christians, Santals and other minorities, the agency's activities do not reflect any particular religious bias.

Figure 2.2 Caritas group formation process



Caritas has 972 target groups in several regions of Bangladesh, many of these are involved in or related to fisheries programmes. Caritas field workers report that the group formation process is oriented toward institution-building rather than simply transmitting a message and disbursing credit to its clients. Male and female groups alike are identified using a baseline survey. Awareness and motivational work with each group continues for more than three months. Although the group formation process Caritas follows (Figure 2.2) is similar to that used by other NGOs, there is a notable difference in its uncommon system of organisation.

Caritas has a three-tier organisational structure. The primary groups are at the village level, but there are also union and *thana* levels of organisation. The union-level groups consist of representatives from each of the primary groups in the union. The *thana*-level organization is a management committee with responsibility for coordinating *thana* development agencies with the development programmes of union and village groups. The secretary or chairperson of each union organisation is a member of the *thana* committee. This committee is managed by individuals who are nominated or elected by members of the village primary groups. Caritas regional and field staff assist the committee in planning development works and the training needed to carry them out. Primary groups are not automatically members of the union or *thana* groups. A new primary group must first meet certain criteria based on the performance of its members in such areas as regularity of meetings, meeting attendance, savings and group income-generation effort. Only after adequately satisfying these performance indicators is the group admitted to the union and *thana* organisations.

2.3 Bangladesh Rural Advancement Committee (BRAC)

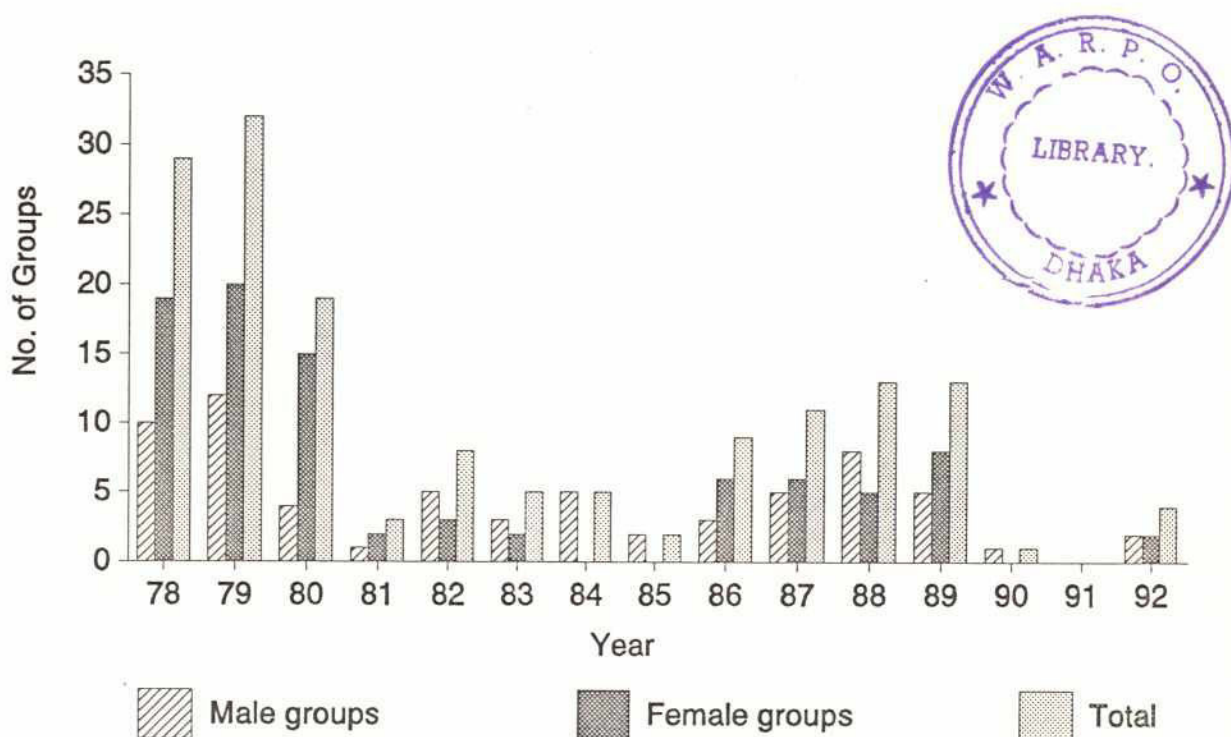
BRAC, one of the largest national NGOs in Bangladesh, engages in a multitude of activities spread throughout the country. The agency uses a sectoral approach to its rural development interventions. The sectors employed are: organisation and human development, primary education and health, primary productive sectors like agriculture, livestock, and fisheries, and credit services. BRAC's activities, particularly its Rural Development Programme have increasingly been dominated by credit disbursal.

BRAC has a unique set of criteria for selecting group members. Its groups consist of landless people who work at least 100 days as wage labourers, marginal and small farmers who own less than 1.5 acres of land, and members of non-farming groups such as fishermen, potters, carpenters and destitute women. The BRAC groups are organised according to occupation, and each includes a female subgroup. The size of the groups ranges from 30 to 50 participants. The trend of male and female group formation in the Manikganj area, shown in Figure 2.3, indicates that group formation has declined somewhat since the late 1970s and early 1980s and has dropped markedly since 1989.

BRAC's group formation process is essentially the same as that used by RDRS. The principal difference is in the amount of time required to form a group; BRAC takes less time than RDRS does. The disadvantage in this is that the BRAC groups may have a higher breakdown rate due to insufficient group member preparation. The advantage of a rapid formation process is that development programmes can be more widespread, reaching even remote

villages. BRAC groups are involved in a wide variety of income-generating activities (described in the baseline study).

Figure 2.3 Group formation growth trend, BRAC, Manikganj

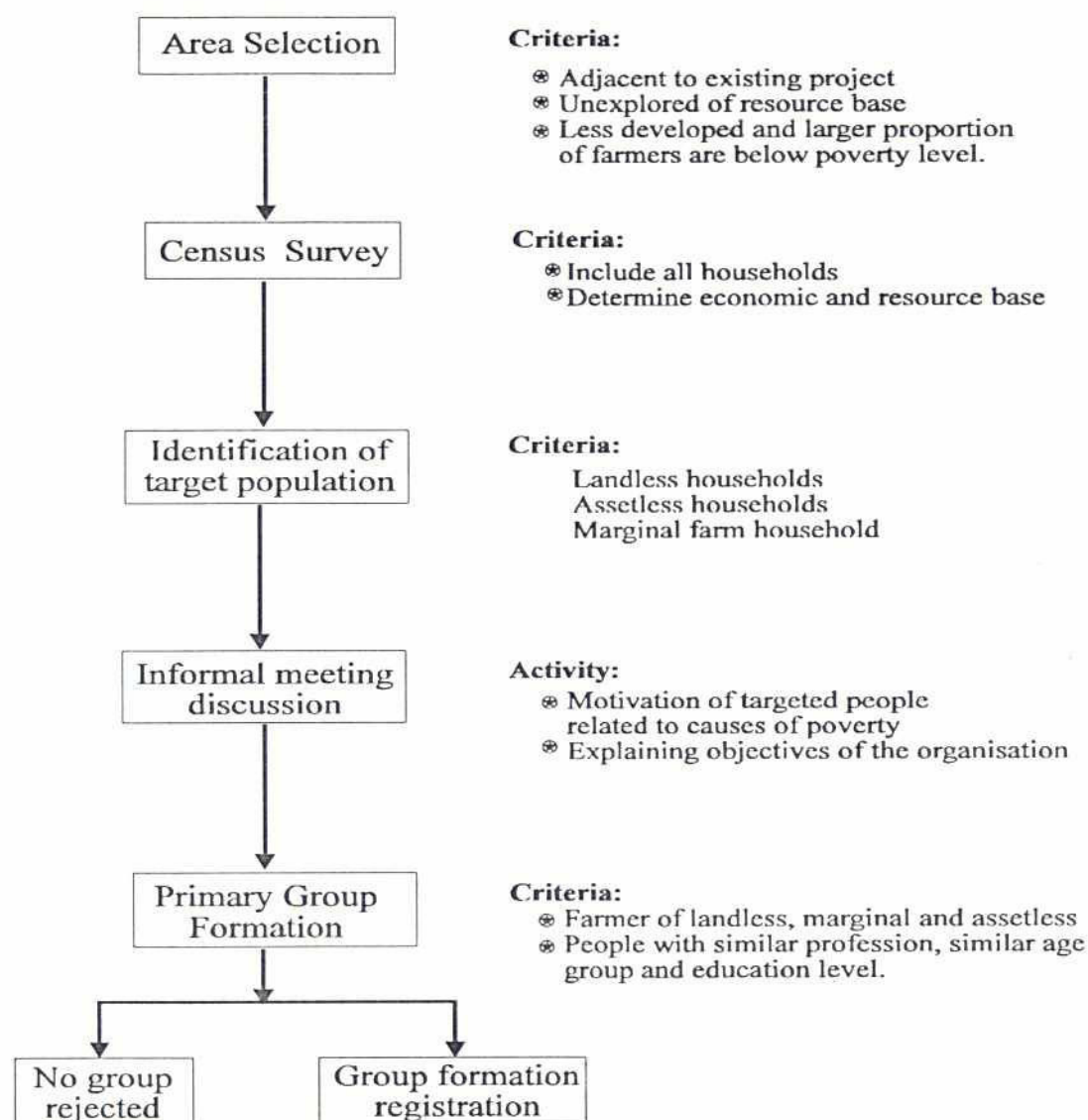


2.4 Proshika

Proshika Manobik Unnayan Kendra, commonly known simply as Proshika, is another of the large national NGOs that work with small and marginal farmers, landless wage labourers and groups of men and women in various occupations. Proshika, which was founded in 1976, had created and worked with more than 1,600 groups by 1992. This NGO's target group growth is the largest of the NGOs studied. Its group formation process (Figure 2.4) is similar to BRAC's.

Proshika's groups have 18 to 44 members. Like BRAC's groups, they are organised according to occupation and there can be subgroups within a group. Subgroups are most commonly found in pond fisheries programmes. Once Proshika identifies a target population, group formation tends to quickly follow.

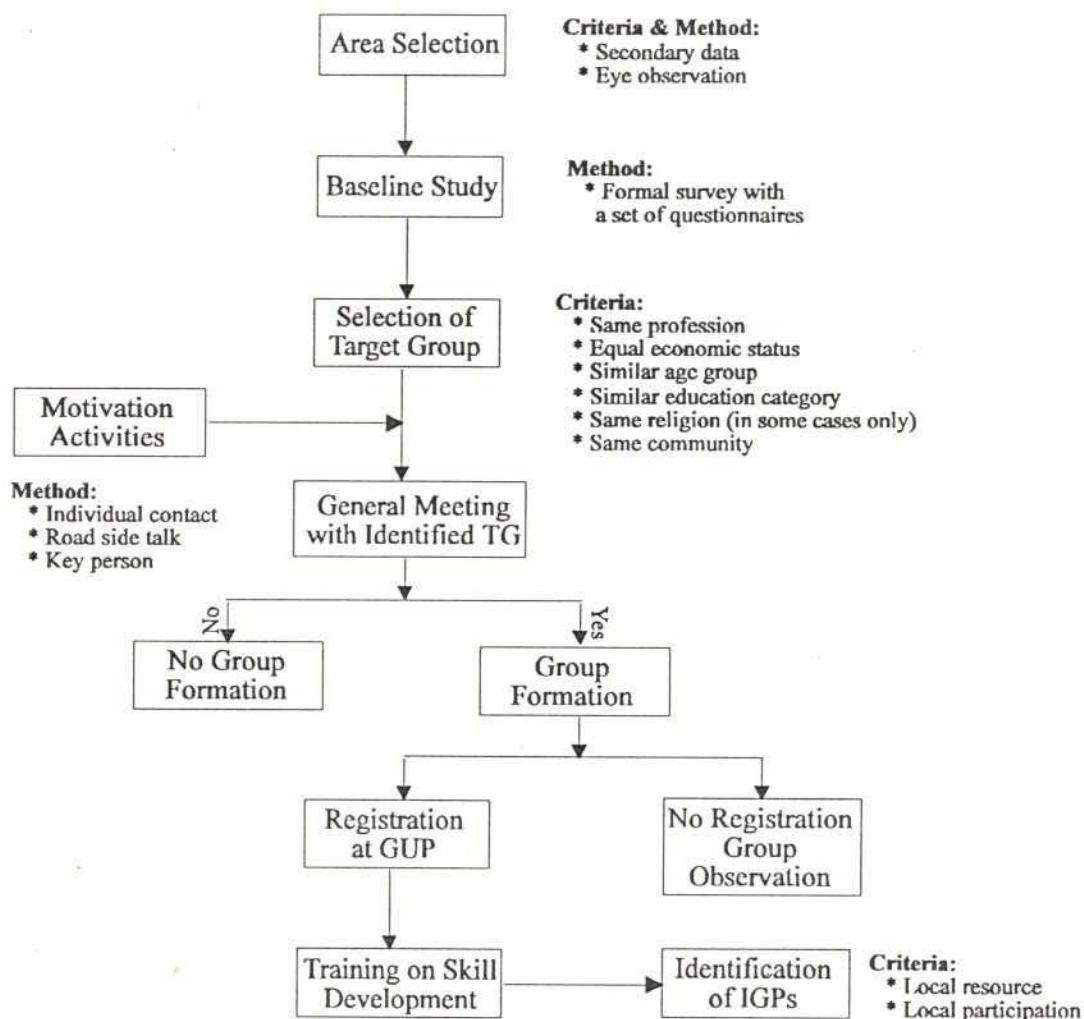
Figure 2.4 Proshika group formation process



2.5 Gono Unnayan Prochesta (GUP)

GUP, which was founded after the Independence of Bangladesh in 1971, is a local NGO that confines its work to Rajoir *thana*, Madaripur district. The organisation has adopted an integrated approach, using a variety of activities to assist socioeconomic and cultural development of rural landless wage labourers, marginal and small farmers and resource-poor fishermen and destitute women.

Figure 2.5 GUP group formation process



GUP targets both men and women and its groups are homogeneous. Groups have between 16 to 38 members, but their average size is 20 members. GUP's group formation process (Figure 2.5) is marked by a strict qualifying procedure for new groups. Under this procedure, identified target groups are subject to motivational activities for about a year. Once the group has established a record of holding regular, well attended meetings and an ability to accumulate savings, the group is recognised and registered by GUP, which then provides income-generation project assistance. If a group fails to meet the preconditions for registration, GUP continues its motivational work with the group.

2.6 Banchte Shekha

Banchte Shekha is a Jessore-based organisation that works in Jessore, Khulna, Jhenaidah, Narail, Kushtia and Barisal. The NGO is headed by women and focuses on the development of women from resource-poor families, such as the wives of farmers owning less than one acre of land, women of landless and sharecropping families and destitute women in rural and semi-urban areas. The organisation's group formation process is similar to that of BRAC and Proshika.

Banchte Shekha field workers require that their target group members undergo three months of motivational work prior to registration. The organisation then implements a variety of projects through its groups and subgroups.

2.7 Group Formation Problems

As is clear from the preceding descriptions, all of the NGOs studied use a similar group formation process. In each case, field workers using motivational techniques disseminate information about the opportunity for assistance and income generation through the formation of a group. The NGO then monitors the groups for their savings, regularity of meetings and meeting attendance.

NGOs encounter a variety of problems during the group formation process. The baseline study reported on six major problem areas. Of those, only intervention by the local elite, acquiring pond leases and group homogeneity were problems in the six NGOs examined for this study. A number of additional problems, described below, were identified by this more detailed study.

Delay in the trust building process: Mutual trust and understanding among group members is a precondition for achieving group goals. NGO field workers reported that lack of trust was a common problem. In some cases, for example, members contended that the group could have received a higher sale price for the fish it had produced. In other cases, members disputed the disbursement of credit among the members, expressing suspicion that the secretary and chairman might have received more than the other members.

Invisible force: The targeting of assistance to particular sections of the population often results in resentment among those who fail to qualify or who consider the advancement of

poorer groups to be a threat to their position. This can manifest itself in active obstruction of a group's efforts, usually when NGO workers are not present.

Similar occupation, different income-generation project: Some NGOs prefer that each of their groups have a diversity of projects. Such diversified project portfolios are often justified by their consequent reduction of risks. The approach also exposes group members to several means of generating income. The problem this causes is that it can create management problems for the group.

Other organisations: It is not uncommon for more than one NGO to work in the same village. Even though the objectives of these NGOs may be similar, the differences between them can give rise to problems. In particular, competition for participants and resources, such as ponds, can cause friction.

Security and risk: This type of problem encompasses several factors that can create unease in the group membership. Among the issues that it includes are concern about the security of member savings, the risks of project investment, uncertainty about the need to migrate due to flood or drought, and the marriage of female members to people outside the village.

Although no statistical test was applied to assess the differences between groups inside FCD/I projects and those outside, some differences were observed with regard to the identified group formation problems. Communities located outside FCD/I projects, and therefore exposed to recurrent flooding that forced them to temporarily or permanently migrate, tended to have more group formation problems. Forced migration delayed the group formation process, increased insecurity about investment risks and resulted in groups with more inactive members. In Manikganj, for example, the group formation process was delayed because the trust-building process required more time, and in Kurigram, RDRS groups had high dropout rates.

18

3. CHARACTERISTICS OF GROUPS AND THEIR MEMBERS

This chapter describes some general socioeconomic characteristics of the members of the NGO groups studied by FAP 17. This is followed by a discussion of the members' participation in group activities and the capital they accumulate as a result of that participation.

3.1 Group Member Characteristics

The characteristics described below and summarized in Table 3.1, farm size, family size, education and training and occupation, are the same ones used by the NGOs during their selection process.

Table 3.1 Study NGO group member characteristics

NGO	Characteristic			
	Farm Size (acres)	Family Size (no.)	Education (years)	Training (no.)
BS	0.96	5.10	4	4
GUP	0.43	5.0	4	7
RDRS	0.29	4.90	9	4
Caritas	0.57	4.54	6	3
Proshika	0.31	5.75	8	4
BRAC	0.76	4.55	4	4
All	0.41	4.92	5.87	4.3
SD	0.38	0.86	4.65	2.37

Farm Size

Farm size includes homestead land plus all land operated for crop production by the group members in 1992-93. In most cases the cropped land is either government-owned *khas* land or is leased or shared with other villagers. For all NGOs, the average group member's farm size was 0.41 acres, or 0.16 hectares (Table 3.1). Banchte Shekha members had larger farms than members of other groups.

Family Size

Group members' average family size was about 5 persons (Table 3.1). This size is lower than the national average. The figures suggest that joint families are uncommon among the resource-poor families typically targeted by NGOs.

Education and Training

The average amount of schooling obtained by group members in the study NGOs was about six years, or through the primary level. RDRS and Proshika members had the most education and GUP group members went through the most training sessions (seven).

Occupation

A majority of the group members (60%) in all NGOs were landless wage labourers (Table 3.2). Most beneficiaries were not dependent on farming, however. None of the members of the BS or GUP groups were farmers or depended upon farm income. The study found a positive correlation between occupational category and participation in group activities.

Table 3.2 Study NGO group member occupational characteristics

NGO	Characteristic					
	Landless Labourer	Wage Labourer and Farmer	Farmer	Farmer and Trader	Other	Total
BS	23	5	0	1	4	33
GUP	12	3	0	0	5	20
RDRS	6	5	2	1	1	15
Caritas	10	4	3	2	1	20
Proshika	9	3	2	5	5	24
BRAC	31	6	2	1	2	42
All (%)	15 (60)	4 (16)	1 (4)	2 (8)	3 (12)	25 (100)
SD	13.11	3.93	2.49	3.71	7.32	14.54

3.2 Member Participation

There is no definitive group size that creates optimum conditions for effectiveness or efficiency. While group size can influence performance, many other variables, including membership characteristics, organisational attributes and the type and size of project undertaken by the group, also have an effect.

The groups studied had an average of 25 members each (Table 3.3). BRAC groups had the most members (42), and RDRS groups had the least (15). Although field workers reported that not all members were active participants in the group, all nonetheless benefitted from NGO services and facilities. The average dropout rate for the groups studied was 2.5

members, largely due to the very high dropout rate (8) of RDRS. The relationship between group size and member attendance was significantly negative ($r = -0.59$, $p < .05$).

Table 3.3 Study NGO group organisational characteristics

NGO	Characteristic				
	Years of Operation	Members (no.)	Dropouts (no.)	Meetings (no.)	Attendance (no. of members)
BS	4	33	0	46	23
GUP	8	20	0	35	16
RDRS	9	15	8	34	12
Caritas	7	20	1	23	16
Proshika	9	24	1	37	18
BRAC	10	42	5	50	30
All	7.8	25	2.5	38	19
SD	3.90	14.54	5.29	11.60	9.20

The purpose of group meetings is to coordinate member efforts and foster cooperation within the group. These meetings, therefore are forums for discussing member problems and conflicts between participants as well as for programme planning. All the groups studied try to hold weekly meetings. The data for 1992 show that the groups actually held an average of 38 meetings for the year. BRAC groups had the most meetings and Caritas groups had the least.

Meeting attendance among the group members was higher than generally found in conventional groups and cooperatives (Kashem, 1978). The FAP 17 study found that, on average, 19 of 25 (76%) members attended their group's meetings. This high overall average indicates that group members were well motivated and aware of the importance of meetings. Although BS and BRAC had slightly lower than average attendance percentages (72% and 71%, respectively), they also had the most members and the most meetings.

The relationship between the education level of group members and their attendance at meetings was found to be significantly positive ($r = 0.28$, $p < 0.05$).

3.3 Capital Formation and Participation

An important objective of group formation is to accumulate and generate capital for investment in income-generating projects that can improve the welfare of group members. The amount of capital generated and the benefits it brings to the group members are therefore vital to successful group organisation and development.

Average group savings were Tk.24,745 (Table 3.4), but the coefficient of variation was as high as 126% with Proshika; BS group savings was significantly above average and BRAC, Caritas and GUP savings was significantly below average.

Table 3.4 Study NGO group capital and investment in income-generation projects

NGO	Savings	NGO Loan	Total Capital	Project Investment	Fisheries Investment	Percent Invested in Fisheries
BS	37,000	55,200	92,200	1,986	1,986	100
GUP	12,730	25,396	38,126	3,279	2,443	75
RDRS	32,783	10,332	43,115	28,384	1,911	7
Caritas	9,195	10,818	20,013	6,054	4,207	69
Proshika	42,587	34,475	78,562	40,698	6,553	16
BRAC	14,717	13,111	27,828	17,970	17,072	96
All	24,745	24,404	49,974	16,378	5,695	
SD	31,201	25,689		33,663	14,569	

On average, each group benefited from Tk.24,404 of credit, almost Tk.1,000 per member. BS group members received the most credit (Tk.55,200), and loans provided by RDRS, Caritas and BRAC were considerably lower than average. The figures suggest that local and national NGOs may be providing more credit to their client members than international NGOs.

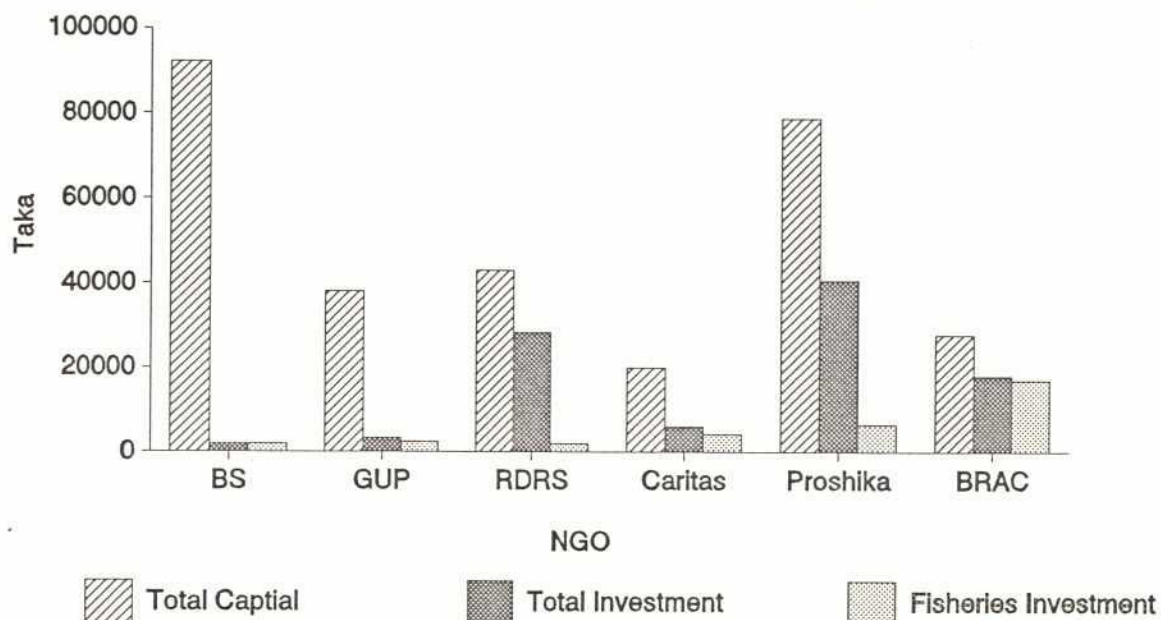
The average total capital, consisting of total savings as of December 1992 and credit received for 1993, was Tk.49,974 per group. Proshika and BS group members had the most capital accumulation, and Caritas and BRAC had the least. These figures indicate that capital accumulation was higher for groups under local and national NGOs than under international ones.

The data show that groups invested an average of Tk.16,378, or 32% of their total capital, in income-generating projects. The investment level was higher in Proshika and RDRS, and lowest

in BS groups. BRAC group members invested the most (Tk.17,072) in fisheries. BS groups accumulated Tk.92,200 and invested only 2% (Tk.1,986) in fisheries in 1993 (Figure 3.1).

The correlation test (PPMP) suggests that there is no association between capital accumulation through savings and investment in pond fisheries ($r = 0.175$, $p < .05$). The BRAC study groups invested the most money in pond fisheries and held more meetings. No apparent association was found between meeting attendance and savings.

Figure 3.1 Capital and investment in pond fisheries



2



4. FISH PRODUCTION AND MANAGEMENT

The production of a pond fishery results from the application of various inputs to enhance a water body's capabilities. Certain physical characteristics of the fishery, such as pond size, are also important factors in production, but the inputs provided to encourage the biological production process are essential. As reported in Chapter 1, the availability and use of fish seed or spawn, fertilizers to encourage fry and fingerling growth, and feed to increase biomass, have been found to be among the reported constraints to fisheries production in Bangladesh. In addition to physical and biological requirements, issues of management efficiency, pond ownership and the economic base of pond owners play a part in the production capability of pond fisheries. This chapter analyzes these factors in the fisheries of the NGO groups studied.

4.1 Pond Ownership

Previous studies of pond fisheries, including those of FAP 17, have found that pond ownership, specifically the multiple ownership of ponds, is one of the most serious problems facing fisheries development in Bangladesh. No detailed study of this issue has been conducted, but some general observations can be made based on information gathered by FAP 17.

Part of the problem may be that ponds generally tend to belong to wealthier individuals. Such owners may gain more from the pond as a social asset than as an economic one and they are therefore reluctant to give it up for fish cultivation. In one case in the North East Region, a 0.32 acre pond was found to have seven owners, all members of the same extended family. According to one of the owners, giving the pond up for fish culture would prevent any of the current owners, their children or their neighbours from fishing in the pond when and where they wished. This is currently a form of recreation that helps maintain harmony in the family and the neighbourhood. The economic benefit gained from the pond is negligible for these people, but the social benefit, in their estimation at least, outweighs the potential economic benefits of the pond.

While cases like the one just described exist in many places, elsewhere ponds are leased out for their economic benefits. In such cases sizeable investments in re-excavation may be required to make the pond productive. The size of the investment necessary may either be beyond the means of the owners or may be perceived as too risky or having too little potential return. One pond studied, a 3-acre Caritas group pond in the North West Region, has been leased by the NGO's *thana*-level group for eight years. The *thana* group was able

to get wheat under the WFP food-for-work programme to excavate and embank the pond. The owners of what had been low land providing poor harvests of rice and fish, now have a highly productive fish pond on their property. This pond is producing excellent fish of several species, and its embankments are planted with banana, guava and timber trees. In addition to the lease fee, the owners are also enjoying part of the fruit and fish harvest provided them as a courtesy by the Caritas group. Since the second year after pond renovation, the group itself has made a profit of about Tk.80,000 per year.

Villagers of Bhatra, Manikganj in the North Central Region have developed an effective lease and share system that comprises about 16 different tenure arrangements. The essential characteristics of these schemes can actually be reduced to four principle tenure types.

1. **Share system:** This system is similar to that for agricultural sharecropping. The pond operator provides all the production cost of fish culture; the pond owner pays for nothing. Each party's share of the harvest is set by negotiation at the outset.
2. **Kot system:** *Kot* is the local term for a cash contract. The contract period can range from one to six years. The pond owner's interest in such an arrangement is to have the pond prepared so that he himself can take up culture fishing at a later date.
3. **Lease system:** Government-owned *khas* ponds are leased to special groups, usually to the highest bidder. NGO groups are not usually among those who lease such water bodies, but the potential exists to increase their involvement, redirecting the benefits of such water bodies to disadvantaged groups.
4. **Dow ani system:** Under this system, a local innovation of fishermen and fish traders, a fee is paid for consultancy and advisory service. The person contracting with the pond owner receives one-eighth of the total harvest and the rest goes to the pond owners ("*dow*" means two and "*ani*" comes from "*anna*," meaning one-sixteenth of a taka). The pond owners supply all the necessary inputs for fish production in this system. The *dow ani* holder suggests what to do, when to do it and how much feed and fertilizer is to be applied. The harvesting generally is also done by the *dow ani* holder using his own nets and labourers, although some pond owners provide harvest labourers. This system is gaining popularity.

These systems of culture of pond fisheries, which are also used by GUP groups in Rajoir *thana* of Madaripur district, have the following advantages:

- they use water bodies for productive purposes;
- the supply of fish increases;
- the income of pond owners and fish culturist increases;
- they increase local employment opportunities; and
- they offer increased nutritional benefits to the local population.

NGO groups can lease water bodies under any of the systems discussed. This study found that 91% of target group ponds were leased (Table 4.1). RDRS groups owned three ponds, which they had purchased with their savings. The lease periods of the NGO group ponds ranged from three to 12 years, and nearly 75 percent of them were leased for 10 or more years. The length of these leases indicates that the ponds required major investments for preparation.

Table 4.1 Tenurial status of NGO ponds

Tenure	Frequency	Percent
Lease	51	91
Share Contract	1	2
Own	4	7

FAP 17 found that 94% of the ponds operated by the groups studied were re-excavated with the assistance of their NGO. Most of this help was provided in the form of food aid or WFP Food-for-Work grants for fish culture. This programme had several beneficial effects:

- It generated employment opportunities for labourers in general and group members in particular (all members participated in pond excavation).
- It created long-term income-generation sources for the group.
- By requiring that group members increase their savings to get wheat, the programme resulted in increased total savings for the group.
- It increased the available fisheries resources.
- It increased pond fish production in rural areas.

The negative effects of the programme were few, but notable.

- It engendered distrust among group members by raising questions of their sincerity.
- Conflict between group members and the NGOs grew out of the requirement to meet certain savings or payment requirements in order to receive the WFP wheat. For example, an RDRS group was required to save Tk.2,400 in order to receive Tk.30,000 worth of wheat. Caritas groups were required to pay 20% of their

project cost in order to get 80% paid for in wheat. The BRAC programme in the North West Region required that its groups pay for wheat from WFP.

4.2 Pond Size

Fish production is closely related to pond size and other physical characteristics of the water body, such as water depth, water retention and soil quality. The average size of the ponds used by the groups in this study was 0.81 acres, or 0.33 hectares, which is higher than the national average. BRAC groups operate larger ponds than other NGOs, and BS groups operate smaller than average ponds (Table 4.2).

Table 4.2 Study NGO pond sizes (acre)

NGO	Minimum	Maximum	Mean	SD
BS	0.25	0.66	0.38	0.15
GUP	0.21	0.97	0.65	0.29
RDRS	0.43	2.08	0.99	0.50
Caritas	0.18	1.12	0.53	0.35
Proshika	0.60	1.47	0.99	0.25
BRAC	0.22	2.64	1.54	0.91
All	0.18	2.64	0.81	0.58

4.3 Fisheries Technology

Of the NGOs studied four, RDRS, Caritas, BS and BRAC, had groups working with hatcheries, nurseries and culture fisheries. Proshika and GUP only had pond fisheries (see Draft Final Report, Supporting Volume No. 25).

The principle advantage of having groups run hatcheries and nurseries is that it can alleviate problems with the supply of fry and fingerlings to stock other ponds. Such operations, however, require specific skills and practical experience in order to be successful. Hatcheries require the highest level of skill and experience. Nurseries, while also requiring considerable skill and experience, can readily be operated under field conditions. Pond culture itself is least dependent on technology and skill, requiring only adequate information and knowledge.

4.4 Hatchery Programmes

The BRAC hatchery efforts, in the North Central and North West regions, and similar Caritas projects in the North West and South West, were not very successful. The groups

C 3

involved in these projects reported bitter experiences with the programme. According to one of the BRAC members in the NGO's North Central programme, the risks of running a hatchery are very high. Raising fish to the size necessary for them to become breeders takes time and considerable investment. The successful injecting of hormones into fish to create breeders requires a high level of skill and an experienced technician. To manage the fish spawn in a *hapa* (a net about one meter square) the water must be at a certain temperature and food must be provided to reduce mortality. The further rearing of grain-size fry into fingerlings also requires skill and experience. Moreover, hatchery fish, particularly the breeders, are at a high risk of theft because of their value.

The BRAC hatchery programme at Batila was a losing venture in its first year and was only marginally successful in its second year. In the third year a subgroup of three members assumed responsibility for the hatchery. One member of this subgroup reported that their profits were inadequate, but they were able to stock more than 100,000 fry in their ponds. In addition to supplying group ponds, the hatchery sold fry to wealthier local families on credit. This, they said, helped them in other ways, such as making it easier to lease ponds for culture.

At the BRAC Chatmohar hatchery in the North West Region, the group running the hatchery successfully produced hatchlings. When they transferred them to a smaller secondary pond for rearing into fry, however, strong sunlight and warm water damaged the fry.

4.5 Nursery Programmes

Group-run nursery programmes have generally been more successful than hatcheries, although there were also some failures. Among the more successful groups, according to field workers and group members, were those under Banchte Shekha. These groups made a profit from fry and fingerling production. Caritas nurseries were next most successful and those of BRAC and RDRS were the least successful.

4.6 Pond Fisheries

As previously noted, the key technical parameters affecting pond fish production are pond size, stocking density, feeding and fertilization. In the NGO ponds studied, the average stocking density was 14,046 per hectare (Table 4.3). BS groups, at 35,400/ha, had the highest stocking density. BRAC, Proshika and GUP groups were all close to the density of

10,000 fingerlings/ha recommended by FRI (FRI, 1993). RDRS and Caritas groups were below the recommended density.

Table 4.3 Pond fisheries technology adopted by study NGO target groups

NGO	Sample Size	Stocking Density (no./ha)	Lime (kg/ha)	Fertilizer (kg/ha)		Feed (kg/ha)		Fish Yield (kg/ha)
				Organic	Inorganic	Oilcake	Bran	
BS	10	35,400	45	63	0	82	347	2,289
GUP	9	13,500	46	22	2	195	363	688
RDRS	11	5,968	102	78	87	51	873	498
Caritas	11	8,198	225	145	136	638	1,288	1,762
Proshika	7	11,350	124	83	41	70	792	1,058
BRAC	8	9,864	155	32	134	192	317	1,562
All	56	14,046	116	71	67	205	663	1,310

Table 4.3 also shows the application of feeds and fertilizers to NGO group ponds. Lime is applied to ponds most heavily during the preparation stage, but it is also used during production. Its use on the ponds studied ranged from 45 to 225 kilograms per/ha/yr. The BS and GUP groups used less lime than the groups of the other NGOs.

All NGO groups used organic fertilizer (cow dung) in their ponds, although the average quantity applied was much lower than the level of 3,500 kg/ha recommended by FRI (FRI, 1993). This may be because many ponds have multiple uses, including domestic use as a water supply for cooking, drinking and washing. It may also be because dung is used for agricultural production and as fuel. An inadequate supply of livestock can readily result in a shortage of dung available for use in ponds. Inorganic fertilizers are even less commonly used than dung, with the BS and GUP groups using none or almost none at all.

Of the feeds applied, rice bran is more commonly used than oilcake. The average application of rice bran was 633 kg/ha. All the groups used rice bran in their fisheries.

The average fish yield of the study ponds was 1,310 kg/ha, which is higher than the national average of 900 kg/ha/year. BS had the highest yield (2,289 kg/ha) and the Caritas and BRAC groups had yields that were greater than the mean for all six NGOs. The RDRS and GUP groups had the lowest yield.

The sources of the fry and fingerlings used by the groups included government and private nurseries, as well as nurseries run by the NGOs themselves (Table 4.4). Fry that had been collected from natural sources and sold through an intermediary was considered to be from a private source. Nearly 80% of the groups surveyed procured their fry and fingerlings from private sources. NGO nursery programmes supplied most of the rest, with government nurseries providing less than 5% of the supply. Indian carps were the most common species stocked (80%) in all the ponds studied, but the popularity of exotic carps has been increasing.

Table 4.4 Pond fishery fingerling sources

Source	Frequency	Percent
Government Nursery	2	3.57
Private Nursery	43	76.79
NGO-managed Nursery	11	19.64

Larger fingerlings generally have lower mortality rates than smaller ones, and it appears as though the NGO groups studied are aware of the fact. The size of the fingerlings stocked in the pond fisheries ranged from about 2.5 inches to 6.5 inches, and the majority stocked fingerlings of between 2.5 and 4.5 inches in size (Table 4.5).

Table 4.5 Size of fingerlings stocked in ponds

Class Limit (inches)	Frequency	Percent
< 2.50	8	14.29
2.50 to < 4.50	36	64.29
4.50 to < 6.50	12	21.43

4.7 Economics of Pond Fisheries

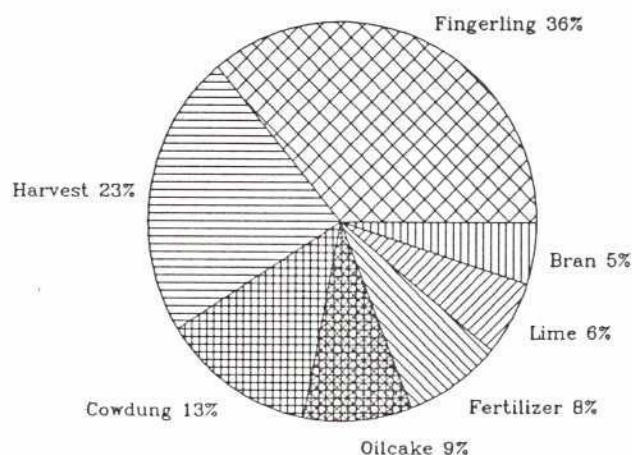
Table 4.6 shows the cost of production for the ponds studied. All costs have been included with the exception of labour. The average cost for all NGO groups was Tk.13,131 per hectare. Caritas groups had the highest production cost.

Figure 4.1 shows the overall distribution of the production costs. The largest portions are for fingerlings and harvest.

Table 4.6 Pond fish production costs in study NGO target groups (Tk/ha)

NGO	Sample Size	Fingerlings	Lime	Fertilizer		Feed		Harvest cost	Total Cost
				Organic	Inorganic	Oilcake	Bran		
BS	10	9,288	279	2,424	58	578	376	3,360	16,363
GUP	9	6,490	353	957	15	976	360	3,400	12,551
RDRS	11	2,045	760	2,008	723	631	780	1,738	8,685
Caritas	11	4,487	1,603	3,504	2,971	4,077	1,710	2,306	20,604
Proshika	7	2,949	773	1,185	359	511	848	3,702	10,327
BRAC	8	3,549	790	883	1,485	1,214	352	3,648	11,921
All	9.34	4,760	1,680	1,680	1,012	1,198	701	2,991	13,131
Percent		36	6	13	8	9	5	23	100

Figure 4.1 Distribution of pond fish production costs



4.8 Profit and Benefits Sharing of Pond Fisheries

The gross margin analysis (Table 4.7) shows that, on average, groups earned Tk.32,518 per hectare. BS groups had the highest margins and Caritas groups had the second highest. The benefit cost ratio indicates that BS and BRAC groups did better than those of other NGOs.

According to the data on the average benefit earned by group members, shown in Table 4.8, an average of Tk.1,570 per year was earned by group members. BS and Caritas groups benefited the most.

Table 4.7 Gross margin analysis of study NGO pond fisheries

NGO	Sample Size	Fish Yield (kg/ha)	Gross Benefit (Tk/ha)	Total Cost (Tk/ha)	Gross Margin (Tk/ha)	Benefit Cost Ratio
BS	10	2,313	108,933	16,363	92,570	6.65
GUP	9	687	34,275	12,551	21,724	2.73
RDRS	11	501	17,025	8,685	8,340	1.96
Caritas	11	1,761	70,795	20,604	50,191	3.43
Proshika	7	1,057	49,542	10,327	39,215	4.79
BRAC	8	1,563	41,783	11,921	29,862	6.50
All	9.34	1,216	45,649	13,131	32,518	3.47

Table 4.8 Pond fisheries benefits earned by group members

NGO	No. of Members	Gross Benefit from Pond Fisheries (Tk)	Avg. Benefit/member/year* (Tk)
BS	33	92,570	2,805
GUP	20	21,724	1,086
RDRS	15	8,340	556
Caritas	20	50,191	2,509
Proshika	24	39,215	1,634
BRAC	42	29,862	711
All	25	32,518	1,570

* Lease value and interest on capital invested for pond fisheries were excluded from the analysis.

80

5. EFFICIENCY AND EFFECTIVENESS OF TARGET GROUPS

The efficiency and effectiveness of NGO groups can best be assessed by evaluating the degree to which they have achieved their objectives and carried out the programmes they implemented. The analysis in this chapter, therefore, is based upon the data presented in the previous chapters.

5.1 Group Participation and Effectiveness

For the group participation test, NGO groups were assigned scores for each of four characteristics: membership, dropout rate, meetings held and attendance. These scores were based upon the relationship of each group's data to the mean for all groups. The sum of these scores, therefore, permits a ranking of the NGO groups studied from most effective to least effective. The data, presented in Table 5.1, show that BS and BRAC groups achieved the highest effectiveness ratings and RDRS groups were the least effective.

Table 5.1 Effectiveness of study NGO target groups

NGO	Effectiveness*				Total Score	Rank
	Membership	Dropouts	Meetings	Attendance		
BS	2	3	2	2	9	1
BRAC	1	2	3	3	9	1
GUP	3	3	1	1	8	2
Caritas	3	2	1	1	7	3
Proshika	3	2	1	1	7	3
RDRS	3	1	1	1	6	4

*Scores for meetings and attendance

1 less than mean = less effective

2 within mean and one standard deviation = effective

3 within mean and more than one standard deviation = most effective.

Scores for group size and dropouts

3 less than mean = most effective

2 within mean and one standard deviation = effective

1 within mean and more than one standard deviation = less effective.

5.2 Group Capital Formation and Effectiveness

One of the major goals of all NGO groups is to accumulate capital for investment. The degree to which they succeed in this, therefore, is also a measure of their effectiveness; the higher the rate of capital accumulation and formation, the more effective a group is.

Table 5.2 shows that BS groups saved and accumulated more capital than the groups of other NGOs. RDRS groups were next most effective by this measure, and the least effective groups were those of Caritas and BRAC.

Table 5.2 Capital formation and target group effectiveness

NGO	Avg. Member/group	Avg. Savings/year/group	Avg. Savings/member	Effectiveness
BS	23	9,250	280	1 (most effective)
RDRS	15	3,643	243	2 (most effective)
Proshika	24	4,732	197	3 (effective)
GUP	20	1,591	80	5 (less effective)
Caritas	20	1,414	66	6 (less effective)
BRAC	42	1,471	35	7 (less effective)
All	25	3,684	150	-

5.3 Group Efficiency on Pond Fisheries Projects

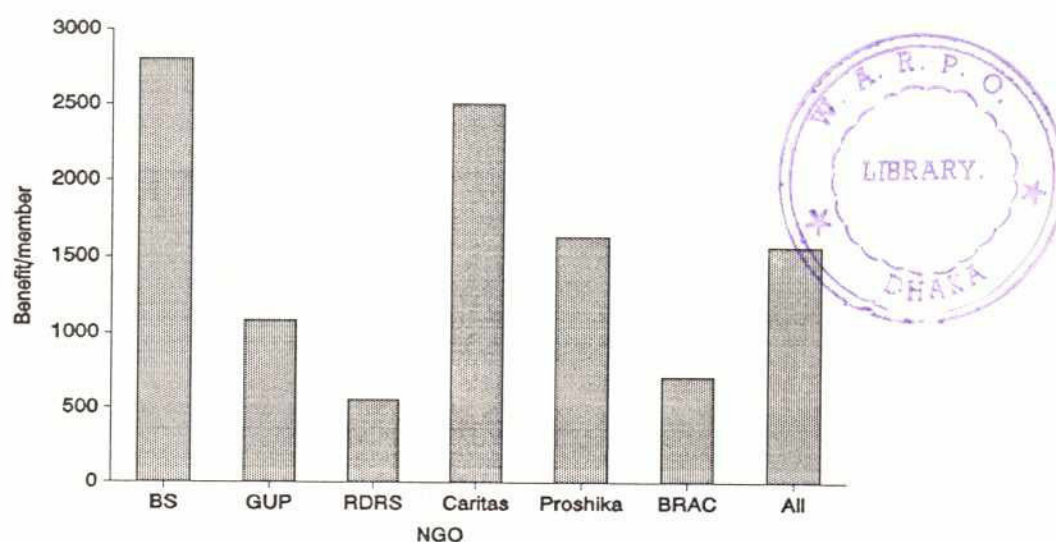
The economic efficiency of an NGO group can be judged by inference on the basis of its return on the investment made. Data on group investments in income-generating pond fisheries activities show that Proshika groups invested the most (Tk.40,698) and BS groups invested the least.

Table 5.3 Pond fisheries investment and target group efficiency

NGO	Avg. Fisheries Investment/TG (Tk/ha)	Gross Margin/TG (Tk/ha)	Investment GM ratio/TG	Rank
BS	16,363	92,570	6.65	1 (most efficient)
BRAC	11,921	29,862	6.50	2 (most efficient)
Proshika	10,327	39,215	4.78	4 (efficient)
Caritas	20,605	50,191	3.43	5 (efficient)
GUP	12,551	21,724	2.73	6 (less efficient)
RDRS	8,685	8,340	1.96	7 (less efficient)

The gross margin ratio per group, in Table 5.3, shows that the lowest ratio was 1.96 for the RDRS groups. This means that every Taka invested in pond fisheries returned a minimum of two Taka. The pond fisheries of BS and BRAC groups were the most efficient, returning a gross margin of more than Tk.6 for every Taka invested. The least efficient groups were those of GUP and RDRS.

Figure 5.1 Average benefit group members received from pond fisheries



Based on the assumption that all members received benefits, the average benefit received per group member from pond fisheries varied widely from NGO to NGO (Figure 5.1 and Table 5.4). The members of BS, Caritas and Proshika groups gained more than those of other NGO groups and therefore had the highest efficiency on the basis of this test.

Table 5.4 Pond fishery efficiency and group member benefits share

NGO	Avg. Members/TG	Avg. Fisheries Gross Margin/TG	Avg. Benefit/member/yr* (Tk)	Rank [†]
BS	33	92,570	2,805	1 (very efficient)
Caritas	20	50,191	2,509	1 (very efficient)
Proshika	24	39,215	1,634	1 (very efficient)
GUP	20	21,724	1,086	2 (efficient)
RDRS	15	8,340	556	3 (less efficient)
BRAC	42	29,862	711	3 (less efficient)
All	25	32,518	1,570	

* Lease value and interest on capital invested were excluded from the analysis.

[†] greater than mean = very efficient

within mean = efficient

less than mean = less efficient

86

6. CONCLUSIONS

1. There is growing awareness that flood control structures, by reducing the overall area of flooded land, are changing the production potential of Bangladesh's floodplain fisheries, particularly for areas inside FCD and FCD/I schemes. The cumulative effect of the change has reduced fish production by 74 thousand metric tons per year, most of which has come from floodplain capture fisheries.
2. The steady growth of culture fisheries in recent years, while offsetting some of these losses is not keeping pace with the growing demand for fish. This issue is of great concern to policy makers in Bangladesh. To what extent, it has been asked, can pond fisheries programmes, particularly those run by NGOs, successfully compensate for losses to capture fisheries caused by flood control?
3. Bangladesh has an estimated 1.3 million ponds covering an area of 150,000 ha. Although these ponds are distributed throughout the country, a higher proportion is concentrated in the South West and North West regions. Average pond fish production ranges between 800 and 900 kg/yr/ha, but this is well below the potential of the available water bodies. At present, culture fisheries contribute about 20% of the national fish production.
4. The FAP 17 study of NGO group-operated pond fisheries found that the groups achieved an average fish yield of 1,310 kg/ha/yr, which is higher than the national average cited above. The results suggest that if NGO group pond fisheries programmes were extended to all the current culture fisheries, it could increase the share culture fisheries contributes to national fish production by 10% over its current level.
5. Studies have found that public sector programmes that create farmers groups or institute collaborative efforts at income generation have not been very effective (Kashem, 1978). The groups created by NGOs, unlike those of the public sector, are small and capable of delivering NGO services to their members as and when they are needed. In addition, NGO field workers frequently meet with group members to discuss their programmes and problems. Action is then taken either through the group or a subgroup of the participants. NGO groups also have a membership that is economically homogeneous, all the participants have a similar resource base. Finally, NGO groups are active year-round and every member has an opportunity either for training, to speak up in meetings, discuss credit disbursement or assist in conflict resolution.

6. NGO groups are not uniformly successful or without flaws, however. Some are not as effective as others, and sometimes group efforts are misapplied. Since NGOs target their assistance to small farmers and resource-poor segments of the population, the development of these people can create conflicts with the rest of the society to which they belong. This can manifest itself in overt or covert hindrance of the project by those who are not part of the programme and may resent or feel threatened by its goals.
7. This study examined three types of fisheries programmes run under NGO group arrangements: hatcheries, nurseries and culture fisheries. Some were found to be effective and efficient, others were not. Most of the NGOs studied took an integrated approach to fisheries, implementing all three types of programmes. The objectives of such an approach are ambitious. By raising spawn, fry and fingerlings, the NGO groups can provide their own supplies with which to stock ponds, but the technology and level of skill required to do so are quite high in comparison with that involved in creating a culture pond fishery.
8. The NGOs that have attempted to build hatcheries have been particularly unsuccessful. Nursery programmes have met with more success, but failures also occurred. Culture pond programmes, by contrast, were almost all successful.
9. Hatcheries can be highly profitable, but they require a high level of skill and management. Each step in the hatchery process is sensitive and risky. Hatcheries, therefore, may not be viable initiatives for NGO groups to undertake, particularly given the low level of skill that is generally available.
10. Nursery programmes require less skill than hatcheries and can be implemented at the farm level. The experience of the Bhatra project in the North Central Region showed that such programmes can be successful. NGOs may be able to capitalize on such successes by sharing technology and innovations with their groups.
11. The group pond fisheries programmes examined by this study were generally successful and had higher average yield levels than ponds that were not under NGO operation. Chapter 5 clearly showed that NGO pond fisheries programmes are generally effective and efficient.
12. Although NGO-sponsored hatcheries and nurseries are short on success stories, such attempts should be encouraged and supported. If culture fisheries are to be

89

strengthened, there will be an increasing need for reliable sources of spawn, fry and fingerlings. These projects can also have a multiplier effect on the wellbeing of the communities that support them and the floodplains around them.

- If fry and fingerlings are made available at the farmer's door, culture fisheries stocking technology in local water bodies will increase.
 - If fry and fingerling production is increased through culture, the amount of fry harvested from natural sources should decline. Fingerlings produced from culture fisheries are more reliable than those from natural sources, making them more desirable for stocking. An increase in culture production, therefore, would also reduce demand for natural fry. As the demand for natural fry drops, less effort would be applied to fry harvesting and floodplain fish production may well increase as a result.
 - Fry and fingerling production in a hatchery or nursery takes only six weeks. The benefit that can be earned in that time is greater than what is possible from either culture fisheries or crop cultivation.
 - The income generated from pond fisheries projects would likely have a beneficial effect on the economic subsystems of farm households.
 - The income and employment that the utilization of local water resources could produce would likely reduce social conflict and economic stress.
13. Although the process NGOs use for group formation is very good, FAP 17 found that those processes are often abbreviated in practice. Many groups are formed in less than a month. While this increases the number of groups that can be created, it weakens the ability of the groups to attain the maturity necessary for success. Furthermore, when NGO assistance is withdrawn from a group, it quickly withers and dies. A mechanism needs to be found to sustain groups even after their support is taken away.
14. NGO fisheries programmes are largely dependent on WFP wheat for the aid needed to re-excavate ponds. The resources available to do this are finite and, in recent years, declining. It is essential, therefore, that other means be found to increase culture fisheries. One solution would be to use water bodies that are already available and require little or no excavation or physical improvement.
15. In order to accomplish this, several problems must be overcome. Chief among them is access to water bodies. Small, seasonal water bodies such as are found around homestead areas and along roadsides could be leased with NGO assistance from their

8X
owners, whether private or public. They could then be sublet to a small group or even to individual members of a group. Such a procedure is used by some BRAC groups. Additionally, the leasing systems used by the villagers of Bhatra and Rojoir could be replicated more widely to facilitate this.

16. Since group members have neither assets nor resources, they require frequent income to meet their domestic needs. To achieve this, group fisheries programmes could use a multiple harvest system, which would increase the total harvest as well as the income of the group members. This would have the additional benefit of increasing the total production.
17. Another problem NGO pond fisheries face is the availability of fingerlings. Although some NGOs have taken initiatives to produce spawn through hatcheries, these projects have had little success. Group pond fisheries projects should therefore make greater use of existing government and private commercial hatcheries. In the North West Region, for example, NGO groups could use the ODA hatchery programmes in Parbatipur as a source of supply.
18. Transporting spawn and fry from hatchery or nursery to pond can be difficult. NGOs could provide the necessary arrangements and logistical services to facilitate and improve the delivery of these essential inputs.
19. Income-generating pond fisheries programmes are often hindered by their lack of a preproduction plan and supply of necessary inputs. These, too, are services that NGOs could provide.
20. Many development programmes overlook possible marketing interventions that could improve success. This is especially true in production programmes, for which marketing support is essential. Strategies need to be developed for the marketing of pond fisheries produce.
21. There is a vital need for training among target group members, particularly those associated with pond fisheries, and NGO field workers and supervisors in order to upgrade their awareness and commitment to development.

REFERENCES

- Abed, F. H. 1991. Extension Services of NGOs: The Approach in BRAC. *Journal of Extension Education*, Vol.6, Special Seminar Issue, pp. 170-178.
- Flood Action Plan (FAP) 17. 1993. Nature and extent of NGO's participation in fisheries resource development, an interim report. FAP 17 Dhaka, pp. 25.
- FRI. 1993. Improved Fish Culture Technology for Pond Fisheries. A production manual, Mimeo. pp. 47.
- Kashem, M. A. 1978. Case study on the management of cooperatives in relation to people's interest in society. Bangladesh Agricultural University, Mymensingh, December. pp. 40-43.
- Lewis, David J. 1992. Catalysts for change? NGOs, agricultural technology and the state in Bangladesh. ODI, Agricultural Administration (Research and Extension) Network, London. Paper 38, December, pp. 38.
- Solaiman, M. 1990. Some Issues of Rural Development in Bangladesh. In *Agricultural and Rural Development in Bangladesh: A Review of Related Studies*. Japan International Cooperation Agency, Dhaka. JSARD Publication No. 19, pp. 128-140.
- Sultan, T. K. M. 1991. Partnership in Development. The Govt and NGO collaboration, ADAB News, January- March, pp. 45-56.
- UNDP/FAO. 1989. A review of extension methodologies in aquaculture. Aquaculture development and coordination programme. ADCP/REP/89/44, FAO, Rome, pp. 65.
- Wood, G. 1984. Targets strike back—rural works claimants in Bangladesh. In *Levelling in development policy*. ODI, London.
- World Bank. 1983 Bangladesh: Selected Issues in Rural Employment. Repot No. 4292- BD, Washington DC. pp. 58.

