Government of the People's Republic of Bangladesh

Ministry of Irrigation, Water Development and Flood Control
Flood Plan Coordination Organization

BANGLADESH ACTION PLAN FOR FLOOD CONTROL

COMPARTMENTALIZATION PILOT PROJECT (FAP 20)

SIRAJGANJ CPP INTERIM REPORT

ANNEX 8: HOUSEHOLD SURVEY MAIN VOLUME

(DRAFT FINAL)

June 1993

Euroconsult/Lahmeyer International/Bangladesh Engineering & Technological Services/House of Consultants

under assignment to

DIRECTORAAT GENERAAL INTERNATIONALE SAMENWERKING
Government of the Netherlands

and

KREDITANSTALT FÜR WIEDERAUFBAU
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(DRAFT FINAL)

June 1993

Prepared by

Multidisciplinary Action Research Centre (MARC)

House 24, Road 5, Dhanmondi R/A, Dhaka-1205

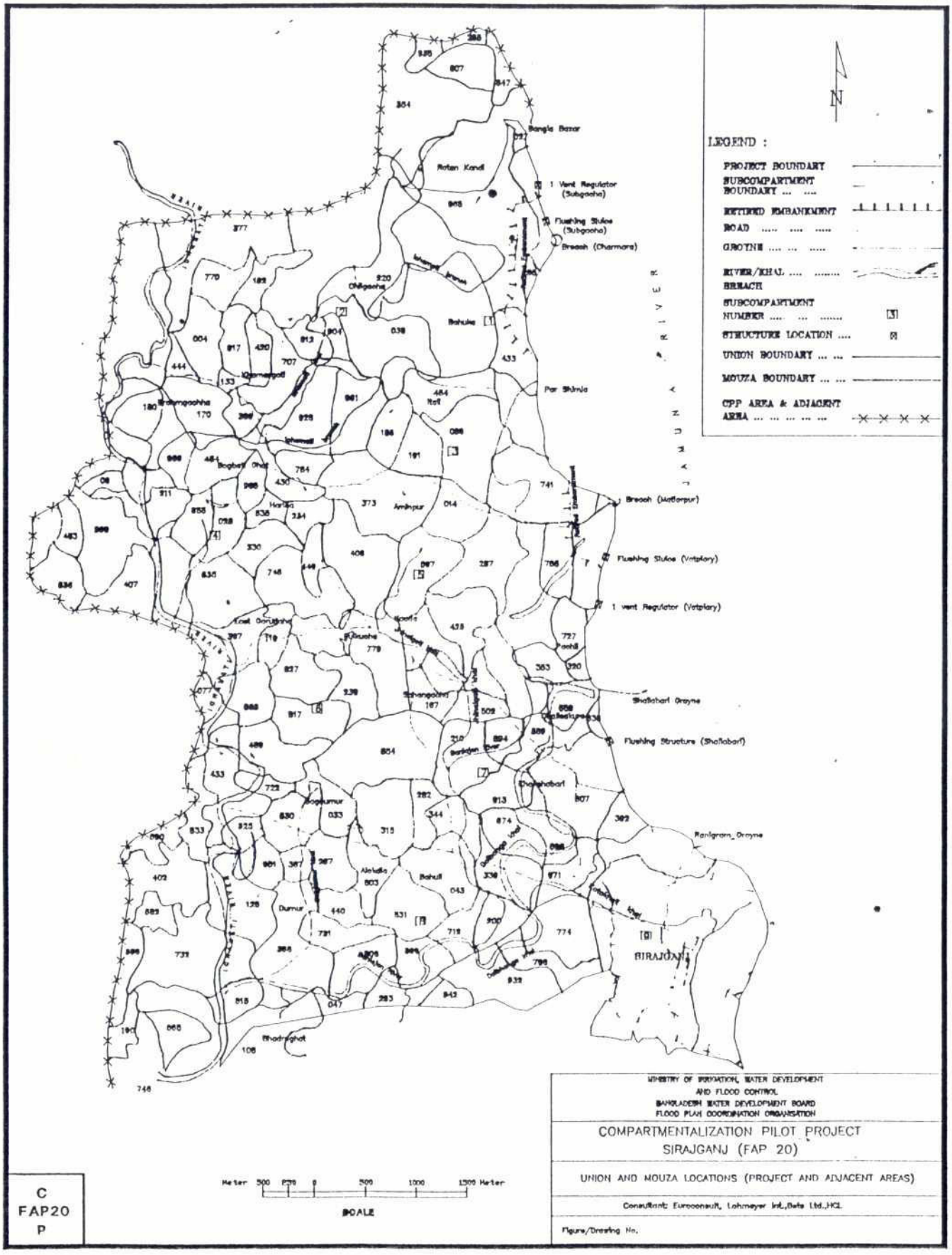
THE APPENDICES OF THIS MAIN VOLUME
ARE AVAILABLE ON REQUEST ONLY

PREFACE

The Sirajganj Household Survey findings as presented in this report could not be checked by the CPP consultants due to time constraints as a consequence of unavoidable delay in submission of the report by MARC - the consulting firm who executed the survey. Therefore, all data presented in this report remain under the responsibility of MARC.

A general impression of the report is that a number of recommendations are given on subjects as agriculture, fisheries, etc. In several cases the recommendations are quite understandable but they often have no direct linkage with the results of the Household Survey. From a professional point of view a number of statements can not be made on the findings of a Household Survey only and certainly most of them are not supported by professionals on the subjects concerned. Therefore, all statements and recommendations as presented in this report should be considered as private statements and private recommendations under responsibility of MARC and should not be attributed to any staff member of the CPP.

A case in point is the interpretation by MARC of data on fisheries. The fisheries study for the Sirajganj CPP area did not use the data as presented in this report but used the raw data, as provided by MARC in Dbase. Their analysis resulted in a different picture, especially when the Sirajganj CPP area is compared with the Tangail CPP area.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BANGLADESH WATER DEVELOPMENT BOARD
FLOOD PLAN COORDINATION ORGANISATION
COMPARTMENTALIZATION PILOT PROJECT
SIRAJGANJ (FAP 20)
UNION AND MOUZA LOCATIONS (PROJECT AND ADJACENT AREAS)
Consultant: Eurocconsult, Lahmeyer Int., Beta Ltd., HCL
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CHAPTER 1

INTRODUCTION

1.1 General

FAP-20, sometimes referred to as the Flagship of the Flood Action Plan, is expected to make a definitive contribution towards resolving some of the existing controversies over how to deal with the floods in Bangladesh. In particular, it is to develop and implement a plan built on the concept of compartmentalisation in two areas, one on either side of the Jamuna, namely Tangail and Sirajganj. The approach to compartmentalisation has, of necessity, to be experimental, since the underlying philosophy of controlled flooding has varied ramifications for different socio-economic and physical environments. Therefore, considerable data are needed by FAP-20, first to obtain an accurate picture of the present situation, and secondly to carry out mid-term and post-project evaluations. To gather these information FAP-20 undertook a comprehensive baseline survey.

According to the ToR the main objective of the baseline survey is to

> *"Provide and verify data on hydrological, engineering, agricultural, socio-economic and environmental aspects prior to, during and on completion of the pilot project".*

One part of the baseline survey is a household survey (for the study framework see 2.4 below). The quality of this survey is vital for the final evaluation of the impact of compartmentalisation at the end of the project life cycle. Furthermore, it is important that the survey be replaceable, both geographically (Tangail and Sirajganj) and in time (1992-1995).

As the BWDB does not have a permanent survey team it was decided to have the household baseline survey conducted by an experienced local firm. **MULTIDISCIPLINARY ACTION RESEARCH CENTRE (MARC)** was chosen on the basis of local competitive bidding.

This **draft** report on the household survey has been produced by MARC. Due to unavoidable circumstances the CPP Team has only had limited time to check and edit this report. However, it was decided to distribute this report and its appendices as part of the **SIRAJGANJ CPP INTERIM REPORT** for two reasons. First, even unedited, it provides useful background data. Second, the Report solicits useful comments from FAP and other professionals which can then be taken into account in preparing the Final Report.

1.2 Objective of the Report

A considerable volume of data has been collected during the household survey. All information is stored and retrievable in a database system. It is expected that specialists will often refer

back to this information system as the project develops.

For easy reference the most obvious data have been processed and compiled in a tabular form. This household survey main report combines the data from the three areas covered (see 2.6), where possible and relevant compares the data with national figures, analyses the data and draws conclusions that are relevant to compartmentalisation.

1.3 Organisation of the Report

Following this introduction the background of the project and the study areas are described. Chapter 3 deals with the methodology, 4 and 5 deal with demographic characteristics, employment and occupation, 6 with income, expenditure and assets, 7-9 with agricultural matters, 10 with professional fishermen, 11 with the urban population, 12 with women, 13 with livestock, poultry and kitchen gardening, 14 with open water fisheries, 15 with floods and finally chapters 16-19 with general matters.

Appendix 8.1 contains the Bengali version of the questionnaires, Appendix 8.2 the english translation of those questionnaires, Appendix 8.3 the processed project area tables.

CHAPTER 2

PROJECT BACKGROUND AND STUDY AREAS

2.1 Project Background

Following the disastrous floods of 1987 and 1988 several studies were undertaken to investigate how to protect the country better against the devastating effects of the floods. The results showed alternatives, with 'full protection' on the one side and 'living with the floods' on the other.

Bangladesh adopted the outlines of an Action Plan for flood control and drainage in June 1989 and the Government of Bangladesh requested the World Bank to assist in preparing a Flood Action Plan (FAP). This request was endorsed at the G-7 meeting of industrialised countries in July 1989, which called for the international community to help find solutions to the flood problem in Bangladesh which are 'technically, financially, economically and environmentally sound.' The FAP was in turn endorsed at a special conference of the Government of Bangladesh and donor organisations in London in November 1989, and is presently being implemented.

The FAP comprises a number of studies and pilot projects which are expected to lead to water resource management and related projects, with an emphasis on flood control and drainage. In the first two years of the Plan, 1990-92, Regional Water Resource Development Planning Studies are being undertaken to identify alternative water resource management strategies for different regions of the country. These will be followed by feasibility studies for priority investment projects. A number of complementary socio-economic and environmental studies are being carried out in order to improve understanding of the impact of flooding and of Flood Control, Drainage and Irrigation (FDC/I) projects, and to recommend economic, social and environmental guidelines and criteria appropriate for use in the planning and implementation of such projects. While the emphasis of the Regional Studies is on flood control and drainage, other problems such as saline intrusion will also be addressed.

The main focus of the Flood Action Plan is defined by the Government of Bangladesh in the well-known Eleven Guiding Principles. Emphasis is laid on 'controlled flooding' and 'controlled drainage'. Floods would be controlled in such a way that maximum profit can be achieved from the beneficial effects of river water flooding, while minimising the disadvantages. The Action Plan comprises twenty-six components and supporting activities. The Compartmentalisation Pilot Project - FAP 20 - is one of them.

2.2 The Compartmentalisation Concept

The concept of compartmentalisation was introduced in the

GoB/UNDP study "BAngladesh Flood Policy Study" (May 1989). According to the Flood Action Plan, which resulted from this study, the areas at the right and left bank of the Brahmaputra would be subdivided into compartments.

The flood water will flow into the compartment and spread over the area in a semi-controlled way by means of regulating structures in the primary embankments along this river and the gated or ungated openings in the secondary embankments between the compartments. The structural and non-structural measures to achieve this can be called the macro (main) system.

The way the flood, as well as the drainage of excess rainfall, has to be controlled will be determined by the demands from inside the compartment. The required structural and non-structural measures for water management within the compartments can be called the micro (minor) system.

The concept of compartmentalisation is instrumental for the implementation of water management interventions.

The following definition will be used :

> A compartment is an area in with effective water management, particularly through semi-controlled flooding and controlled drainage, is made possible through structural and institutional arrangements. Compartmentalisation is linked to area development with sound water management as the main agent. A compartment will be sub-divided into sub-compartments and operational water management units.

So far it is not clear yet what the "optimal" size of a compartment will be not what factors should determine the boundaries of the compartment. The boundaries of the Tangail pilot area are formed by the existing embankment.

It is obvious that a compartment can be a large and that hydrology, topography, existing infrastructure, landuse and administrative boundaries are important factors to consider. In analogy with an irrigation system, it is possible to make a distribution between the macro (main) system and the micro (minor) system. Clearly, to make the participation of the beneficiaries in Project planning, design, construction, operation, maintenance, monitoring and evaluation successful, it will be necessary to subdivided the compartment into rather small units.

2.3 Objectives of the Compartmentalisation Pilot Project

The overall objective of FAP 20 is :

> ".... to establish appropriate water management systems for the development of protected areas so that criteria and principles for design, implementation and operation can be made available for the Action Plan." [ToR, page 4].

Specifically this will entail the

> ".... testing of the compartmentalisation concept in the field under real operating conditions, addressing all relevant socio-economic, institutional and environmental issues and trying out water control works and water management systems". [ToR, page 4].

FAP 20 has to produce not only the structural works and an institutional set-up for the compartments in Tangail and Sirajganj, but also criteria, guidelines, manuals and a training and demonstration programme for the establishment of other compartments.

2.4 Baseline Survey and Study Framework

The involvement of FAP 20 in a compartment starts with a **reconnaissance survey**. This survey is conducted by a few members of the CPP Team, takes a few days and aims at getting a general picture of the areas.

This survey is followed by a **preliminary survey** of the whole compartment. All disciplines in the CPP Team are involved in this survey. The aim is to get a multi-disciplinary overview of the situation, mainly based on secondary data, and to tentatively decide on sub-compartmental boundaries. The team members report their findings in Technical Notes. These are then discussed and result in a **SUMMARY OF THE PRELIMINARY SURVEY** of the compartment. This information is the starting point for the baseline survey.

Next comes the **baseline survey**. Some parts of this survey are done by members of the CPP Team while other parts are conducted by specialised local firms. The results of the baseline survey will be used in two ways. First of all, the results feed into the design phase of the compartment. Secondly, the information gathered will be used in monitoring and ultimately in post-project evaluation.

On the basis of the outcome of the baseline survey a **monitoring programme** will be designed, measuring key indicators on a regular basis throughout the project lifetime.

Finally, the experimental nature of the project calls for in-depth **special studies** to supplement the broad surveys. The reason is that there are areas, relevant to compartmentalisation, where existing practices are clearly ineffective, as well as areas about which little is known and/or where there are few if any solutions. The baseline information is used to up-date the tentative list of special studies drawn up during the inception phase.

2.5 Different Components of the Baseline Survey

The baseline survey comprises the following four surveys, each with specific aims and objectives :

- The **household survey** is designed to provide statistically valid baseline data mainly covering social, economic and agricultural issues. The survey is of the questionnaire type. These data will be used to some extent in the planning process, but their main use will be in the multi-criteria analysis of the alternatives, and the post-project evaluation.

- The **hydrological survey** provides vital information for planning, mathematical modelling and post-project evaluation. This survey includes levelling, recording water levels and discharge measurement.

- The focus of the **multi-disciplinary sub-compartmental (MDSC) survey** is the interrelation between all the relevant facets of life in each sub-compartment. Typical items are a history of the area, environment, transport, fisheries, rural industry, hydrological situation, agricultural status etc. Data are collected using a Rapid Rural Appraisal approach. The main use of the information is in planning and design. At the post-project evaluation stage the data will again prove useful as qualitative, descriptive baseline information.

- Through the **institutional survey** information is gathered at the compartmental level regarding the institutions relevant to water management. The information is gathered using open ended cheklist questionnaires. The data are fed into the design and implementation of the institutional development.

This Annex 1.1 covers only the household survey, Annex 1.2 the topographic and hydrological survey, Annex 1.3 covers the MDSC-survey and Annex 5 (Institutional report) the institutional survey.

2.6 Geographic Coverage of the Household Survey

The household survey has covered three basically different geographic areas. The first one is the **area inside the main borders** of the Sirajganj CPP. This is the area that is expected to benefit from the project. However, in spite of all-out efforts to prevent this from happening, it is likely that at least some people in this area will be dis-benefitted; for instance through land acquisition, loss of boat transport facilities or access to common capture fisheries resources.

The second area to be influenced by the CPP project, and therefore to be covered by the household baseline survey, is the **area adjacent to the project boundary** but hydrologically or socio-economically linked to it. The impact in some parts of this area could be negative. The area between the river and the BRE and the area to the North, Northwest and the West of the Sirajganj CPP area, will be surveyed.

As per the "Guidelines for Project Assessment" of the FPCO the baseline survey must include a third distinct area, the **"control area"**. This is an area, presently similar to the project area,

but not influenced by the CPP. It will facilitate the distinction between project impact and impacts from more general developments in the region. It was decided to use the Kazipur Thana, North of the Sirajganj CPP as a control area for the Sirajganj CPP household survey.

2.7 Basic Approach to the Household Survey

The main effects of compartmentalisation will be on the timing of flooding, the speed of water level changes and possibly water levels. Because the many direct impacts of compartmentalisation will be on agriculture, livestock and fisheries, the bulk of the survey households (the main household survey) will be selected from the rural area. Besides the main household survey two supplementary household surveys have been conducted.

The basic stratification is as mentioned above, ie the area inside the project area, the adjacent area and a control area. It has been decided to stratify the study area further by making a distinction between rural and urban areas. As the main impact of compartmentalisation will be on the rural area the main household survey will only cover that part of the three study areas.

Within the rural area farm households are distinct from the non-farm households. The former are likely to obtain most of the structural and direct benefits. The non-farm households are likely to only receive temporary and secondary benefits. Therefore both groups will have to be seen as distinct populations, with their own domain and therefore coverage.

The process of urbanisation is likely to continue in the decades to come. Therefore the needs of the urban section of the society must be taken into account in the FAP. FAP 20 will accordingly cover the urban population through a supplementary households survey.

Fishermen communities are often concentrated in a few specific villages/paras. They might be under-represented in the main household survey. In order to avoid such a situation, they too were covered through a supplementary household survey.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The Methodology of the Sirajganj CPP Household Survey was entirely specified in the TOR in terms of the design and size of samples, the questionnaires, the detailed tabulation plan and an outline of the Report. In fact it was essentially a replication of the methodology followed at Tangail CPP Household Survey which had been carried out earlier. The consultants were of the opinion that there was room for improving both the sampling design as well as the questionnaires. Unfortunately, field work was to start from day one (with the training of the field enumerators) and the statistical experts in FAP-20 did not agree to a change in the sampling design.

So, the consultants confined themselves only to some improvements in the questionnaires, mostly by way of restructuring some of the questions and their precoded answers, and adding new questions on some important issues such as institutions related to public participation, satisfaction of basic needs, family planning etc. This was done during a short period of about 10 days between the start of the training programme and the end of the household census in the first study area.

Various salient features: of the sampling design and survey methodology are briefly summarised below.

3.2 The three Study Areas: Project, Adjacent and Control

Keeping in view the two basic objectives of the Household survey, ie to provide information for planning and benchmarks for future evaluation, three geographical areas of comparable size were selected for the survey. These were

Project Area: comprising 6 unions under Sirajganj Sadar and one under Kazipur, adjoining and to the west of the Brahmaputra Right Embankment; Sirajganj town is wholly inside the Project area.

Adjacent Area: comprising 2 unions under Sirajganj Sadar, 2 under Kazipur and 2 under Raiganj Thana, bordering the western and northwestern sides of the Project Area.

Control Area: consisting of 5 unions of Kazipur Thana, the HQ of which is about 18 km away to the north of Sirajganj Town; the area adjoins the BRE and lies entirely on its western side, as in case of the Project Area.

The logic behind the selection of these three areas was that while the Control Area lying upstream in the Jamuna, will remain essentially unaffected by CPP activities in the future and thus provide suitable indicators to capture the impact of non-CPP development factors in the evaluation of CPP. The Adjacent Area, will be affected by CPP activities in the Project and a monitoring of the spillover effect in this area will provide valuable information for en-vivant modification in the design of CPP.

3.3 The Broad Analytical Categories

Five broad analytical categories were adopted for the purpose of this survey. These categories along with a brief note on reasons for their inclusion are as follows:

- Farm households: They are likely to benefit the most from flood protection and irrigation under controlled flooding; they suffer heavily from breached embankments and constitute a powerful lobby in favour of embankments; Traditionally they have been considered as providing the foundation of this country's agrarian economy.

- Non-farm households : They should also benefit from the spill over effect of agricultural growth and independent as well as agro-linked growth in secondary and tertiary sectors, facilitated by the development of infrastructure.

- Fisherman households : As gatherers in open water bodies, the traditional fisherman suffers the most from flood control measures that hamper the recruitment of fishes into the rivers, canals and Beels inside the protected area. Mitigating measures need to be conceived to redress their problems.

- Urban households : Both in the Project and Control areas urban households have suffered heavily in the past from breached BRE; they constitute a powerful pro-embankment lobby and need to be involved in the planning and implementation of CPP.

- Women in the selected households : This traditionally neglected category plays a vital but insufficiently recognised role in the economics and development of the family and hence the nations; under CPP their involvement in mainstream development activities need to be promoted; hence they constitute an important analytical category.

3.4 The Sampling Design

3.4.1 Farm and Non-farm Households

As specified in the ToR, a two-stage random sampling design was followed. In the first stage villages were selected within each study area, Project, Adjacent and Control, on a PPS basis, using

1981 Census population statistics for villages. For the second stage, household listings (ie a complete count in designated villages/ Mahallas) were carried out to provide the sampling framework. A systematic random sampling procedure was followed for obtaining a sample of 5 farm and 5 non-farm households.

3.4.2 Fisherman and Urban samples

A procedure similar to the one for farm and non-farm households was followed for fisherman communities and the urban area. Both presented problems. The ToR specified obtaining 10 communities/ villages or Mahallas for each Study area and to obtain a total of 50+5 households from these clusters for the sample. Sometimes fisherman communities lived in clusters of 3 or 4. In the Adjacent area, there was no well defined Urban area.

However, these problems were resolved by the consultants in consultation with the CPP authority.

3.4.3 Women

The women's sample was a direct outcome of the household sample. For all selected households, which were male headed, the wife of the household head or anyone else who was in charge of household management, was taken as the respondent. In case of female headed households, a second woman in order of importance in household management was taken into the sample.

3.5 Size and Structure of the Sample

The size and structure of the actual sample drawn was as follows.

Table 3.1 : Sample Village/Para and Household Sample Frame.

Study Area	Farm and Non-farm				Supplementary Survey					Total	
	Village	Farm H'H	Non-farm H'H	Sub-Total H'H	Fishermen Village	Fishermen H'H	Urban Para	Urban H'H	Sub-Total H'H	Village/ Para	H'H
Project area	24	131	133	264	10	55	10	55	110	44	374
Adjacent area	24	132	132	264	10	55	10	55	110	44	374
Control area	24	131	133	264	10	57	10	55	112	44	376
Total	72	394	398	792	30	167	30	165	332	132	1124

3.6 Estimated Sampling Error

The sample design was based on an estimated sampling of 10% in two-tailed populations. The parameters as given in the Tangail CPP Interim Report are : K=1.64 V=0.5 D=0.1 and d=0.2.

3.7 Questionnaires

There were five separate questionnaires, one for each analytical category mentioned earlier. Some information schedules and questions, such as those on the age-sex structure of the household, its cash income and expenditure, opinion on floods and public representation etc were common for all the four household types. The questionnaire for women concentrated on family and life around the household. As mentioned earlier, the consultants added a few questions to all the 5 questionnaires. They related to quality of life, family planning (in case of women) and public representation.

3.8 Field Work

A team of 18 Enumerators, equally divided between males and females, with a Male and Female Supervisor carried out the field work of interviewing 1124 household heads and the women in these households. The field work was coordinated by a Project Coordinator under the guidance of Managing Director, MARC and with periodic guidelines and instructions from CPP authority.

The Field Enumerators were trained over a period of three days at the beginning. The Project Director, and other CPP officials and experts from FAP-20 participated in the training programme along with MD, MARC.

3.9 Quality of Field Work

Every possible effort was made, under the pressing constraints of time to retain a high quality of data. The FAP-20 experts visited the field from time to time and gave useful feedbacks.

After the first month a second Supervisor was engaged specifically to carry out field checks on 10% sample households overall. In addition, six villages in the Project area were re-surveyed for a 100% check on some important questions to ensure accurate data. The discrepancies noted during re-interview were low. The findings have subsequently been used to correct the data sets, while a preliminary set of tables were carried out to assist FAP-20 with draft tables for the Project area.

3.10 Data Processing

This has been carried out entirely at MARC's micro computer unit. Data were entered in dBase IV while tabulations were carried out with SPSS and SAS software. Machine editing was done to ensure consistency and comprehensiveness.

3.11 Shortcomings and Problems

Time shortage was severe. A total of 132 villages/communities had to be covered twice, first for household listing and then for interviewing, and long questionnaires administered, all within less than 3 months. The work was delayed by six days of strikes and 'Aborodh' at national and local levels. In between there were Ramadan, Eid and the 'Kalbaisakhis'. The Enumerators hardly had any breathing space.

The questionnaires could certainly do with some improvement. The consultants feel that certain parts of existing questionnaires could be dropped and other questions introduced, and all of them possibly re-structured to make it simple and easy to fill in in the field.

The consultants also believe that the sampling design can be improved upon to include the villages (albeit a smaller number of them) as an analytical category. The value of villages as a community in understanding and explaining social behaviour is well appreciated by seasoned researchers in this country. Ignoring such an important analytical unit could only be justified statistically for estimating quantitative parameters for the whole area (such as crop production), if one knows for sure that the variation between the villages is more than that within. This point will be investigated further to explore for an optimal sampling design for surveys like this one.

CHAPTER 4

DEMOGRAPHIC CHARACTERISTICS

4.1 Introduction

In this chapter an attempt will be made to present a demographic profile of the population in the 3 different study areas of Sirajganj. Since the study was not specifically designed as a demographic survey it is not possible to provide direct estimates of the four major components of demographic behaviour, namely fertility, mortality, marriage and migration. However, indirect measures can be provided for those parameters for which a direct measure is not possible.

A demographic profile of an area is important in understanding the relationship between people, resources and development. Hence it constitutes an important information base both to plan for and evaluate compartmentalisation activities.

4.2 Size of Household and Its Composition

The average household size in the Project area was 5.8, compared to 5.6 in the Adjacent area and 5.7 in the Control area (Table 4.1). These were somewhat higher than the national average (5.4), but very much close to the average size of households of Sirajganj district (5.6). In the study areas an average farm household showed the highest number of household members : 6.8 in the Project area and 6.3 in each of the Adjacent and Control areas.

Table 4.1 : Household Size in 3 Study Areas.

Study area	Farm	Non-farm	Fisherman	Urban	All h'h
Project	6.8	4.9	5.4	6.0	5.8
Adjacent	6.3	4.9	5.4	5.9	5.6
Control	6.3	4.9	5.1	6.1	5.7

On the other hand, the non-farm households had the lowest size at 4.9 in each of the Project and Adjacent areas. It may also be mentioned that the average household size in the urban areas under the survey were also somewhat higher than the national average of 5.4. In addition, Table 4.2 shows an important relationship between the size of household and social

Table 4.2 : Average family size of farm household in Project area

Area	Pure share-cropper	Marginal	Small	Medium	Large	All
Project	5.6	5.6	6.7	9.1	7.9	6.8
Adjacent	4.0	6.5	6.2	7.8	9.0	6.3
Control	7.3	4.4	6.3	10.4	14.0	6.3

stratification. The family size of farm households was observed to increase with an increase in the size of land ownership. For example, in the Control area, large farm households had 14.0 members on an average compared to 4.4 for marginal farmers.

4.3 Sex-ratio

Sex-ratios, ie the ratio of males per 100 females, is shown in Table 4.3. It appears from this table that sex-ratio was the highest at 116.0 in the Adjacent area. In the Project area the proportion was 107.0 percent. These ratios were also higher than the national data on sex-ratio. The highest sex-ratio in the Project area was found among the farm households (116.0) and the lowest among the non-farm households (99.0). There were wide variations in the sex-ratio among different household categories and among various study areas. This is probably due to the fact that the sample size was relatively small for the calculation of such rates.

Table 4.3 : Sex-ratio of Household Members in Different Study Areas

Area	Farm	Non-farm	Fisherman	Urban	All h'h
Project	115.7	99.4	100.0	104.9	106.8
Adjacent	117.4	107.3	125.8	122.7	116.1
Control	105.5	106.6	97.3	105.6	104.7

4.4 Age Structure

The age structure of the population within sample households in

Table 4.4 : Age Distribution of Sample Population in Different Study Areas.

Area	Farm	Non-farm	Fisherman	Urban	All h'h
<u>Project</u>					
0-14	40.0	45.4	42.8	34.3	41.1
15-29	27.3	23.0	21.9	30.4	25.8
30-44	14.8	18.4	21.2	17.8	17.2
45-59	9.4	9.7	7.7	9.9	9.4
59+	8.4	3.5	6.4	7.5	6.6
Mean age	24.4	22.0	23.5	25.4	23.7
<u>Adjacent</u>					
0-14	39.1	42.1	46.2	41.5	41.4
15-29	25.6	25.0	20.1	24.1	24.5
30-44	17.2	20.6	19.4	15.5	18.3
45-59	9.6	6.9	8.7	12.4	9.0
59+	8.6	5.3	5.7	6.5	6.8
Mean age	25.1	22.7	22.1	23.9	23.8

Control

0-14	41.7	41.0	44.1	37.5	41.1
15-29	26.8	26.3	22.4	29.8	26.6
30-44	17.0	17.9	18.3	19.8	17.9
45-59	8.8	9.9	10.0	7.2	9.0
59+	5.7	4.9	5.2	5.6	5.4
Mean age	23.1	23.2	22.6	23.4	23.1

different study areas shows more or less the national characteristics. The population in study areas was relatively young. More than 40.0 percent of them were below 15 years. Slightly over 6 percent were 60 years or above. On the other hand, about 52.0 percent were in the age group 15-59 years.

The age structures of population in different household categories were about the same, except for the urban households in the Project area, where a comparatively lower proportion of population (42.0 percent) was dependent. The age structure of the urban population in the Adjacent area was similar to that of the rural areas in the survey. This might be due to the fact that the urban centres selected for this area, namely Hat Pangashi and Bangla Bazar, had a strong rural character.

4.5 Dependency Ratio

Demographic dependency ratio is defined as

(Popn in age groups 0-14 and > 60)/(Popn in age group 15-59)

The demographic dependency ratios in the Project, Adjacent and Control areas were .91, .93 and .87 respectively compared to a national rate of 1.09. Amongst the various household categories in 3 study areas the rate was the highest for the fisherman households (1.08) in the Adjacent area and the lowest for the urban household (.72) in the Project area.

Table 5.4 : Demographic Dependency Ratios in 3 Study Areas for Different Household Categories

Study Area	Farm	Non-farm	Fisherman	Urban	All HH
Project	.91	.98	.97	.72	.91
Adjacent	.91	.90	1.08	.92	.93
Control	.90	.85	.97	.76	.87

4.6 Marital Status

The incidence of marriage was high among the population over 14 years of age, particularly married females, in the Project area. Proportions of married persons, both male and female, were the highest among the fisherman community: 82.0 percent of females and 68.0 percent of males were married. These proportions among

the farmer community were the lowest, 63.0 percent and 55.0 percent for female and male members respectively. Among the unmarried members, males were found to out-number females. Proportions of widow/widower were between 4.0 and 9.0 percent. However, loss of a spouse mostly prevailed among the women. This is perhaps due to the fact that in a male dominated society like Bangladesh a male member, after the death of his wife, can easily manage to get remarried, while a female member after her husband's death can not do this easily. Divorce, separation and abandonment were rare in the study areas.

4.7 Age at First Marriage

Tables 4.6A and 4.6B present the findings of the household survey in respect of age at first marriage for the 3 study areas & various household categories within the project area. Pre-puberty marriage for girls was widely practised in all 3 study areas with an average of 27% reportedly married office before they reached 12. It was the lowest in the Project area (23%) and highest in the Adjacent areas (33%). Within the Project Area Non-farm and Urban households showed a relatively lesser incidence than farm and fishermen households.

The modal age group for first marriage was 15.19 years for areas and all categories of households, at which stage only a small fraction was left still to be married. This, virtually universally, took place before the age of 25.

Table 4.6A : Age at First Marriage in 3 Study Areas

Age Group	Project	Adjacent	Control	Total
Before 12	25.5	33.4	25.6	27.2
12 - 14	17.4	17.4	23.5	19.4
15 - 19	54.5	41.4	45.6	47.2
20 or more	5.6	7.7	5.3	6.2

Table 4.6B : Age at First Marriage in Different Household Categories of Project Area

Age group	Farm	Non-farm	Fisherman	Urban	Total
Before 12	26.0	18.8	25.5	20.0	22.5
12 - 14	18.3	18.0	5.5	25.5	17.4
15 - 19	51.9	57.9	63.6	43.6	54.5
20 or more	3.8	5.3	5.5	10.9	5.6

4.8 Indicators of Fertility

The household survey did not generate adequate data to estimate direct measures of fertility, such as crude birth rate (CBR) or age specific fertility rates (ASFR). However, it did have data to provide some indirect indicators of fertility, such as children ever born and child-women ratio, as discussed below.

4.8.1 Children Ever Born

This is not a complete measure of an average woman's fertility, since it is an average measure of children born to women who are currently at different stages of their reproductive life. Table 4.8A and 4.8B show the findings from the survey for the 3 study areas and the 4 household categories in the Project area respectively. Among the 3 areas the Adjacent area showed the highest level of children ever born at 5.4 comprising 2.8 sons and 2.6 daughters. This was followed by the Project area with a marginally lower level (CEB=5.1). But the lowest showing was in the Control area (CEB=4.4). Within the Project area the farm households had the highest CEB (6.1) with 3.1 sons and 3.0 daughters. The gap between this category and the urban households (CEB=4.3) was quite sharp. The non-farm (CEB=4.8) and fishermen households (CEB=4.5) were also at subtantially lower levels.

Table 4.8A : Children Ever Born in 3 Study Areas

	Project	Adjacent	Control	Total
Son ever born	2.7	2.8	2.3	2.5
Daughter ever born	2.5	2.6	2.4	2.4
CEB	5.1	5.4	4.4	5.0

Table 4.8B : Children Ever Born in Different Household Categories of the Project Area

	Farm	Non-farm	Fishermen	Urban	Total
Son ever born	3.1	2.6	2.3	2.1	2.7
Daughter ever born	3.0	2.2	2.3	2.2	2.5
CEB	6.1	4.8	4.6	4.3	5.2

4.8.2 Child-woman Ratio (CWR)

The ratio of children in age group 0-4 and women in their reproductive ages often serve as a crude and simple indicator of fertility. The computed ratios for the 3 areas are as follows.

	Project	Adjacent	Control	Total
CWR	.52	.50	.45	.49

while the ratio for the 4 household types are :

	Farm	Non-farm	Fishermen	Urban
CWR	.52	.60	.52	.36

It is clear that among the areas the level was highest in the Project area and lowest in the Control area. Between the household groups the highest in the non-farm category (.52) and the lowest in the urban category (.36). This more or less are in conformity with the indicator mentioned earlier (CEB).

4.9 Mortality Indicator

The experience of child mortality is a crude indicator of mortality status. Unfortunately, it is not an indicator of the current mortality situation. However, it is a more relevant variable in explaining fertility behaviour that is rooted in the fear of child loss. Child mortality ratios are shown in Tables 4.9A and 4.9B.

Table 4.9A : Child Mortality Ratios in 3 Study Areas

	Project	Adjacent	Control	Total
Sons	.27	.28	.29	.26
Daughters	.19	.27	.27	.24
Children	.25	.23	.27	.25

Table 4.9B : Child Mortality Ratios in Different Household Categories of the Project Area

	Farm	Non-farm	Fishermen	Urban
Sons	.28	.31	.21	.17
Daughters	.26	.26	.20	.20
Children	.27	.29	.21	.18

The mortality indicators were relatively higher in the Control area, although the differences were somewhat marginal. However, among the household categories, the differences were more pronounced and was the lowest in case of sons in the urban households (.18).

On the whole, child mortality appeared to be still high enough to instil a fear in the mind of couples about losing a son or a daughter, or both, during their reproductive life time. Hence it would still continue to exert pressure on fertility to remain at relatively high level.

4.10 Migration

Migration can take place to areas inside the country for purposes of study or a job. Likewise it could also take one out of the country for the same purposes. Migration related questions were asked of farm and non-farm households only. The results are shown in Tables 4.10A and 4.10B for farm and non-farm households respectively.

Table 4.10A : Internal and International Migration Indicators for Farm Households

Type of Migration	Project		Adjacent		Control	
	% h'h	Mean	% h'h	Mean	% h'h	Mean
In country for studies	3.8	(1.6)	4.5	(1.2)	3.1	(1.0)
In country for jobs	10.7	(1.36)	11.4	(1.27)	4.5	(1.00)
International for studies	-	-	1.5	(1.5)	-	-
International for job	0.01	(1.0)	0.01	(2.0)	0.01	(1.0)

It may be noted that internal migration among the farm households is mostly for jobs and the incidence rate is in the range of 5-11 percent. The higher rates are seen in the Project and Adjacent areas, presumably indicating a higher awareness and motivation.

Migration for education involves 3-5 percent of the farm households in the study. Once again the higher rate is seen in the Adjacent area. This area being both close to Sirajganj town as well as lying around the Dhaka-Bogra highway is exposed to movement. It probably explains the higher incidence of internal migration in this area.

International migration exists marginally for the purpose of jobs abroad. There are a few farm households (1.5 percent) in the Adjacent area which reportedly sent students abroad for studies. This matter however, requires much greater probe to obtain a clear picture of the nature of this migration.

Table 4.10B : Internal and International Migration Indicator for Non-farm Households

Type of Migration	Project		Adjacent		Control	
	% h'h	Mean	% h'h	Mean	% h'h	Mean
In country for studies	3.8	(1.0)	3.8	(1.6)	3.8	(1.6)
In country for jobs	8.4	(1.3)	9.8	(1.2)	6.9	(1.1)
International for studies	-	-	0.01	(1.0)	-	-
International for job	-	-	0.01	(2.0)	3.1	(1.3)

The pattern of migration among the non-farm households is very similar to what was seen in the farm households. In other words, internal migration was incurred primarily for the purpose of jobs elsewhere in the country by about 7-10 percent households, while internal migration for studies touched about 4 percent of the non-farm households in all the three study areas.

4.11 Comments

The demographic profile of the three study areas and the four different household categories did not revealed any thing of paticular significance to distinguish it from the rest of the

country except for a visible sign of a declining level of fertility over the last one decade or so, as seen in the small proportion of population in the children's age group. Further findings on family planning in Chapter 19 will corroborated the point.

CHAPTER 5

EMPLOYMENT AND OCCUPATION

5.1 Employment Defined

The definition of employment frequently stumbles on to methodological problems, particularly in dealing with cases in a relatively backward agrarian society. One particularly tricky case is that of the traditional housewife.

Since employment has a connotation of income the hard work of housewives has not been recognised in the national income accounts of Bangladesh as a form of gainful employment. This is a contentious issue particularly when one considers that in the absence of a housewife a husband would have to employ someone to take care of the important household chores.

In this report labour force will be derived in demographic terms, ie those belonging to the age group 15-59. Employment has already been predefined at the time of the survey in terms of the respondents own perception of whether she or he has been employed during the last years for a period of time. In calculating economically active people a cut-off point of six months or more will be used.

5.2 Labour Force Ratios

The labour force as a proportion of the total population of the relevant categories (eg male, female and total) as well as in absolute numbers are shown in Table 5.1.

Table 5.1 : Labour Force in 3 Study Areas

	Male	Female	Total
Project	55.1 (613)	49.5 (516)	52.4 (1129)
Adjacent	52.2 (589)	51.3 (499)	51.8 (1088)
Control	54.0 (589)	53.1 (553)	53.6 (1143)

It is seen that the difference between male and female labour force ratios as well as absolute numbers are quite substantial in the Project area. The difference in absolute numbers is also pronounced in the Adjacent area which perhaps reflects a lower sex ratio in the population, since the difference in the labour force ratio is not much.

5.3 Persondays of Employment

To start with, a picture of the employment status of the labour force, ie labour age group population, is presented in Table 5.2 by sex for the 3 study areas. Even after using the cut-off point of 6 months in a year to define one as employed the unemployment rate was quite, low ranging between 2.6 percent for females in the Control area to 6.4 percent for males in the Adjacent area. The male unemployment rates were always higher than the female unemployment rates.

It was also the females who considered themselves to be more fully employed than the males as seen by perusing the percentages in the top persondays boxes. It makes sense, because men's work in the rural area has distinct seasonalities and well defined periods of slack, while women's work around the house perpetuates unabated throughout the seasons.

Table 5.2 : Persondays of Employment for Members of the Labour Force in the 3 Study Areas

Persondays	Male	Female	Total
Project :			
0	2.8	2.7	2.7
301-360	61.5	92.8	75.8
241-300	31.6	2.9	18.5
181-240	3.1	1.6	2.4
121-180	0.7	-	0.4
61-120	0.2	-	0.1
Upto 60	0.2	-	0.1
Adjacent :			
0	4.4	3.8	4.1
301-360	62.6	92.6	76.4
241-300	27.8	1.2	15.6
181-240	3.1	0.4	1.8
121-180	1.5	1.0	1.3
61-120	0.5	0.6	0.6
Upto 60	-	0.4	0.2
Control :			
0	1.7	2.4	2.0
301-360	51.3	92.2	71.1
241-300	41.4	4.0	23.3
181-240	4.2	1.3	2.8
121-180	1.2	0.2	0.7
61-120	-	-	-
Upto 60	0.2	-	0.1

5.4 Labour Force Participation Rate

If one accepts female perceptions of their participation in employment, the labour force participation rates could be easily calculated from the employment data in Table 5.2. These are presented below in Table 5.3.

Table 5.3 : Participation Rates : A New Definition

	Project	Adjacent	Control
Male	96.1	93.6	96.9
Female	97.3	94.2	97.4
Total	96.7	93.9	97.2

These rates are rather crude and could be refined by giving due weight to the period of employment. This would bring down the participation rate substantially by excluding periodic unemployment. This new measure will be attempted in the Final Report after some comparative analyses with various existing rates.

5.5 Occupation Structure

Since the household survey selected the sample size of different categories of households on a purposive basis, the occupational structure cannot estimated from these data for the entire rural population.

Occupational structures were those computed using the household census data for farm and non-farm households. It is possible that the fisherman community has been somewhat underestimated in the procedure. But it cannot be redressed by adding on the fisherman household of the supplementary villages, which would obviously distort the picture by giving them too much (and unknown) weightages.

Agriculture was the most dominant occupation in all 3 study areas, accounting for 32, 40 and 36 percent of the household heads in the Project, Adjacent and Control areas, respectively. It was followed by agricultural labour at 24, 22 and 26 percent respectively for the 3 areas.

The next in importance was trading accounting for 12, 10 and 10 percent. The professionals ranged between a high of 8.7 percent in the Project area and a low of 5.7 percent in the Project area. Artisans and craftsman were more dominant in the Control area (9%) than in the Project area (3.1%), while the reverse was the case a respect of industrial and transport workers (10.7% in the Project area as against 2.8% in the Control area.

The fishermen constituted a small fraction in the whole community, at par with transport workers (1.7% in the Adjacent area and below par in the Control and Project areas (1.0 and 0.3 percent respectively).

Table 5.4A : Primary Occupation of the Rural Household Heads in the 3 Study Areas

Occupation	Project	Adjacent	Control
Agriculture	31.8	39.7	36.1
Agri. labour	24.2	22.4	26.1
Artisan	2.1	5.8	8.8
Other crafts	1.0	0.7	0.2
Fisherman	0.3	1.7	1.0
Trading	12.0	10.3	10.1
Indust.owner	0.3	0.4	0.2
Indust.worker	7.1	3.5	1.1
Transp.owner	0.1	0.1	-
Transp.worker	3.6	1.7	1.7
Professional	8.7	6.1	5.6
Other services	4.7	5.2	4.7
Housewife	1.1	0.4	0.8
Student	0.5	0.5	0.4
Unemployed	0.2	0.3	0.3
Others	0.3	1.3	3.0

As in case of the primary occupation, agriculture dominated the secondary occupation, the proportion varying from 18.6 to 23.9 percent. Likewise also agriculture labour was the next in order of importance.

Table 5.4B : Secondary Occupation of the Rural Household Heads in the 3 Study Areas

Occupation	Project	Adjacent	Control
Agriculture	21.1	18.6	23.9
Agri. labour	4.4	5.8	5.2
Artisan	0.3	0.7	0.6
Other crafts	0.1	0.1	0.1
Fisherman	-	1.0	0.2
Trading	1.9	3.4	3.4
Indust.owner	0.1	0.1	0.1
Indust.worker	0.4	0.4	0.2
Transp.owner	0.1	0.2	0.1
Transp.worker	0.3	0.3	0.2
Professional	0.6	0.7	0.6
Other services	0.5	0.7	0.5
Housewife	0.1	-	0.3
Student	0.1	-	-
Unemployed	-	-	-
Others*	70.1	67.9	64.6

* includes respondents without a secondary occupation.

5.6 Comments

In view of the definitional problem referred in this Chapter on the gainful employment of women a need is felt to find a better measure of labour force participation rates, etc to analyse various issues related to employment.

It is likely that the structure of occupation in the CPP area will undergo a profound transition in the course of the next decade or two. Under these circumstances employment and occupation structures should be studied not only on the basis of household surveys but also anthropological case studies.

CHAPTER 6

HOUSEHOLD INCOME, EXPENDITURE AND ASSETS

6.1 The Importance of and Problems with Income Data

Income has been traditionally serving the role of a catch-all variable indicating economic status. There is no other economic indicator which conveys so much. However, income is also a very difficult variable to estimate on account of both a deliberate distortion and/or withholding of information as well as methodological difficulties of quantifying non-marketed goods and services. In rural Bangladesh both the factors operate strongly and unless one gives a lot of time in building up the structure of income, expenditure, savings and investments bit by bit through a comprehensive analysis of all economic and social activities, a good estimate of income is very difficult to obtain.

In view of the above the consultants were informed by FAP-20 experts that income data would be covered by a separate questionnaire. Therefore, income data were not given high priority while improving the questionnaire.

6.2 Income and Expenditure Estimates

The findings on income and expenditure are presented in 4 tables. First, average household income and expenditure are presented in Tables 6.1A and 6.1B respectively.

Table 6.1A : Cash Income of Different Household Categories in 3 Study Areas

Household Categories	Project	Adjacent	Control	Total
Farm	31,620	18,049	19,232	22,955
Non-farm	18,545	20,164	15,613	18,102
Urban	41,892	23,935	37,696	34,475

Inspite of all the anxiety over the quality of income data it is heartening to note a remarkable degree of consistency in the estimated averages. For example, cash income exceeds cash expenditure for all the areas by a small but comfortable margin. The only case where this was not true was in the case of the fisherman in the Project area because of a deliberate exclusion of fishery income from the calculations. The anticipated peculiarities associated with different occupational categories were also clearly reflected by the data. For example, the farmers expenditures on food was the lowest and the fisherman's stated expenditures on fishes etc was the lowest, indicating a typical case of consumption of household produce.

Table 6.1B : Cash Expenditure of Different Household Categories in 3 Study Areas

Household Categories	Project	Adjacent	Control	Total
Farm	24,622	15,530	16,719	18,949
Non-farm	16,619	16,946	14,425	16,062
Urban	37,773	19,130	30,500	29,134

The average cash income in the Project area was estimated as 41.9 thousand for the urban households and 31.6 thousand for the farm households. The farmers in the Project area certainly had an advantage over the farmers in the other two areas, reflecting their 'cashing in' of urban opportunities. One needs to remember that the true income of this farm household is very likely to be twice the stated cash income if one takes into account all the agricultural, fishery, livestock, dairy and kitchen garden produce which were consumed at home and the possibility of other household members income not being fully stated, not to mention the well accepted non-inclusion of the value of housewife's chores. If this is acceptable the per capita income turns out to be Tk. 10,000 or approximately $ 250, which is just above the current estimate of per capita national income of Bangladesh.

Table 6.2A : Structure of Cash Income of Different Household Categories in the Project Area

Items	Farm	Non-farm	Urban	Fisherman
Crops	17,811	745	571	107
Livestock & poultry	1,596	430	214	127
Trees & vegetable	774	161	75	48
Rents	1,206	88	45	125
Industries	-	381	1,852	123
Trade	1,304	4,537	12,307	3,398
Services	4,054	10,519	17,300	398
Asset sale	1,799	188	1,180	820
Loans	771	695	1,202	695
Receipts	18	117	391	7
Remittances	577	295	2,497	-
Other income	1,709	414	5,964	3,854
Total	31,620	18,545	41,792	9,702*

(*an underestimate since fishery income was not added in the Questionnaire by design.)

The Project area fisherman's income may be completed by adding the fishery income estimated from section 10.4.4 as follows.

Average cash income from all sectors except fishery	Tk. 9,702
Fishery income (Tk.14,57,900)/55	Tk.26,507
Total	Tk.36,209

Table 6.2B : Structure of Cash Expenditure of Different Household Categories in the Project Area

Items	Farm	Non-farm	Urban	Fisherman
			(in takas)	
Cereals	2,552	5,669	7,158	7,368
Pulses	719	663	1,177	774
Fish/meat	2,447	1,822	4,694	473
Vegetables	1,078	872	1,867	737
Other food	1,464	1,164	2,417	1,117
Clothing	2,107	1,430	2,965	1,424
Medical	1,296	594	1,521	537
Education	1,767	816	3,550	128
Other expenses	4,305	1,890	5,992	2,390
Housing	1,158	678	603	442
Cattle	642	163	-	57
Poultry	87	20	65	7
Others investment	5,004	838	5,762	1,074
Total (takas)	24,623	16,619	37,773	16,529

Considering that rural farmers are usually below the average in terms of income, the CPP area farmers are doing all right.

This exceeds the estimated cash income of the farmer but not his total imputed income.

One may conclude that the Project area fisherman may be worse off that the farmer but he certainly is doing better than the non-farm categories.

6.3 Household Assets

Table 6.3 provides a picture of the assets position of the households surveyed. The assets are arranged according to some broad categories such as general assets, agricultural tools, cottage industries and nets. It is seen that there are only marginal differences between Project, Adjacent and Control areas.

Further information on assets are available in Chapters 11 and 13.

Table 6.3 : Various Types of Assets in Rural Parts of the 3 Study Areas

Assets	Project		Adjacent		Control	
	%	Number	%	Number	%	Number
General :						
House	89.3	762	75.9	592	98.4	801
Shops	1.9	6	3.8	12	1.5	6
Cycle	24.1	82	21.6	70	21.2	70
Carts	-	-	0.3	1	0.3	1
Rickshaw/van	0.9	3	1.9	6	1.2	4
Boat	8.5	27	1.9	6	5.6	20
Motor cycle	0.3	1	-	-	0.6	2
Agri tools :						
Plough	41.4	175	43.3	159	37.4	152
Ladder	41.4	150	46.7	161	40.5	146
Scythe	75.5	469	77.4	474	80.4	502
Weeder	72.1	476	73.7	469	76.9	434
Spade	72.7	263	75.2	268	73.2	254
Axe	49.8	167	58.3	203	48.9	163
Power Tiller	0.3	3	0.3	1	-	-
Thresher	1.3	4	0.3	1	0.3	1
Power Pump	0.3	1	0.6	2	0.3	1
HTW	38.6	125	33.5	107	29.6	95
STW	7.5	24	8.5	27	8.7	32
LLP	0.6	2	-	-	-	-
DTW	1.3	4	0.3	1	-	-
Cottage industry :						
Handloom	0.6	6	0.3	4	-	-
Maku	0.6	29	-	-	-	-
Chorka	0.9	4	1.2	9	0.3	1
Shana	0.6	6	-	-	-	-
Wheel	0.6	3	-	-	-	-
Oil Crusher	-	-	0.6	2	0.6	2
Nets :						
Bhesal	6.3	21	1.3	4	1.9	6
Ber	6.9	23	6.3	24	8.1	26
Dhole	0.9	3	1.6	5	0.6	2
Current	2.5	17	1.9	10	3.4	13
Koi Jal	0.6	2	1.3	4	0.9	3
Jhanki	17.0	60	29.2	111	18.4	61
Dharma	1.6	5	3.1	12	1.9	6
Thela	12.2	39	17.9	57	13.4	43
Other nets	4.3	18	4.3	17	2.5	8
Bana	2.5	10	6.3	20	2.2	7
Doair	1.8	12	8.1	28	1.9	10
Polo	0.9	4	7.5	29	1.9	6
Borshi	2.4	714	8.8	139	4.4	230

Table 6.4A: Various Assets Mentioned by Female Respondents in the 3 Study Areas : Farm Households

Assets	Project		Adjacent		Control	
	% h'h owning	av #	% h'h owning	av #	% h'h owning	av #
Furniture :						
Khat	21.4	1.6	18.3	1.5	16.8	1.5
Chouki	93.9	2.2	90.1	1.9	90.8	1.9
Table	61.1	1.4	51.1	1.5	64.1	1.3
Chair	79.4	2.4	74.8	2.4	80.2	2.4
Almira	12.2	1.1	14.5	1.0	19.1	1.3
Radio	22.9	1.0	19.8	1.0	28.2	1.0
TV	-	-	1.5	1.0	1.5	1.0
Tape	2.3	1.0	3.1	1.0	1.5	1.0
VCP	-	-	n	n	-	-
Fan	-	-	1.5	1.0	-	-
Watch	38.2	1.5	30.5	1.5	33.6	1.3
Torch	35.1	1.1	30.5	1.2	29.8	1.1
Dhenki	77.9	1.0	71.8	1.0	78.6	1.0
Janta	38.2	1.0	31.3	1.0	24.4	1.0

Note : n = negligible.

Table 6.4B: Various Assets Mentioned by Female Respondents in the 3 Study Areas : Non-Farm Households

Assets	Project		Adjacent		Control	
	% h'h owning	av #	% h'h owning	av #	% h'h owning	av #
Furniture :						
Khat	9.0	1.3	10.5	1.4	14.3	1.7
Chouki	78.2	1.6	69.2	1.7	79.7	1.4
Table	37.6	1.3	33.8	1.6	28.6	1.5
Chair	46.6	2.0	42.9	2.3	44.4	2.1
Almira	4.5	1.2	6.8	1.7	10.5	1.5
Radio	19.5	1.0	12.8	1.0	27.8	1.0
TV	0.01	1.0	0.01	1.0	3.0	1.0
Tape	3.0	1.0	4.5	1.0	1.5	1.0
VCP	-	-	n	n	-	-
Fan	1.5	1.5	0.1	2.0	1.5	1.0
Watch	37.6	1.2	21.1	1.4	12.8	1.2
Torch	24.1	1.1	15.8	1.1	12.8	1.1
Dhenki	27.1	1.0	33.1	1.0	38.3	1.0
Janta	9.0	1.0	15.8	1.0	9.8	1.0

Note : n = negligible

Table 6.4C: Various Assets Mentioned by Female Respondents in the 3 Study Areas : Fishermen Households

Assets	Project		Adjacent		Control	
	% h'h owning	av #	% h'h owning	av #	% h'h owning	av #
Furniture :						
Khat	3.6	1.0	3.6	1.0	1.8	1.0
Chouki	81.8	1.4	72.7	1.2	67.3	1.4
Table	29.1	1.2	16.4	1.0	18.2	1.1
Chair	36.4	1.5	14.5	2.0	5.5	0.5
Almira	3.6	1.5	-	-	-	-
Radio	14.5	1.0	12.7	1.0	9.1	1.0
Watch	5.5	1.0	5.5	1.0	3.6	1.0
Torch	25.5	1.1	3.6	1.0	5.5	1.0
Dhenki	23.6	1.2	25.5	1.0	29.1	1.1
Janta	3.6	1.0	1.8	1.0	1.8	1.0

CHAPTER 7

LANDHOLDING STRUCTURE, TENURIAL PATTERN AND CHANGE IN LAND OWNERSHIP

7.1 Introduction

In order to collect farm information 396 farm households were surveyed with the help of structured questionnaire. Of these 394 filled-in questionnaires were found valid : 131 in the Project area, 132 in the Adjacent area and 131 in the Control area. These farm households were distributed in the following pattern :

11 percent were pure share croppers,
37 percent marginal farmers,
34 percent small farmers,
13 percent medium farmers and
5 percent large farmers.

This chapter deals with issues like land holding and its use, farm size and its distribution, land fragmentation, tenurial pattern, terms of share cropping, etc.

7.2 Land Holding and Its Use

The average land holding size of farmers is shown in Table 7.1. It is clear from this table that there were some variations in the average size of holdings owned by different categories of farmers in the study areas. The average size was the highest (0.90 ha) in the Project area, followed by the Control area (0.77 ha) and the Adjacent area (0.70 ha). As expected, serious inequality was found to exist among different categories of farmers in each of the study areas. A large farmer on an average, in the Project area owned land 22 times more than an average share cropper. In the Adjacent and Control areas such differences were more pronounced.

Table 7.1 : Land holding size by farmers category in different study areas

Farmers category	Project	Adjacent	Control
Pure share cropper	0.137	0.118	0.125
Marginal farmer	0.376	0.394	0.405
Small farmer	0.776	0.780	0.808
Medium farmer	1.647	1.690	1.699
Large farmer	3.015	2.817	3.061
All households	0.898	0.700	0.770

To analyse land use patterns, land has been divided into four categories : homestead, pond, cultivable and other uncultivable or fallow land. Land distributions based on these categories for different strata of farm households are shown in Table 7.2. It is seen that in the Project area, as elsewhere in the country, land

was predominantly used for cultivation. In the Project area 86.0 percent of land was used for this purpose. The next highest use was reported for homestead (9.0 percent). Fallow land accounted for 4.0 percent of the total and land under ponds was below 1.0 percent. It is easy to understand why pisciculture was not widely practised in the area.

Table 7.2 : Average Land Holding Size of Farm Household in the Project area

Household categories	Home-stead	Pond	Fallow	Culti-vable	(ha) Total
Pure share cropper	0.051	-	0.021	0.065	0.137
Marginal farmer	0.053	0.002	0.017	0.303	0.376
Small farmer	0.064	0.009	0.031	0.672	0.776
Medium farmer	0.130	0.003	0.110	1.404	1.647
Large farmer	0.147	0.018	0.011	2.839	3.015
All farmers	0.077	0.006	0.039	0.776	0.898
% to total	8.6	0.7	4.3	86.4	100.0

Table 7.3 : Land Holding of Farmers in 3 Study Areas

Farmers category	Project	Adjacent	(%) Control
Pure share cropper	1.4	1.7	2.3
Marginal farmer	12.1	25.6	19.3
Small farmer	32.3	35.5	35.3
Medium farmer	33.6	22.0	21.9
Large farmer	20.6	15.3	21.2
All farm household	100.0	100.0	100.0

7.3 Farm Size and Its Distribution

The average size of own cultivated land in the Project area was 0.78 ha. This was the highest among the three study areas. In the Adjacent and Control areas, the averages were 0.65 ha and

Table 7.4 : Farm Size (own cultivated land) by Farmers Category in 3 Study Areas

Farmers category	Project	Adjacent	(ha) Control
Pure share cropper	0.065	0.063	0.100
Marginal farmer	0.303	0.282	0.270
Small farmer	0.672	0.667	0.674
Medium farmer	1.404	1.377	1.276
Large farmer	2.839	2.610	2.644
All farmers	0.776	0.651	0.608

0.61 ha respectively (Table 7.4). The Project area showed the highest averages for all categories of farmers except for the pure share cropper and small farmer.

The average operated farm sizes per household were very close to those of the own cultivated land. The average was the highest for the Project area at 0.79 ha. In the Control and Adjacent areas the averages were 0.68 ha and 0.61 ha respectively. However, the

Table 7.5 : Farm Size (net operated land) by Farmers Category in 3 Study Areas

Farmers category	Project	Adjacent	Control
Pure share cropper	0.492	0.397	0.456
Marginal farmer	0.392	0.323	0.375
Small farmer	0.736	0.705	0.675
Medium farmer	1.185	1.289	1.148
Large farmer	2.320	2.229	2.569
All farmers	0.793	0.612	0.682

average operated land for the lower categories (pure share cropper, marginal and small farmers were greater than the averages of own cultivated land, whereas for the upper categories of farmers (medium and large farmers) the reverse was true. This is due to the existence of share-cropping, mortgaging and leasing.

Table 7.6 : Average Size of Crop Land under Farm Households in the Project Area

Household categories	Owned cultivated land	Share cropping		Land mortgage		Net Operated land
		in	out	in	out	
Pure share cropper	0.065	0.354	-	0.073	-	0.492
Marginal	0.303	0.064	-	0.033	0.007	0.392
Small	0.672	0.092	0.018	0.027	0.036	0.736
Medium	1.404	0.042	0.144	0.022	0.140	1.185
Large	2.839	-	0.236	-	0.283	2.320
Total	0.776	0.093	0.048	0.030	0.058	0.793

The reasons for the differences between the averages of own cultivated land and net operated land is clearly seen in Table 7.6. It appears from this table that large farmers did not take any land on a sharecrop-in or mortgage-in basis. So, their operated land was less than the owned cultivated land. In the Project area, for large farmers 2.84 ha was the average size of owned land, while 2.32 ha was their net operated land. On the other hand, the lower categories of farmers took more land on a sharecrop-in or mortgage-in basis and gave less land on

sharecrop-out and mortgage-out basis. Thus pure share croppers had 0.06 ha of land as owned cultivated land, whereas their net operated land was 0.49 ha.

Table 7.7 : Ratio of Operated Land Size and Owned Land Size in 3 Study Areas

Farmers category	Project	Adjacent	Control
Pure share cropper	7.57	6.30	4.56
Marginal farmer	1.29	1.15	1.39
Small farmer	1.09	1.06	1.00
Medium farmer	0.84	0.94	0.90
Large farmer	0.82	0.85	0.97
All farmers	1.02	0.94	1.12

7.4 Land Fragmentation

Due to the practice of the Muslim law of inheritence and a rapid growth of population, land is being continuously fragmented. This has become one of the major obstacles to mechanised cultivation in Bangladesh. Survey results confirm that the average plot size in the study areas was small. In the Project area the average size was 0.12 ha, compared to 0.118 and 0.091 ha in the Adjacent and Control areas respectively (Table 7.8).

Table 7.8 : Fragmentation of Operated Land in the 3 Study Areas

	Project		Adjacent		Control	
	av no. of plot	av area per plot	av no. of plot	av area per plot	av no. of plot	av area per plot
Pure Share Cropper	6.4	0.0104	3.5	0.110	6.2	0.066
Marginal	5.4	0.072	4.2	0.099	6.4	0.065
Small	6.5	0.108	6.2	0.098	7.2	0.086
Medium	7.8	0.149	6.6	0.144	9.3	0.118
Large	9.0	0.259	8.7	0.236	12.3	0.195
All	6.6	0.120	5.1	0.118	7.2	0.091

The size was smaller in case of the pure share cropper, marginal and small farmers in all ths study areas. On the other hand, a household in the Project area, on an average had 6.6 plots. In the Adjacent and Control areas, the average number was reported to be 5.1 and 7.2. On the basis of information presented in Table 7.8, two important conclusions can be drawn. The average number of plots and average plot size of net operated land were found to increase with an increase in the ownership of cultivable land in all the three study areas. Secondly, land was more fragmented in the Control area.

7.5 Tenurial Pattern

Generally there are four tenurial forms : owner-farmer, farmer-cum-tenant, tenant farmer (share cropper) and absentee land owner. Owner farmers cultivate their own land by themselves or their land is cultivated under their own supervision and guidance. An owner-cum-tenant cultivates his own land as well as land belonging to others. A person who cultivates land mainly belonging to others is a tenant or pure share cropper. An absentee owner is one who does not cultivate his own land; rather his land is cultivated by others under share cropping or other arrangements.

In the household survey information on three forms of tenurial pattern, namely owner-farmer, farmer-cum-tenant and pure share cropper, was collected and is presented in Tables 7.9 and 7.10. It appears from these tables that large farmers were the owner farmers. They did not cultivate other's land but they share-cropped out some of their own land.

Table 7.9 : Average Size of Share-in Land in 3 Study Areas

Area	Share Cropper	Marginal Farmer	Small Farmer	Medium Farmer	Large Farmer	Total
Project	0.354	0.064	0.092	0.042	-	0.093
Adjacent	0.214	0.069	0.079	0.031	-	0.086
Control	0.446	0.049	0.038	0.077	-	0.085

There were 5 percent owner-farmers in the survey, while pure share croppers or tenant farmers were 11 percent. Thus, owner-cum-tenants were dominant, about 84 percent in the study areas.

As evident from Table 7.9 pure share croppers had the highest share-in land (0.45 ha) in the Control area, 0.35 ha in the Project area and 0.21 ha in the Adjacent area. No large farmer was found to cultivate other's land on share cropping basis. Because they had enough land rather they gave some of their lands to others on share cropping-out basis. It is shown by Table 7.10 that large farmers had the highest share-out land in all the areas, 0.25 ha in the Adjacent area, 0.24 ha in the Project area and 0.12 ha in the Control area.

Table 7.10 : Average Size of Share-out Land in 3 Study Areas

Area	Share Cropper	Marginal Farmer	Small Farmer	Medium Farmer	Large Farmer	Total
Project	-	-	0.018	0.144	0.236	0.048
Adjacent	-	0.022	0.004	0.047	0.245	0.027
Control	-	-	0.011	0.081	0.121	0.016

7.6 Comments

Land use pattern has already undergone significant changes in the

study areas, particularly the Control and the Adjacent areas, since the construction of the BRE. However, the pattern has not stabilise on account of uncertainties because of BRE breaches and erosion in the Jamuna. If CPP succeds in its aim of achieving controlled flooding, much will be gained in terms of stable and sustainable land use pattern in this region.

CHAPTER 8

CROP PRODUCTION

8.1 Introduction

One of the main objective of CPP is to increase crop production without having any negative effects on fisheries and environment. This chapter attempts to analyse certain important issues of crop production in the study areas, such as land use, cropping intensity, cropping pattern, crop production, extent of damage and irrigation.

8.2 Present Land Use

Medium high land (MH) and medium land (M) predominated in the study areas. In the Project area about 80 percent of the total net operated land was included in these two categories. Corresponding proportions in the Adjacent and Control areas were about 74 and 72 percent respectively. Farm land subject to high flooding was only 11, 14 and 6 percent in the Project, Adjacent and Control areas respectively. On the other hand, a sizeable 22 percent net operated land in the Control area was high land and as such, was not affected by flood normally. Comparable proportions in the Project and Adjacent areas were 11 and 14 percent respectively.

Table 8.1 : Net Operated Land by Land Elevation in 3 Study Areas

Land Elevation	Study Area		(%)
	Project A=104.3	Adjacent A=79.8	Control A=87.0
High Land (H)	9.9	11.6	21.9
Medium High Land (MH)	46.7	37.1	39.8
Medium Low Land (M)	32.3	37.0	32.3
Low Land (L)	11.2	14.4	6.0

N.B. A is the net operated land in hectares.

The distribution of net operated land by farmer's category shows that most of the farm land was cultivated either by small farmers (35 percent) or by medium farmers (34 percent) in the Project area. Large and marginal farmers were found to cultivate 13 percent and 14 percent of the total farm land respectively. Only a low 4 percent was cultivated by the pure sharecropper.

In the other areas, the picture was almost the same. In the Adjacent area about 34 percent farm land was operated by the marginal farmer. The share of small and medium farmers was 23 and 19 percent respectively. Large farmers and pure share cropper were found to cultivate 16 and 5 percent of farm land respectively in the Adjacent area (Table 8.2).

Table 8.2 : Operated Land by Farmers Category in 3 Study Areas

Farmer Category	Study Area (%)		
	Project N=131	Adjacent N=132	Control N=131
Pure Share Cropper	4.0	5.4	11.9
Marginal Farmer	14.0	33.5	18.7
Small Farmer	34.6	23.1	32.5
Medium Farmer	34.3	22.5	17.8
Large Farmer	13.2	15.6	19.2
Total	38.5	29.5	32.0

N.B. N is the number of farm households in each study area.

The highest proportion of land cultivated by each category of farmer was either medium high (MH) or medium (M) types of land. For example, MH category land had the highest proportion among pure sharecropper (55 percent), small farmer (45 percent), medium farmer (35 percent) and large farmer (53 percent). M land was the highest for the marginal farmer. Share of high (H) land was 9-14 percent among different categories of farmers except for large farmers. But low (L) land had the highest variations from 5 to 17 percent.

Table 8.3 : Percentage Distribution of Farm (Operated) Land by Farmers Category and Land Elevation in 3 Study Areas

	H	MH	M	L
Project :				
Pure Share Cropper	11.9	55.0	28.5	4.7
Marginal Farmer	9.1	30.9	45.8	14.1
Small Farmer	9.2	45.4	31.9	13.5
Medium Farmer	13.8	51.0	28.8	6.4
Large Farmer	1.5	52.7	29.2	16.7
Total	9.9	46.7	32.3	11.2
Adjacent :				
Pure Share Cropper	35.5	48.4	13.1	3.0
Marginal Farmer	11.4	34.2	45.8	8.6
Small Farmer	7.5	37.6	29.2	25.7
Medium Farmer	5.6	36.2	42.3	16.0
Large Farmer	18.4	40.4	29.9	11.3
Total	11.6	37.1	37.0	14.3
Control :				
Pure Share Cropper	26.1	45.7	24.7	3.5
Marginal Farmer	20.9	52.4	19.2	7.5
Small Farmer	12.3	43.1	37.3	7.3
Medium Farmer	22.8	21.1	48.3	7.8
Large Farmer	36.1	35.7	26.2	2.0
Total	21.9	39.8	32.3	6.0

In the adjacent and control areas, almost the same trend was observed. In the control area, the proportion of H land was reported at a moderate 22.0 percent, compared to a low 11.0 percent in the project area. By contrast, the proportion of L land was much lower than that in the project and adjacent areas.

Double cropping was the dominant pattern in all the study areas. About 71 and 61 percent of the net operated land in the Control and Adjacent areas were under two crops in 1992. In the Project area double and triple cropped areas had about the same proportions (38.5 percent). In addition, compared to the Project area, Adjacent and Control areas had smaller proportions of triple cropped area. There was almost no variation in the proportions of single cropped land in the different study areas. The highest proportion of such land was in the Project area at 23 percent and the lowest in the Control area at 20 percent.

Table 8.4 : Operated Land by Land Use in 3 Study Areas

Land Use	Study Area		
	Project A=104.3	Adjacent A=79.8	Control A=87.0
Single Cropped Area	22.8	20.3	19.9
Double Cropped Area	38.7	61.1	70.7
Triple Cropped Area	38.6	18.6	9.4

N.B. A is the net operated land in hectare.

Jute/Aus/Boro (HYV), T.Aman/B.Aman/Aman (HYV) and Mustard/Wheat/ Kheshari/Mushuri/Potato/Vegetables were produced as triple cropping pattern in the study areas. Besides, area under sugarcane was treated as triple cropped area.

In the Project area double cropping was most practised by the large farmers (58 percent), followed by medium and small farmers at 48 percent. The highest triple cropping pattern was practised by the small farmers (39 percent) and pure sharecroppers at 38 percent. Only 20 percent of the land cultivated by large farmers

Table 8.5 : Percentage Distribution of Operated Land by Farmers Categories in Different Study Areas

Farmers Category	Project		
	Single	Double	Triple
Pure Share Cropper	27.0	31.8	41.2
Marginal Farmer	30.8	36.8	32.4
Small Farmer	24.1	36.0	39.9
Medium Farmer	23.0	40.9	36.1
Large Farmer	9.1	43.8	47.1
Total	22.8	38.7	38.5

was under triple cropping. This showed that farmers with small land holding could cultivate it more effectively than those who have more land.

8.3 Cropping Intensity

In the study areas, particularly in the Project area, sugarcane was an important crop, covering about one-third of the net operated area. Therefore, considering the area under sugarcane as single cropped area, cropping intensity in the Project area would obviously be low. The first calculation confirms this. According to this method, cropping intensity was calculated at 157.7. The highest cropping intensity at 165 was for medium land and lowest (122) for high land.

Sugarcane is a perennial crop. It exists throughout the year in the field. This means that it covers all the three crop seasons : Kharif-I, Kharif-II and Rabi. Three crops are possible during the period of its existence in the field. In other words, sugarcane is equivalent to 3 crops. Because of a possible confusion cropping intensity has been calculated in three different ways. First, sugarcane has been treated as a single crop in the traditional manner. Second, cropping intensity has been calculated leaving sugarcane out. Third, sugarcane has been treated as equivalent to three crops in calculating cropping intensity.

Table 8.6 : Various Measures of Cropping Intensity by Land Elevation Project Area

Measures	High Land (H)	High Medium (HM)	Medium Land (M)	Low Land (L)	All
Traditional	121.7	156.7	165.3	147.2	154.7
Without Sugarcane	148.3	189.8	188.1	120.9	178.9
With Sugarcane	257.1	221.6	212.4	164.3	215.8

Cropping intensity without sugarcane was 179.0 percent. According to this estimate, the intensity was the highest (189.0 percent) for high medium land, followed by medium land (188.0 percent). The lowest intensity was estimated for low land at 121.0 percent.

According to the third estimate, cropping intensity was a high 216.0 percent. Higher intensities for the high and low lands were due to the inclusion of sugarcane as three crops and a relatively lower share of these two categories of land. Here cropping intensity was found to vary from 164.0 percent for low land to 257.0 percent for high land.

Besides the above estimates, cropping intensity for the Study are presented in this study assuming sugarcane as equivalent to 3 crops. Cropping intensity by land elevation is presented in table 8.7. It appears from this table that cropping intensity was the highest for the Project area, followed by Adjacent area (198

Table 8.7 : Cropping Intensity by Land Elevation in 3 Study Areas

Area	H	MH	M	L	Total
Project	257.11	221.64	212.42	164.28	215.82
Adjacent	212.85	209.85	190.77	175.35	198.24
Control	204.51	181.51	195.75	175.06	189.46

Table 8.8 : Cropping Intensity by Farmers Category

	Project	Adjacent	Control
Pure Share Cropper	214.17	176.61	190.19
Marginal Farmer	201.66	200.38	173.40
Small Farmer	215.83	189.14	198.14
Medium Farmer	213.20	206.24	198.67
Large Farmer	237.98	202.59	181.40
Total	215.82	198.24	189.48

percent) and Control area (189 percent). On the basis of data presented in Table 8.7, important conclusion can be drawn: cropping intensity in possitively linked with land elevation.

Cropping intensity by farmers category in Table 8.8 shows that in the Project area cropping intensity was the highest among large farmers (238 percent), while in the Adjacent and Control areas the intensity was the highest among medium farmers.

8.4 Cropping Pattern

As expected paddy was the most dominant crop in the study areas. Fifty percent of the gross cropped area was under paddy production in the Project area, as against a national average of about 75 percent. This low acreage in the Project area was due to the fact that sugarcane was widely cultivated. Compared to the Project area, in the Control and Adjacent areas paddy was more frequently cultivated. Thus, about two-thirds and three-fourths of the gross area were under paddy production in the Adjacent and Control areas respectively. High yielding varieties of paddy, particularly of IRRI-Boro (BRAUS), were widely used. About 29 percent of total gross area was under its cultivation and another 7 percent was under T.Aman (HYV). This means that more than one-third of the gross area was under HYV-paddy. Proportions of land under HYV paddy was more in the Adjacent and Control areas. Although the HYV was in practice in the seventies, it was started on a massive scale only in the eighties. At present, its expansion has virtually stopped and in some cases it has started to decline because of high costs associated with the cultivation of these varieties of paddy. Paddy was followed by sugarcane cultivation, where a slightly less than a quarter of gross cropped area was utilised for its cultivation, compared to a national average of only 1.4 percent in 1990-91. However, sugarcane cultivation in the Adjacent area was relatively low at 7 percent and in the Control area it was found not significant

only at 2 percent. Due to a decline in the demand for jute, its cultivation has been declining since the independence of Bangladesh. In spite of this a sizeable 8.0 percent of gross cropped area was still used for jute cultivation in the Project area. Although the production cost of jute was not covered by the price the farmer received, yet it would be cultivated in future for some obvious reasons. Oil seeds, particularly mustard seeds, were cultivated in 7 percent of gross area. Pulses (3 percent), potatoes (2.5 percent), wheat (2 percent), chilli (1.2 percent) were the other minor crops in the Project area. Vegetables were not cultivated on a large scale for commercial purposes, although vegetable production is as profitable as sugarcane (Table 8.9).

Table 8.9 : Cropping in 3 Study Areas

Crops	Project	Adjacent	Control
B. Aus	0.9	0.3	0.8
T. Aus (LV)	0.7	1.2	0.4
T. Aus (HYV)	0.1	1.1	0.2
IRRI-Boro	27.5	29.3	39.3
Mixed Aus-Aman	0.1	0.6	-
Jute	7.8	6.2	9.8
Sub-total Kharif-I	37.0	38.7	50.4
B. Aman	0.4	0.6	-
T. Aman (LV)	11.2	12.7	17.9
T. Aman (HYV)	8.3	18.7	16.6
Sub-total Kharif-II	19.9	32.1	34.4
Boro (LV)	0.1	1.0	-
Wheat	2.4	5.2	5.5
Kaon	0.5	0.7	0.8
Potato	1.6	0.9	0.2
Sweet Potato	1.0	0.1	1.0
Mustard	6.9	9.5	1.4
Til	0.5	0.4	0.4
Nut	0.3	0.3	-
Mushuri	2.1	1.1	0.1
Khesari	0.9	0.5	0.1
Onion	0.5	0.1	-
Chilli	1.1	1.2	1.8
Sub-total Rabi	18.5	21.2	12.5
Vegetables	0.9	0.9	0.7
Sugarcane	23.8	7.1	1.9
Total	100.0	100.0	100.0

8.5 Crop Yield and Crop Production

In 1992 the yield rate of paddy in the Project area was estimated at 4.01 ton/ha, against a national average of 1.61 ton/ha (1991). Even in Tangail CPP area in 1991 yield per ha was 2.9 tons. This means that the yield rate in the Sirajganj area was significantly higher than that of Bangladesh and of Tangail. This might be the result of having no flood in 1992. As a result there was a bumper production of paddy in Sirajganj, as well as in Bangladesh. Therefore, it is not unlikely that yield rate was higher in the Project area in 1992.

The second most important crop from an acreage point of view was sugarcane. Gur (molasses) is prepared from sugarcane. The yield rate of gur was 4.7 tons and that of jute (1.59 tons) was almost similar to the national average of 1.62 tons (Table 8.10). The yield rate of oilseeds was low at 0.68 tons. The rates for most of the crops in the Adjacent and Control areas were lower than those in the Project area.

Table 8.10 : Acreage and Yield Rate of Major Crops in the Project Area

Crops	Project		Adjacent		Control	
	Acreage (%)	Yield rate (ton/ha)	Acreage (%)	Yield rate (ton/ha)	Acreage (%)	Yield rate (ton/ha)
Paddy	49.2	4.01	65.6	3.78	75.1	3.78
Wheat	2.4	2.07	5.2	2.18	5.5	1.67
Potato	1.6	5.87	0.9	2.74	0.2	1.82
Pulses	3.0	0.98	1.6	1.14	0.2	0.28
Oilseeds	7.7	0.68	10.2	1.22	1.8	0.54
Sugarcane (Gur)	23.8	4.73	7.1	5.17	1.9	3.11
Jute	7.8	1.58	6.2	1.5	9.8	1.75

Variety-wise Yield Rate of Paddy

In the Project area 73 percent of the paddy producing area was utilised for HYV, and the remaining 27 percent for local varieties. In the Adjacent and Control areas the proportions used for HYV paddy were about the same at 75 percent. At the national level the situation is different with 56 percent and 44 percent for high yielding and local varieties respectively. In the Project area productivity of HYV was found more than twice the local varieties: 4.76 tons for high yielding varieties and 2.02 tons for local varieties.

Table 8.11 : Acreage and Productivity of HYV and LV of Paddy in 3 Study Areas

Paddy Variety	Project		Adjacent		Control	
	Acreage (%)	Yield rate (ton/ha)	Acreage (%)	Yield rate (ton/ha)	Acreage (%)	Yield rate (ton/ha)
HYV	72.8	4.76	74.8	4.17	74.7	4.13
LV	27.2	2.02	25.2	2.63	25.3	2.75

8.6 Crop Damage

Although the year 1992 experienced a bumper crop, yet a significant proportion of gross cropped area experienced various degrees of crop damage due to various reasons. For example, about 70 percent of the cropped acreage in the Project area was affected. Table 8.12 also shows that 'Rabi' (79.3 percent) was the most affected season, while Kharif-I (60.2 percent) was the least affected.

Table 8.12 : Damage to Gross Cropped Area by Crop Season in Project Area

Crop Season	Project
Kharif-I	60.2
Kharif-II	77.9
Rabi	79.3
Vegetables	60.0
Sugarcane	68.3
Total	69.4

Various degrees of damage to crops were reported in the affected areas. In the Project area, 32.5 percent of the area under Boro (HYV) was damaged to the extent of 11-25 percent, while 13.6 percent to the extent of 26-50 percent. In case of T.Aman, 34.7 percent and 26.3 percent of the area were mentioned to sustain a damage to the extent of 11-25 percent and 26-50 percent respectively. For sugarcane and jute, almost the same trend of

Table 8.13 : Extent of Damage of Some Major Crops in Project Area in 1992

Study Area and Major Crops	Proportion of damage to total area					
	No damage	1-10	11-25	26-50	51-75	75 +
Boro (HYV)	43.4	8.8	32.5	13.6	1.7	-
T.Aman (LV)	28.3	2.5	34.7	26.3	5.0	3.3
T.Aman (HYV)	13.2	14.3	51.6	18.3	2.5	-
Sugarcane	31.7	10.1	35.1	19.7	2.9	0.6
Jute	29.5	7.7	42.1	16.6	2.9	1.2
Mustard	1.7	5.4	39.8	29.6	12.4	11.1

damage was reported. But damage to mustard seed was colossal, where about 98 percent of the area was affected with various degrees of damage : 11 percent of the area to the extent of more than 75 percent, 12 percent to the extent of 51-75 percent, 30 percent to the extent of 26-50 percent and 40 percent to the extent of 11-25 percent (Table 8.13).

Various causes were responsible for this damage which, in this study, are grouped under 5 headings : excessive water, little water, other natural hazards, soil degradation and poor use of technology. Relevant data for the Project area are presented in Table 8.12. It appears from this table that poor use of technology (52 percent) was reported by the farmers as the main cause of Kharif-I crop damage, particularly of Boro (HYV). Lack

Table 8.14 : Causes of Crop Damage by Crop Season in the Project Area.

	Kharif-1	Kharif-2	Rabi	Vegetable	Sugar-cane
Excessive Water	**10.80**	**12.86**	**17.87**	**8.20**	**12.72**
Early rain	0.63	2.20	4.85	-	0.13
Excessive rain	4.65	0.37	12.92	8.20	1.65
Early river water	1.19	9.73	-	-	1.65
Speedy water rise	1.89	-	-	-	5.33
Excessive flood	1.14	-	-	-	1.74
Flood by BRE breach	1.30	0.56	-	-	2.22
Little Water	**12.50**	**51.23**	**21.95**	**47.58**	**23.87**
Drought	12.00	50.62	19.69	47.58	17.85
No flooding	0.50	0.61	2.26	-	6.02
Other Natural Hazards	**17.23**	**7.68**	**24.17**	**9.12**	**25.27**
Hailstorm	1.49	-	1.27	-	-
Pest attack	15.74	7.68	23.90	9.12	25.27
Soil Degradation	**7.14**	**3.65**	**2.18**	**-**	**8.07**
Water logging	1.99	-	0.99	-	-
Bad soil	5.15	3.65	1.19	-	8.07
Poor use of technology	**52.32**	**24.57**	**33.34**	**35.10**	**30.09**
Untimely sowing	-	-	6.75	-	1.35
Early harvest	0.30	0.81	-	-	5.44
Unplanned fertilizer	1.11	3.80	7.14	-	1.05
Not enough fertilizer	20.06	6.53	7.76	10.94	8.03
Bad seeds	1.02	-	-	-	-
Faulty irrigation equipment	23.55	10.01	7.89	5.93	11.24
Economic reasons	6.28	3.42	3.80	18.23	2.98

of enough fertilizer (20 percent), faulty irrigation equipment (24 percent), etc were the main reasons in this group. Pest attack (16 percent) and drought (12 percent) were also mentioned as the causes of significant damage to Kharif-I crops.

A slightly more than a half of the damage to Kharif-II crops was done by drought (50.6). Flood during plantation period (10 percent), pest attack (8 percent), lack of sufficient fertilizer (7 percent), etc were other reasons for crop damage during Kharif-II season.

Poor use of technology such as unbalanced or insufficient use fertilizer and faulty irrigation equipment were the main causes of Rabi crop failure. Other causes as mentioned by farmers were : pest attack (24 percent), drought (20 percent) and excessive rain during plantation period (13 percent).

For sugarcane, pest attack, drought, lack of sufficient fertilizer, faulty crushing machines and bad soils were reported as the main problems.

It appears from the above discussion that pest attack, drought, lack of sufficient fertilizer, faulty irrigation equipment, unplanned fertilizer use, etc were important causes of crop damage in different seasons. In light of these findings, necessary steps such as the extension of irrigation facilities, easy availability of fertilizers and pesticides, particularly during Kharif-I and Rabi seasons, arrangement of effective agriculture extension services, etc appear to be urgently undertaken under CPP.

8.7 Use of Agricultural Inputs

It has been already mentioned in the foregoing section that a significant portion of gross cropped area was under high yielding varieties. HYV is based on water-seed-fertilizer technology. As expected, use of modern inputs like fertilizer, HYV seeds, pesticides, etc. were almost universal. Thus, 99, 96 and 93 percent of farmers were reported to have used chemical fertilizer, pesticides and HYV seeds respectively (Table 8.13). ...nic fertilizer was relatively less used due to a shortage of ...ply. It may be mentioned here that cowdung, an important source for it, has declined in the areas as a result of a shortage of bovine animals. There were no marked variations in

Table 8.15 : Use of Agricultural Inputs by Farm Households in Different Study Areas

Input	Project	Adjacent	Control	All households
Organic Fertilizer	87.7	88.6	89.3	88.5
Chem. Fertilizer	100.0	98.5	99.2	99.2
HYV seeds	100.0	91.7	88.5	93.4
Pesticides	96.9	97.0	94.7	96.2

the proportions using inputs in different study areas. However, agricultural inputs seemed to have been more frequently used in the Project area.

The local market was the only reported supply-source of chemical fertilizer and pesticides in the Project area. Eighty percent of farmers had their own HYV seeds, while the remaining 20 percent obtained their supply from the local market (Table 8.16). Organic fertilizer was used mainly from their (farmers) own source. Thus, the market played a dominant role as the supply source of agricultural inputs, particularly of manufactured inputs.

Table 8.16 : Sources of Agricultural Inputs in the Project Area

Sources	Organic fertilizer	Chemical fertilizer	HYV seeds	Pesticides
Own source	94.7	-	80.0	0.8
Local market	0.9	100.0	20.0	98.4
Dealer	-	-	-	0.8
Ideal farmer	4.4	-	-	-

Agricultural inputs are to be used at the right time and in right quantity. But only 32 percent farmers in the study areas reported that they used adequate fertilizer in 1992, while the remaining 68 percent did not use it adequately. Almost all the farmers using inadequate fertilizer had mentioned 'expensive fertilizer' (64 percent) and 'inadequate supply' (2 percent) as their main reasons (Table 8.17).

Against this backdrop, efforts should be made to lower fertilizer prices by reintroducing subsidy on agricultural inputs. High input costs may also be neutralised by giving price-support to farmers.

Table 8.17 : Reasons for Non-use of Adequate Fertilizer

Use Status & Reasons	Project	Adjacent	Control	Total
Using adequate fertilizer	26.2	38.6	29.5	31.5
Using inadequate fertilizer	73.8	61.4	70.5	68.5
Reasons :				
Inadequate supply	3.1	3.0	-	2.0
Irregular supply	-	0.8	-	0.3
Costly	69.2	53.8	69.8	64.2
Harmful	-	0.8	-	0.3
Unusable	-	2.3	-	0.8
No need	0.8	0.8	-	0.5
Others	0.8	-	0.8	-

Table 8.18 : Irrigation Coverage by Crop Season in Project Area

Crop Season	Project	Adjacent	Control
Kharif-I	6.7	15.7	5.0
harif-II	21.5	31.6	11.7
Rabi	44.3	61.3	77.4
Total	24.1	36.2	31.4

8.8 Coverage of Irrigation

With the advent of HYV and modern irrigation facilities, particularly under flood-free conditions, farmers' dependence on the climate and the traditional divisions between seasons for choosing a crop have both been undergoing a transition. Year round irrigation is now possible in the study area with either ground or surface water, provided there are no breakdowns in the equipment or the supply of energy (electricity or diesel).

The extent of irrigation practised in the three seasons is shown in Table 8.18. Irrigation was practised throughout the year. The highest irrigation coverage (77.4 percent) was seen in the Control area during the Rabi season. The lowest coverage (5%) was also seen in the Control area during Kharif-I season.

Although the extremes were noted in the Control area, the average coverage was better in the Adjacent area with an annual average of 36.2 percent coverage. The Project area had the lowest annual average of 24.1 percent which is marginally higher than the national average. Besides, the spread of irrigation in the Rabi season was fairly high at 44.3 percent.

It is intersting to note that a substantial amount of irrigation was being done in the Kharif-II season, indicating large scale adoption of HYV Aman.

In the Rabi season more than 70 percent of the irrigated land was under sugarcane cultivation. Potato, wheat, chilli, sweet potato, cauliflower, cabbage, khirai, data, etc were other crops which were more or less irrigated in the Rabi season.

8.8.1 Irrigation Coverage be Land Elevation

Irrigation coverage by land elevation is shown in Table 8.17. In the Project area irrigation seemed to bear an inverse relationship with land, the range varying between 15 percent on high land and 30 percent on low lands. This pattern was, however, not wholly replicated in the other two areas. There, irrigation coverage went up steadily for the first three elevation categories, only to show a dip when it came to the lowest level.

8.8.2 Irrigation Coverage by Farmer Categories

Irrigation coverage by different farmer categories is shown in Table 8.19.

The irrigated crop land belonging to large farmers was the highest at 51 percent, while the lowest (45 percent) was seen among small farmers. This means that there were no significant variations in the proportion belonging to various categories of farmers.

Table 8.19 : Irrigation Coverage by Farmers Category in Project Area

Farmer Category	Project	Adjacent	Control
Pure sharecropper	25.6	27.1	27.9
Marginal Farmer	22.6	35.2	24.9
Small Farmer	22.6	31.5	29.7
Medium Farmer	24.4	38.6	35.1
Large Farmer	28.7	45.0	39.4
All	24.1	36.2	31.4

Irrigation coverage by land elevation (Table 8.20) shows that in the Project area land elevation and irrigation coverage was found inversely related i.e. the more the land elevation, the less was the irrigation coverage. Thus, irrigation coverage for the low land was as high as 62 percent, while for the high land, it was only 30 percent.

Generally high land was situated along the river Jamuna. Most of this land is sandy. Water retaining capacity is negligible. Therefore, irrigation is least practised. On the other hand, water retaining capacity of medium and low lands are higher; also the soil quality is better. That is why these types of land were more irrigated.

Table 8.20 : Irrigation Coverage by Elevation of Land in 3 Study Areas

Land Elevation	Project	Adjacent	Control
High Land (H)	14.6	33.1	30.9
High Medium (HM)	23.6	36.1	31.1
Medium Land (M)	25.9	39.5	32.4
Low Land (L)	29.6	30.6	29.3
Total	24.1	36.2	31.4

8.9 Mode of Irrigation

Shallow tubewells appeared to be virtually universal as the most popular mode of irrigation. Its coverage ranged from 87.3 percent in the Adjacent area to 97.3 percent in the Control area. DTWs covered 5-6 percent land in the Project and Adjancent areas and very little in the Control area. The share of indigenous technology including Cradle pumps was between 3 to 7 percent, the highest being in the Adjacent area.

Table 8.21 : Mode of Irrigation in the 3 Study Areas

	Project	Adjacent	Control
Indigenous	3.2	6.9	2.5
HTW	1.0	0.1	0.2
STW]DTW	91.1	87.3	97.3
LLP	4.7	5.6	-
Total	100.0	100.0	100.0

8.10 Yield Rate of Irrigated and Non-irrigated Crops

Irrigated areas had an advantage over non-irrigated area with respect to their productivity. For example, yield rates of T.Aman (HYV) with and without irrigation were 5.4 tons and 2.8 tons respectively. Potato, Mushuri, Onion, Brinjal, Palong Shak also showed wide variations in the yield rate between irrigated and non-irrigated areas (Table 8.22).

Table 8.22 : Yield Rate of Major Crops by Irrigated and Non-irrigated Lands in Project Area

Major Crops	Project	
	Irrigated	Non-irrigated
T.Aus (LV)	2.6	1.8
T.Aman (LV)	2.3	2.1
T.Aman (HYV)	5.4	2.8
Wheat	2.2	1.9
Potato	8.9	6.6
Mushuri	1.9	0.9
Onion	5.3	2.8
S.Potato	13.7	12.2
Brinjal	23.3	9.2
Palong Shak	6.9	3.2
Sugarcane	5.1	4.6

8.11 Reasons for Not Irrigating Farm Land

It has already been mentioned in section 8.7 that a substantial amount of land was still non-irrigated in the study areas. The reasons for non-use of irrigation facilities were analysed and presented in Table 8.23. It appears from this table that non-irrigatability emerged as the most important reason for not irrigating land. These lands were perhaps sandy or a major component was of sandy type. So that water retaining capacity of such soil was poor. Most of these lands were situated near the BRE (bank of the river Jamuna). About half of the total non-irrigated crop land was of this type in the total sample. In the Control area two-thirds of such land was not irrigated due to this reason, followed by 47 percent in the Project area. Cost of irrigation was high. Therefore 27 percent of the farmer (mostly the poor farmer) could not bear such high irrigation cost and hence did not avail of this opportunity. In the Project area the proportion of such farmers was 30 percent, followed by 28 percent in the Adjacent area. Water sources were inaccessible to about 8 percent farmers.

Table 8.23 : Reasons for not irrigating farm land in different study areas

Reasons	Project	Adjacent	Control	Total
Source inaccessible	7.0	17.9	1.1	8.1
Unwillingness of land owner	-	2.6	-	0.7
Not irrigable	47.0	35.9	66.0	50.4
Benefit enjoyed by owner	-	2.6	-	0.7
Ineffective canal	-	1.3	-	0.6
Water doesn't reach	8.0	2.6	2.1	4.4
Supply inadequate & irregular	4.0	3.8	-	2.6
Defective pump machine	-	1.3	-	0.4
Inability to buy water	30.0	28.2	23.4	27.2
Non profitable	1.0	-	4.1	0.7
No need	-	3.8	2.1	1.8
Others	3.0	-	4.3	2.6

8.12 Comments

One of the critical task to be addressed by Sirajganj CPP is to ascertain the prospects of sustainable agriculture in the region. This will hinge critically on how best one has been able to achieve the most desirable conditions for land and water to creat the base for sustainable agriculture.

As has been observed earlier in this Chapter, there is still room for enhancing irrigation. Farmer education leaves room for improvement and various experiments on environment friendly agricultural technologies would certainly be in order.

The Consultant would strongly recommended to the CPP authorities to undertake a number of action reseach projects under CPP some which are briefly discuss below.

a. An Integrated Farming System Reseach :

   A comprehensive and integrated farm combining the benefits of controlled water regimes and appropriate soil engineering should be undertaken to obtain models to be followed by oters;

b. Tissue Cylture :

   There should be experiments on the production of clonal seedlings for a variety of fruit and timber trees suitable for the region.

c. Integrated Pest Management :

   This project has often been heard about but never experimented with in a proper manner. CPP provides an opportunity of carrying out a thorough experiment.

CHAPTER 9

CROP MARKETING AND STORAGE

9.1 Introduction

The market plays an important role even in the rural areas of Bangladesh. It was mentioned in section 8.6 that farmers had to entirely depend on the market for the supply of chemical fertiliser and pesticides. For the sale of agricultural crop, again, he had to depend on the market.

In this chapter the marketable surplus of various crops in the study areas would be identified and discussed with respect to their quantity, period of marketing, average price, storage, etc.

9.2 Sale of Crops

Various agricultural crops were sold in the market by the farmers in 1992. Their average sale of crops is presented in Table 9.1. It appears from this table that sugarcane (gur), paddy, jute were the main crops sold in the market. For paddy marketing the Control area topped the list. In 1992 farmers of this area, on an average, sold 929 kg. of paddy, followed by the Adjacent area (734 kg) and Project area (447 kg).

Table 9.1 : Average Sale of Crops by Households in 3 Study Areas

Crops	Project	Adjacent	Control
		(in kg)	
Paddy	447	734	929
Wheat	17	31	41
Potato	99	21	10
Sweet potato	65	10	75
Oil seeds	29	57	7
Pulses	16	8	-
Spices	20	16	19
Vegetables	58	78	36
Sugarcane	1133	656	125
Jute	118	94	158

On the other hand, for gur (molasses) marketing, the Project area was much ahead of the Adjacent and Control areas. In 1992 the Project area was reported to sell 1133 kg of gur per household, followed by the Adjacent area (656 kg) and Control area (125 kg).

Relatively larger quantities of jute were produced in the Control area (158 kg), compared to the Project area (118 kg) and Control area (94 kg). Other marketed items were oil seeds (mustard), wheat, potato, spices, vegetables etc.

9.3 Crop Price

As is evident from Table 9.2, the prices of agricultural crops were lower in the harvesting season than those prevailing 2-3 months after harvest. Significant increases in the prices of oilseeds and spices were reported during the period of 2-3 months after the harvest.

Table 9.2 : Average Price/kg of Marketed Crops in 3 Study Areas

Crops	Project		Control	
	Harvesting time	2-3 months after harvest	Harvesting time	2-3 months after harvest
Paddy	5.37	5.78	5.46	5.51
Wheat	5.51	5.63	4.97	5.01
Potato	4.79	4.96	3.75	4.38
Sweet potato	2.05	2.05	1.75	1.07
Sugarcane	10.93	11.69	11.60	11.59
Jute	5.44	5.05	4.75	5.00
Oilseeds	13.45	14.74	10.72	14.07
Pulses	14.88	14.83	-	-
Spices	24.65	32.37	21.48	45.99

Table 9.3 : Crop Marketing by Different Farmer Strata in the 3 Study Areas

Strata	Project	Adjacent	Control
Pure Share Cropper	4.5	3.7	6.4
Marginal Farmer	10.1	22.5	13.2
Small Farmer	35.1	34.8	29.2
Medium Farmer	25.9	18.7	23.4
Large Fermer	24.5	20.4	27.9
Value of Crop Sold (000 Tk)	2,375.6	1,120.1	1,119.5

9.4 Share of the Crop Market

Table 9.3 shows the relative share of different farmer strata in the total sale of their produce either to the market or else where. The figures are percentages of total taka value of all crops sold (which is shown as the bottom line in the table).

It is interesting to note that the Small Farmer categories took the highest share of the market, combining all crops. This was true in all the 3 study areas. Their shares were 35.1, 34.9 and 29.2 respectvely for the Project, Adjacent and Control areas.

9.5 Place of Sale of the Produce

Farmers' produce can be sold either at the farm gate (ie the house of the farmer), the various primary and secondary markets

nearest to the village or at a government procurement centre. The survey revealed the predominance of the market as the chosen place to dispose of the agricultural commodities. It was estimated that about 80 percent of the sale took place in the rural markets. Another 19.5 percent of the marketable produce on average were sold from the farm gate. It is also the remaining 0.5 percent that went procurement centres.

9.6 Period of Marketing

Although there were relatively lower prices of agricultural crops in the harvesting period, farmers in most cases sold their product at harvest time. Among marketed crops, 58 percent of paddy, 80 percent of potato, 100 percent of sweet potato, 100 percent of vegetables, 74 percent of gur in the Project area were sold at harvest time. On the other hand, oil seeds and pulses were mostly stored and sold 2-3 months after the harvest (Table 9.4).

Table 9.4 : Period of Crop Sale in 3 Study Areas

Crops	Project		Adjacent		Control	
	Harvest-ing time	2-3 months after harvest	Harvest-ing time	2-3 months after harvest	Harvest-ing time	2-3 month after har
Paddy	57.6	42.4	67.3	32.7	52.3	47.7
Wheat	52.4	47.6	47.5	52.5	66.2	33.8
Potato	80.2	19.8	82.7	17.3	50.0	50.0
Sweet potato	100.0	-	100.0	-	98.0	2.0
Oil seeds	28.7	71.3	67.0	33.0	41.3	58.7
Pulses	45.0	55.0	85.2	14.8	42.4	57.6
Spices	54.8	45.2	78.6	21.4	61.4	38.6
Vegetables	100.0	-	100.0	-	97.6	2.4
Sugarcane	73.6	26.4	51.4	48.6	25.8	74.2
Jute	45.9	54.1	44.7	55.3	55.8	46.2

9.7 Storage Facilities

Various types of storage facilities were used in the study areas. These were rather traditional methods. Among these 'Doles' (bamboo made container) were used for storage of paddy by more than two-thirds of the farmers in each of the study areas. Store house (18.7 percent) and drums (6.5 percent) were the second and third most important types in the Project area. Mutcha (in-house platform) was almost universally used for the storage of jute in all the study areas. Relatively fewer number of farmers were reported to store potato. For this purpose, they used 'mutcha', open floor and kola (earthern container) in the Project area (Table 9.4). No one was reported to have used modern storage method.

Table 9.5 : Type of Storage Used for Different Crops in Study Areas

Storage Type	Project			Adjacent			Control		
	Paddy	Jute	Potato	Paddy	Jute	Potato	Paddy	Jute	Potato
Store house	18.7	-	2.3	18.0	1.6	4.3	20.1	-	5.0
Dole	72.4	-	-	72.1	3.1	2.2	72.1	-	-
Mutcha	-	96.5	58.1	0.8	87.5	34.8	0.8	96.5	35.0
Drum	6.5	1.2	9.3	1.6	-	6.5	6.2	1.5	30.0
Jute bag	1.6	-	-	1.6	1.6	2.2	-	-	10.0
Floor	0.8	-	18.6	4.9	-	32.6	-	-	5.0
Kola	0.8	-	-	0.8	3.1	10.9	0.8	-	5.0
Ceiling	-	2.4	11.6	-	3.1	6.5	-	2.4	10.0

Problems of Crop Storage

In the study areas, rodent damage was reported as the predominant cause of damage to or loss of stored paddy and jute. Nine out of ten farmers had mentioned this problem in respect of the storage of paddy and six out of ten farmers for jute. The second most important problem was pest attack. About

Table 9.6 : Storage Problems for Different Crops in Different Study Areas

Problems	Project			Adjacent			Control		
	Wheat	Jute	Oilseed	Wheat	Jute	Oilseed	Wheat	Jute	Oilseed
Rodent damage	88.4	62.3	26.3	89.8	62.9	40.0	90.7	59.2	23.5
Pest attack	9.9	24.7	57.9	10.2	29.0	53.3	6.2	36.8	76.5
Flood damage	0.8	1.3	7.9	-	6.4	3.3	3.1	3.9	-
Others	0.8	10.4	7.9	-	1.6	3.3	-	-	-

10 and 25 percent farmers in the Project area reported this problem in the storage of paddy and jute respectively. By contrast, for oilseed storage, pest attack was the most serious problem followed by rodent damage the second most problem. About 60 and 26 percent farmers in the Project area mentioned pest attack and rodent damage respectively as their main problems in oilseeds storage.

9.9 Comments

One of the most remarkable changes that has taken place in the field of agriculture during the last two decades or so is the stabilisation of the prices of foodgrains.

There was a time when marginal farmers and poor share croppers would be forced to sell a substantial part of their produce in the market on account of their overall lack of staying power. This had the adverse impact of depressing commodity prices at post harvest times only to bounce back a few months time when the

poor farmers would be forced to buy back at a higher price what he had earlier sold at a lower price. This price fluctuation not only drained his megre resources but also gave rise to an opportunities for hoarders to cash in on the misery of the marginal farmers and landless workers.

Behind this phenomenon of price stabilisation there are a number of factors. First of all, increased productivity and consequential enhancement of the staying power of the poor and marginal farmer is a help. Next, with the advent of irrigation and HYV, crop production goes on around the year. So the traditionally observed seasonal gaps in food availability has been substantially bridged. Third, the markets have developed to a large extent with improvements in road communication and better storage facilities compared to before.

All in all, agriculture is a sector that seems to have come of age in areas where irrigation has been introduced.

The danger, however, lies somewhere else. There is hardly any systematic monitoring of the land quality, which according to some experts, has been declining rather alarmingly.

CHAPTER 10

PROFESSIONAL FISHERMAN

10.1 Introduction

In Bangladesh the term professional fisherman has traditionally referred to a category of people, usually a special sect of the Hindu community who have for generations been capturing fish in the open water bodies of the country. They learn their skills from their forefathers and pass it on to their sons. A boat and a net are essential tools in their trade. The professional fisherman usually live in small communities, either separated from or as a part of a larger village or Mauza in the proximity of a river, a canal or the sea. Inland fishermen usually operate in the rivers, canals and beels throughout the year, while they also join the crowd in flood plain fishing during the monsoon.

Since open water bodies are where they carry on their activities, these fishermen are one of the worst sufferers in the event of a drastic change in the water environment of a place. Such a situation is usually be brought about by an embankment that does not pay special attention to the conditions required for capture fishing in the protected area or in areas surrounding it.

Table 10.1 : Assets of Fishermen in 3 Study Areas

	(% households owning)			
Assets	Project	Adjacent	Control	Total
GENERAL :				
House	98.1	100.0	94.7	97.6
Boat	90.9	67.3	19.3	58.7
NETS :				
Bhesal	94.5	70.9	7.0	56.7
Ber	94.5	94.5	45.6	77.8
Dhole	92.7	90.9	3.5	61.6
Current	90.9	70.2	9.1	90.9
Koi	90.9	5.4	7.0	34.1
Jhanki	96.4	100.0	63.2	86.2
Dharma	90.6	67.3	5.3	53.9
Thela	92.7	78.2	28.0	92.7
Other nets	94.5	92.7	14.0	66.5
TRAPS ETC :				
Bana	92.7	49.1	12.3	50.9
Doair	90.9	49.1	10.6	49.7
Polo	90.9	49.1	8.8	49.1
Borshi	90.9	49.1	15.8	51.5
Other traps	90.9	100.0	1.8	63.5

10.2 Socio-economic Profile of a Professional Fisherman

A typical fisherman in the 3 study areas of this Survey would be a married male in his early 40s, with a household size of five plus members. There is 85 percent probability that he would be illiterate and a 30% likelihood that he had married a child bride, experienced a child mortality of 1 in 5, with a 43% chance that his wife is currently practising family planning.

Table 10.2 : Occupational Spread within the Fisherman's Profession

Fisherman categories	Project	Adjacent	Control	Total
Mainly manager	5.6	1.9	3.5	3.6
Fish worker	27.8	31.5	43.9	34.5
Fish share-labourer	27.8	24.1	21.1	24.2
Fish labourer	7.4	1.9	-	3.0
Fish Trader	16.7	31.5	29.8	26.1
Others (Trade)	14.8	9.3	1.8	8.5

10.2.1 Assets of Fishermen

Table 10.1 gives a detailed picture of percentages of households possessing various important assets which are necessary for their professional activities. There appears to be a systematic under-reporting of assets in the Control area, unless there are special reasons, such as facilities to borrow nets etc from a cooperative society. Barring this, the position of fishermen households in terms of possession of assets appear to be generally satisfactory.

The fishermen in the Project area appeared to be in a particularly comfortable position, over 90% possessing both a boat and all varieties of nets. This list also includes current nets, the use of which is detrimental to the fish population.

10.2.2 Income and Expenditure of Fishermen

The size and structure of cash income and cash expenditure of an average fisherman household are shown in Tables 6.2A and 6.2B. Average annual cash expenditure per household exceeds the annual cash income. This was because fishery income was excluded. In fact the approximate difference (16,500 - 9,700) = 6,800 takas is substantially exceeded by fishery income, ie by capture fishery in the open waters. Section 10.4.4 below shows that the 167 fisherman households reported an annual sale of captured fish to the tune of 25 lac takas which works out to an average annual income of approximately 15,000 takas. This is more than enough to offset the deficit cash balance shown in Tables 6.3A and 6.3B and leave a cash surplus of about 8000 takas in the hands of the average professional fisherman.

Table 10.3 : Occupational Diversity of Traditional Fishermen

Main Occupation	Secondary Occupation						
	Farmer	Agri. labour	Crafts	Fisher-man	Trader	Others	NSO*
Project							
Fisherman	**7.3**	**3.6**	**1.8**	**25.5**	**0.6**	**3.0**	**58.2**
Manager	33.3	-	-	33.3	16.7	-	16.7
Worker	7.0	7.0	3.5	17.5	-	3.5	61.4
Labourer	2.2	2.2	2.2	22.2	-	2.2	68.9
Traders	7.0	2.3	-	41.9	-	-	48.8
Others	14.3	-	-	14.3	-	14.3	57.1
Adjacent							
Fisherman	**11.1**	**3.7**	**-**	**40.7**	**-**	**1.9**	**42.6**
Manager	-	-	-	100.0	-	-	-
Worker	17.6	5.9	-	41.2	-	-	35.3
Labourer	-	-	-	21.4	-	-	78.6
Trader	11.8	5.9	-	58.8	-	-	23.5
Others	20.0	-	-	20.0	-	20.0	40.0
Control							
Fisherman	**3.5**	**7.0**	**1.8**	**19.3**	**-**	**1.8**	**66.7**
Manager	-	-	-	50.0	-	-	50.0
Worker	-	12.0	4.0	4.0	-	-	80.0
Labourer	8.3	8.3	-	25.0	-	8.3	50.0
Trader	5.9	-	-	35.3	-	-	58.8
Others	-	-	-	-	-	-	100.0

* NSO = No secondary occupation

The expenditure on cereals is highest amongst compared to the other 3 household categories. The expenditure on fish/meat is the lowest, as expected.

10.3 Occupation Diversity of Fishermen

10.3.1 Diversity within the profession

Although it may sound strange and a contradiction in terms, not all fishermen do fishing. For instance, the fish traders, as also those who mostly employ other fishermen after having retired or 'graduated' from active fishery into fishery management. To capture this diversity within the fisherman community five different categories of fishermen were included in the occupational structure. The distribution of the surveyed fishermen household heads among these five categories is shown in

Table 10.1. It may be noted that participation in fishing is not 100 percent. A better measure of diversity however is provided by the spread of a secondary occupation into other territories which characterises an agrarian society. Table 10.1 shows both dimensions of diversity. Although the community itself has a fair spread among the five principal categories of their own profession, there was hardly any noteworthy tendency towards a second profession among these fishermen. Only 41 percent said they had a second profession and among them a big chunk said the secondary occupation was another category of fisherman.

10.3.2 Participation in Capture and Culture fishing by fishermen

Overall, capture fishery ranged between 80-90 percent. Culture fishery on the other hand, hardly existed among the professional fishermen surveyed. The rates are shown in Table 10.4.

Table 10.4 : Incidence of Capture and Culture Fishery Among the Fisherman Households in the 3 Study Areas

		Project	Adjacent	Control	Total
Open water only	(#)	44	41	48	133
Pond culture only	(#)	1	1	2	4
Both	(#)	-	4	-	4
Total	(#)	45	46	50	141
Incidence rate :					
o fishing	(%)	81.8	83.6	90.9	84.4
o capture	(%)	81.8	74.5	90.9	83.0
o culture	(%)	2.2	10.7	4.0	5.7

10.4 Capture Fishery

The main findings on capture fishery are highlighted below.

Table 10.5 : Fisherman's Fishing Grounds and their Location in Relation to Project Area

Grounds	Importance %	Location* Inside	Outside
Rivers	57.8	53.4	46.6
Canal	8.7	95.0	5.0
Beels	12.2	82.1	17.9
Floodplains	8.3	78.9	31.6
Borrow pit	3.0	100.0	-
Derelict pond	6.5	100.0	100.0
Baeed/ditch	2.2	80.0	20.0
Others	1.3	100.0	-

* based on use frequency.

10.4.1 The Fishing Grounds and Leasing Arrangements

The fishing grounds, typically a river, a canal or a beel, are shown in Table 10.5 in respect of their popularity within the Project Area. As expected rivers were the most important fishing grounds (58%) followed by Beels (12%), way behind.

The table also shows the proportions of fishermen going to fishing grounds outside of the Project area. While the rivers appeared to be evenly divided between the inside and the outside of the Project, canals, Beels and flood plains used by the fishermen were mostly inside. The borrow pits, derelict ponds and other small waterbodies were entirely inside.

Table 10.6 : Fishermen's Leasing Arrangement over Fishing Grounds in the Survey Area.

Type of Lease		Period of Arrangement				
		Monsoon	Yearly	2-3 Yrs	Not Fixed	N.A.
Leased by Society	65	3	55	1	6	-
Direct private lease	11	1	3	1	6	-
Sub-lease	10	1	8	1	-	-
Paying water tax	21	5	14	1	1	-
Contractual	2	-	-	2	-	-
Lease free (ie common property)	5	-	-	-	-	5
Total	114	10	80	6	13	5

The leasing arrangements pertaining to the fishing grounds used by the fishermen are shown in Table 10.6. The most prevalent

Table 10.7 : Peak Fishing Periods for Some Important Fishing Grounds

Months	Rivers	Canals	Beels	Derelict Ponds
Baisakh	18	-	8	18
Jaistha	21	6	4	9
Ashar	38	18	12	18
Sravana	34	24	20	18
Bhadra	43	29	16	9
Aswin	57	29	32	9
Kartik	60	29	64	55
Agrahayan	28	24	52	64
Poush	8	41	56	55
Magh	13	18	20	9
Falgun	13	18	20	9
Chaitra	3	12	4	-

N.B. The above % frequencies of mention for each category.

lease was through a society and the most typical period of lease was annual. This typically leads to the usual lack of incentive to invest on or care for the water body used, as manifested by over fishing, for example.

10.4.2 Periods and Species of Fish Catch

The most frequently used months for fishing in different water bodies (ie fishing grounds) are shown in Table 10.7. It shows a fairly long spread but a distinct peak of about 3 months for all the water bodies except canals. The peak months of fishing for the rivers were Sravana - Aswin and for the Beels and derelict ponds Aswin - Agrahayan.

Table 10.8 : Types of Nets Used in Capture Fishery

Types of Nets	Rivers	Canals	Beels	Derelict Ponds
Bhesal	59	15	9	12
Ber	58	7	14	10
Dhol	67	-	33	-
Current	50	-	-	50
Koi jal	43	-	-	57
Jhanki	51	5	18	7
Dharma	100	-	-	-
Thela (drag)	55	-	5	15
Moi (ladder)	77	-	11	3
Harhari	94	-	6	-
Kathi	88	-	-	-
Others	100	-	-	-

Note : The figures are percentages of fishermen using the nets.

10.4.3 Boats and Nets Used

Both boats and nets are essential tools of production in capture fishery. The various types of nets used for different fishing grounds are shown in Table 10.8. A lot more nets were reported to be used in the rivers than on other fishing grounds, but it may also reflect a reporting fatigue on the part of the respondents.

10.4.4 Fish Catch : Days, Volume and Sales Value

The relative importance of the different fishing grounds in respect of their contribution to employment (catch days), production and income to the fishermen and the community/country can be assessed from Tables 10.9A and 10.9B. The rivers

Table 10.9A : Fish Catch : Days Volume and Sale Value in 3 Survey Areas

	Project	Adjacent	Control	Total
Days of fish catch	11,114	8,862	9,670	29,646
Volume of fish (kg)	38,719	14,275	21,113	74,107
Sale value (000 takas)	1,457.9	375.7	667.5	2,501.1

undoubtedly are the main resource for the fisheries sector in terms of total capture, followed by canals, derelict ponds and Beels, in that order.

Table 10.9B : Fish Catch : Days, Volume and Value by Fishing Grounds

Fishing Ground	Days	(total) Volume	Value
Rivers	21,441	50,851	15,36,910
Canals	1,415	12,480	6,09,050
Beels	2,128	3,041	90,000
Floodplains	1,890	2,848	88,000
Borrow pits	840	859	32,000
Derelict ponds	1,467	3,201	1,04,000
Bayed	235	415	15,700
Others	230	412	24,800
Total	29,646	74,107	25,01,110

N.B : The totals are shown for better comparison. There may have been an understatement (missing values) in the number of days in the above table. So, per day catch appears to be on the high side in canals.

10.5 Problems in Open Water Fishery

A. Findings

- All fishermen households tacitly agreed that there has been a decline in open water fishery, both in terms of fishing grounds as well as the size and quantity of fishes in available water bodies.

- The decrease of nursing grounds for the juveniles is pointed out as the most important reason for fisheries decline (48%).

- Other reasons cited are mainly the indiscriminate capture of brood fishes (15%) and very small fishes (14%), and the prevalence of fish diseases (15%).

- Fishermen's perception on the shrinkage of fishing grounds pointed overwhelmingly towards siltation of rivers and Beels (95%) as 'the cause'. Only a small fraction mentioned embankments as the reason. But then dams and embankment are associated with siltation of Beels and river beds.

- The poor fishermen inevitably faces problems in respect of leasing. It comes both from local influential people as well as functionaries involved with the process.

- Fishery extension services were reported as rarely

received (4%).

- Marketing was problematic for a significant (17%) proportion of fishermen, although not cited as a major problem.

- Reduction in biodiversity : if it is defined as a decline in the number of species which used to exist in the natural habitats of the area before, then biodiversity has been shrinking most in respect of the following fish species :

fishes reported as 'rare'	Importance Index
Pabda	26
Shor Punti	18
Pangash	17
Rui, Chital	11
Catla, Kaula	10
Hilsa, Batashi	8

- Fish epidemic was reported to be high in 1988 and 1989, and gradually declined between 1990 and 1992, but still remained quite high.

- About half the households surveyed believed that fishermen of the area have been leaving their profession or location to survive the decline in fisheries. There was however no accurate estimate of the numbers involved.

Another reason for this migration is an increasing competition from intruders into the profession, primarily from the Muslim community.

10.6 Recommendations for Improving Fisheries

A. Findings

The fishermen interviewed made several important recommendations, placed below in a descending order of priority :

- Release of adequate quantities of fingerlings in open water bodies (29%).
- Allowing flood waters in for short periods (27%).
- Massive reexcavation of rivers (13%).
- Adequate credit for the fishermen (13%)
- Effective control on the use of 'current nets' (9%).

B. Comments

- The annual catch from capture fishery in the Sirajganj area was high compared to that of Tangali CPP area, but is not very high compared to culture fishery in intensive or semi-intensive form. For example, farmers in some low

lying areas of Gazipur district are reported to be producing nearly Tk. 42,000 worth of fishes per acre in the span of six months in the monsoon while reverting back to paddy production in the dry season.

- The implied average price of 31 takas per kg was very reasonable compared to prices prevailing in North-West Bangladesh. For Example, Joysagar Fish Farm, about 20 miles away, sold carps for 20-25 takas per kg in Chandaikona market.

- Release of fingerlings for the fish stock in open water bodies, as practised by various agencies/bodies recently, has been criticised by some experts as inadequately conceived. The experiences of past action need to be properly assessed/reviewed to formulate a strategy of improving stocks in natural waters. One particular point made by the experts is that fingerlings have to be of an adequate size before releasing them in the open waters. Its economics also need to be analysed.

- Captive breeding is a well accepted technique for improving biodiversity. While hatchery technology has by now been well spread in Bangladesh in respect of the traditional and exotic Carps and the Magur variety of Cat fish,local hatching of Pangash and Shor Punti and a few other popular species of fishes which are getting rare, need to receive urgent attention. The CPP area in Sirajganj may be suitable for trying out a hatchery on Pangash, which is reported as fast declining in the area and is one that will have a ready market in this country.

- Further recommendations having implications for fishery resources of the area are in Chapter 14.

10.7 The Future of the Professional Fisherman and CPP

Will the traditional fisherman gradually disappear ?

This is a most tricky question charged with a lot of emotion. There is a great deal of romanticism about some traditional professions in this sub-continent. When modernisation and the inexorable demand of time for greater efficiency in the production of goods and services erode these traditional profession and threaten them with eventual extinction a great hue and cry is raised, but eventually the battle is usually lost. This happened to the Palkiwallas in India, the rickshaw-pullers in Hongkong and the Kochwans of Dhaka. More recently it happened to the Dhenkiwalis of Bangladesh. The only way to fight against this is to make a timely transition in the traditional professions by the professional through the achievement of higher efficiency by innovating and adopting new technologies. To an extent this has been done by the Sari weavers of Tangail and Pabna, and the Jamdani weavers of Demra.

The consultants urge that the plight of the professional fisherman in CPP Sirajganj be given serious attention in respect of technological improvement, as also in planning for an improved water environment to provide an ideal habitat for the fishes. This point is further discussed under Chapter 14.

CHAPTER 11

URBAN POPULATION

11.1 Background

Urbanisation is both a manifestation of economic development as well as a potential contributor to environmental degradation and human hardships. Poor countries with a high rate of population growth usually end up having an unbearable growth of urban concentration giving rise to megacities with poor facilities. This stresses the resources of the country to the limit and causes serious hardships.

One possible solution to the problem of urban concentration in a few big cities is to decentralise the growth of urbanisation by creating small townships and district towns with adequate urban facilities. The potential for urban growth in Sirajganj has to be seen in that light.

Sirajganj town was once a thriving Subdivisional HQ during the British period when it was an important riverport and handled the Calcutta-Assam railway traffic. Although the town has assumed increasing administrative importance by becoming a district HQ during the last decade, it has undergone an economic and physical decline under the threat of erosion by the Jamuna river and the periodic floods caused by breaches in the BRE. There has been a degree of depopulation of the town both from a physical reduction of the town's land area by river engulfment as well as outmigration of the elites and entrepreneurs to Dhaka stemming from a long term insecurity surrounding the township's future. The future of the township hangs critically on the success of the riverbank protection scheme and the Jamuna Bridge project, which will also involve river training.

In this chapter, some comparisons are made between the households in the three study areas which were surveyed under the urban component of the Household Survey. It needs to be pointed out that there was no well defined urban centre in the Adjacent area, and some Bazaar areas with only very rudimentary characteristics of urbanism, were selected on the basis of advice from the sociologists in FAP-20 team. The urban centre in the Control area, namely Kazipur Thana HQ will also not be strictly comparable to Sirajganj District HQ for evaluation purpose with the future.

11.2 Some Economic-demographic Characteristics of the 3 Urban Areas in the Sirajganj

Urbanisation begins with the severence of land based links with the rural area, which shows through in the structure of assets and income eventually. It also shows through in demographic characteristics of reduced fertility, hence a lower dependency ratio, higher child survival etc.

The Tables 11.1 and 11.2 give a picture of the characteristics of urban households in Sirajganj town located in the Project area both in terms of demographic variables as well as land.

Table 11.1 : Some Characteristics of Urban Households in the Project Area

Variables	Project
Household size	5.5
Sex Ratio (100 M/F)	102.8
Dependency Ratio (demographic)	71.8
Literacy Rate :	32.4
Male	38.6
Female	25.5
Age at first marriage (female)	14.7
Life time experience of Child mortality	23.9

As expected, household ownership of urban land was very small. A quarter of the households in the Project area was reported to own no land and another 72.0 percent owned 1 - 50 dec. Average size was estimated at about 0.1 ha. This land was situated in urban as well as in rural areas.

Table 11.2 : Land Owned by Urban Households in Project Area

Area (Dec)	Project
0	25.0
1 - 50	71.9
51 - 100	1.6
101 - 200	0.6
201 - 300	0.2
301 - 400	0.2
400+	0.5
Mean (ha)	0.096

Table 11.3A : General Assets of Urban Households Mentioned by Male Respondents in the 3 Study Areas

	Project		Adjacent		Control	
	%	Mean	%	Mean	%	Mean
House	96.4	2.0	87.3	2.4	98.2	3.0
Shop	25.5	1.0	1.8	2.0	25.5	1.1
Cycle	34.5	1.1	34.5	1.2	36.4	1.1
Van	-	-	-	-	9.1	1.2
Motor byke	5.5	1.0	-	-	7.3	1.0
Tube-well	63.6	1.3	50.1	1.0	70.9	1.0
Cash in hand	50.9	1564.1	52.7	1905.2	40.0	1047.7
Bank balance	30.9	16924.7	20.0	3245.5	21.8	13873.2

11.3 Asset Structure

The asset structures of the urban households in the 3 survey areas are presented in Tables 11.1A and 11.1B. The first table based on the male questionnaire shows the differences between the areas in terms of ownership of shops, motor bykes and the ratio of cash in hand and in the bank.

The Adjacent area showed obvious rural tendencies: no ships or motorbykes, more money in cash than in the bank, etc This was further accentuated in respect of household furniture and other durable assets such as radio, TV, other electrical appliances. TV ownership showed a remarkably high rate (33%) in the Project area

Table 11.3B : Household Assets Mentioned by Female Respondents in the 3 Study Areas : Urban Households

	Project		Adjacent		Control	
Assets	% h'h owning	av #	% h'h owning	av #	% h'h owning	av #
Furniture :						
Khat	50.9	2.6	16.4	1.7	47.3	2.0
Chouki	80.0	1.9	76.4	2.0	92.7	2.0
Table	85.5	2.4	43.6	1.8	74.5	2.3
Chair	92.7	4.0	52.7	2.6	81.8	4.1
Almira	40.0	1.9	14.5	1.4	38.2	1.3
Radio	41.8	1.0	21.8	1.0	38.2	1.0
TV	32.7	1.0	1.8	1.0	16.4	1.0
Tape	7.3	1.0	3.6	1.0	16.4	1.0
VCP	1.8	1.0	-	-	5.5	1.0
Fan	3.6	2.0	12.7	1.1	29.1	1.8
Watch	70.9	2.0	34.5	1.4	58.2	2.3
Torch	38.2	1.0	32.7	1.2	49.1	1.1
Dheki	14.5	1.0	45.5	1.0	30.9	1.0
Janta	3.6	1.0	2.0	1.3	18.2	1.0

and a significant rate (16%) in the Control area. One can clearly see also that Khat replaced the Chouki gradually in the urban area. The Dhenki appear to be lingering on in the Project area though on a diminishing scale compared to the Control and the Adjacent areas.

11.4 Housing Pattern

In the Project area 84.3 percent of the urban households were reported to live in their own house, while the remaining 15.7 percent lived in rented houses.

The average number of rooms in one's own house was estimated as 2.1 and in the rented house as 1.4. About three-fourths of the owned houses were kutcha, while 23 percent and 4 percent were semi-pucca and pucca respectively. One half of the rented houses

was semi-pucca, while 39 percent and 11 percent were kutcha and pucca respectively.

Both in the owned and rented houses, the average number of rooms was found to increase with an improvement in the housing conditions. In the kutcha houses, the number of rooms per household was 1.6, while in the semi-pucca and pucca houses there were 3.2 and 4.6 rooms respectively. A similar trend was observed in case of rented houses.

11.5 Municipal Facilities

The only urban area with municipal facilities worth its name was in Sirajganj town. And that too was not very adequate in the opinion of respondents surveyed from this area. Table 11.2 presents a summary of their views in terms of facilities they considered essential but found lacking, and also their demand in order of priority.

Table 11.4 : Urban Facilities Found Lacking in the Project Area

	(% HH)	
	Services found lacking	Facilities demanded
Water supply	32.7	16.4
Sewerage	14.5	9.1
Draiange etc	21.8	9.1
Electricity	23.6	16.4
Gas	23.6	12.7
Telephone facilities	14.5	-
Road building : general	14.5	27.3
Road maintenance	-	20.0
Street light	5.4	1.8

CHAPTER 12

WOMEN

12.1 Background

Women constitute about 49.0 percent of the total population in the Project area. They take part in various income generating, expenditure saving and reproductive activities. Their working day is sufficiently longer than that of man. In spite of these, in a male dominated society she is not an 'equal partner' in family life. She is the one to make sacrifices in terms of consumption. On the other hand, in any important development programme of the country women's participation is essential. For this she should be imparted education and given employment outside home. Her opinion on different family matters must be considered before taking any family decision. In this respect, the traditional idea of keeping women isolated is breaking. Therefore, women must face the challenge to be the real equal partner in various socio-economic processes around them. This chapter pinpoints the position of women in the study areas.

12.2 Age at first marriage

Traditionally in rural Bangladesh, girls are given in marriage at an early age. This study area was no exception. Here mean age at first marriage of the wife of a household head was found slightly higher than 14 years in all the three study areas. The highest mean age at marriage (14.7 years) was estimated for the women of non-farm and urban categories of household, while the lowest (13.0 years) for the fisherman categories in Project as well as in Adjacent areas (Table 12.1).

National data on mean age at first marriage is significantly higher at 18.1 years as per the population Census of 1991. It may be mentioned here that the national (BBS) figure varies appreciably with that of many other surveys like BFS, CPS, etc. On the other hand, our result is very much similar to of these surveys. Mean age at marriage of the wife in the 3 study areas was significantly lower than the legal age at marriage (18.0 years).

Table 12.1 : Mean Age at First Marriage of the Wives of Households by Family Background in 3 Study Areas

Study area	Farm	Non-farm	Fisherman	Urban	All h'h
Project	14.3	14.7	13.0	14.7	14.3
Adjacent	14.3	14.7	13.0	14.7	14.3

Table 12.2 : Age at First Marriage by Family Background in 2 Study Areas

Categories of household	Project			Adjacent		
	Upto 10 yrs	11-15	15+	Upto 10 yrs	11-15	15+
Farm	8.4	55.8	35.8	12.9	52.2	34.9
Non-farm	9.0	50.4	40.6	10.6	50.7	38.7
Fisherman	12.7	50.9	36.4	27.3	58.2	14.7
Urban	5.5	50.9	43.6	9.1	47.3	43.6
All h'h	8.8	52.5	38.7	13.6	51.9	34.5

Table 12.2 shows the frequency distribution of age at first marriage of the wives of the household heads. A slightly more than 50.0 percent of the women under consideration were given in marriage at 11-15 years, while less than 40.0 percent at 16 years or above. Even 9.0 to 10.0 percent women in the Project area, 13.6 percent in Adjacent area got married at a very early age, at 10 years or below. Women from the fisherman community, both in the Project and Adjacent areas were given in marriage at relatively earlier ages. For example, about 13 percent were given in marriage from this community at 10 years or below. On the other hand, relatively more urban girls got married at 16 years or above.

12.3 Problems of Co-wife, Dowry and Divorce/Separation

12.3.1 Co-wife

The incidence of household head, practising polygamy i.e., having more than one wives at a time, is insignificant particularly in the Project area, ranging from 1.5 percent to 3.8 percent. However, in the Adjacent area 5.1 percent of the household heads had a co-wife in the household. The highest incidence of polygamy (7.3 percent) was found in the urban household, followed by farm households (6.1 percent). Polygamy was least practised by the fisherman community (1.8 percent).

Table 12.3 : Percentage Distribution of Respondents by Co-wife in Different Study Areas.

Study area	Farm	Non-farm	Fisherman	Urban	All h'h
Project	1.5	3.8	3.6	1.8	2.7
Adjacent	6.1	4.6	1.8	7.3	5.1

12.3.2 Dowry

Dowry prevailed widely in the study areas. It was given for about half of the female respondents at their marriage. Table 12.4 also reveals that the incidence of dowry among the farm households was

the least at 43.5 percent and 35.6 percent percent respective in the Project and Adjacent areas. By contrast, dowry was most practised by the fisherman community (60.0 percent) in the Adjacent area and by the urban dwellers (56.4 percent) in the Project area. High incidence of dowry among the fisherman community is due to the fact that most of them are Hindus. Hindu girls have no right on their fathers' property. That is why their fathers try to provide dowry in cash or kind or both as much as possible at their marriage.

Table 12.4 : Percentage Distribution of Female Respondents Under Different Household Categories Incidence of Dowry.

Area	Farm	Non-farm	Fisherman	Urban	Total
Project	43.5	53.8	47.3	56.4	49.5
Adjacent	35.6	47.0	60.0	47.3	44.9

12.3.3 Divorce/Separation

Loss of a spouses among the males was virtually absent in the Project areas. Only 2 out of 722 male members above 14 years of age were widower. By contrast, 14.9 percent of the female members were widow. This proportion in the Adjacent area was 7.8 percent. Among male members there was no report of divorce, separation and abandonment. But a low 0.3 percent of female members above 14 years or above were either divorced or separated and another 0.5 percent were abandoned by their husbands.

Table 12.5 : Incidence of Widowhood and Divorce/Separation Among Women Over 14 Years and Above in Different Study Areas

Area	Farm	Non-farm	Fisherman	Urban	All HH
Project :					
Widow	17.7	16.5	10.8	8.8	14.9
Divorced/ Separation	-	0.6	-	2.1	0.3
Abandonment	1.0	-	-	0.9	0.5

12.4 Women's Right to Parental Property

Although women have a right to parental property, this right can rarely be enforced. Various artificial hedges are created on the way to achieving this right. Data on this information is presented in table 12.5.

Table 12.6 : Percentage Distribution of Female Respondents Belonging to Different Household Categories by Their Right to Parental Property

Study area	Farm	Non-farm	Fisherman	Urban	All h'h
Project					
Deprived	3.8	9.1	1.8	3.6	
Not in practice	0.8	4.5	70.9	10.9	
Unwilling to take	38.6	28.8	1.8	32.7	
Not matured	30.3	18.9	1.8	23.6	
Father in landless	15.9	20.0	23.6	18.2	
Received property	10.6	10.6	-	10.9	
Adjacent					
Deprived	4.6	2.3	5.4	9.1	4.5
Not in practice	3.8	9.1	69.1	14.4	16.8
Unwilling to take	36.4	29.6	3.6	18.2	26.5
Not matured	24.2	19.7	1.8	14.6	17.9
Father in landless	17.4	28.0	18.2	27.3	22.7
Received property	13.6	11.4	1.8	16.4	11.5

12.5 Role of Women in Family Management

In a male dominated society like ours, female members can not play their due role. From various studies, it appears that this tradition is breaking up. In this study role of women in family management is explained with respect to three variables : women's opinion on children education and their career build up and also on family maintenance.

12.5.1 Female Opinion on Children Education

Children education is a most important family function in any society. Decisions about children education is to be taken after due consideration to the opinion of women. To a question whether respondents' opinion is considered regarding children's education, a predominant proportion of female respondents reported that their opinion was considered. There were no significant variations in this proportion among different study areas. However, slight gaps were reported regarding education among boys and girls. In the Project area, the proportion was the highest (87.9 percent for boys and 85.6 percent for girls) in the farm household, while lowest (61.8 percent for boys and 56.4 for girls among the fisherman community (Table 12.7).

Table 12.7 : Percentage Distribution of Female Respondents Under Different Household Categories by Whether Their Opinion on Children Education were Considered.

Area	Farm		Non-farm		Fisherman		Urban		All h'h	
	Son	Daughter	Son	Daughter	Son	Daughter	Son	Daughter	Son	Daughter
Adjacent	82.6	83.3	84.1	84.1	56.4	41.8	83.6	78.2	79.4	76.7
Project	87.9	85.6	86.4	83.3	61.8	56.4	81.8	78.2	82.6	79.4

12.5.2 Plan of Future Career Build Up for Children

Children's career is another issue, where disparity between boys and girls exists. In the Project area, about 20 percent female respondents reported that they had neither any plan nor any ability for boys' career build up; such proportion in case of girls' career rose to about 30 percent. On the other hand, 22 percent had expressed to do as much as possible for the boys. This proportion for the girls declined to about 9 percent. Farmers community was less concerned about girl's career, while the urban community was more concerned (Table 12.8).

Table 12.8 : Percentage Distribution of Female Respondents Under Different Household Categories by Whether Their Opinion on Children Education were Considered.

Area	Farm		Non-farm		Fisherman		Urban		All h'h	
	Son	Daughter	Son	Daughter	Son	Daughter	Son	Daughter	Son	Daughter
Project:										
Not applicable	2.2	1.5	4.8	4.8	7.0	20.9	5.6	3.6	4.3	5.6
No Plan	2.2	3.2	10.7	8.3	30.2	27.9	3.6	5.6	9.6	8.8
Inability	10.9	28.7	16.7	40.5	4.7	14.0	5.6	14.5	11.2	28.6
Minimum Education	54.3	60.9	48.8	41.7	51.2	34.9	58.2	49.0	52.7	48.4
As affordable as possible	30.4	5.7	19.0	4.8	7.0	2.3	27.2	27.2	22.2	8.6

12.5.3 Female Opinion on Family Management

About every 9 out of 10 female respondents were consulted before taking any decision by their husbands (head of the household) on important matters either always or sometimes. The intensity of

consultation in the Project area was somewhat higher than that in the Adjacent area. On the other hand, about 6 to 7 percent were never consulted by their husbands (Table 12.9).

Table 12.9 : Percentage Distribution of Female Respondents Under Different Household Categories by Their Opinion on in Matters of Family Maintenance.

Study area	Farm	Non-farm	Fisherman	Urban	All h'h
Project					
Always	82.6	81.1	63.6	85.5	79.7
Sometime	9.8	9.1	23.6	5.5	11.0
Never	6.1	3.8	12.7	3.6	5.9
Not applicable	1.6	6.1	-	5.5	3.5
Adjacent					
Always	69.7	68.2	67.3	74.5	69.5
Sometime	16.7	21.2	21.8	16.4	19.0
Never	9.8	6.1	9.1	3.6	7.5
Not applicable	3.8	4.5	1.8	5.5	4.0

12.6 Child Mortality

Life-time experience of child mortality is used in this study as child mortality rate. Life time experience of child mortality refers to the number of child deaths to number of births given by a mother throughout her life. The findings are presented in Table 12.10. It appears from this table that 24 percent of children ever born per woman died in the Project area. Child mortality was found to be the highest at 29.0 percent in the non-farm households and lowest (13 percent) in the urban area. The reasons for low mortality rate in the urban area are better medicare and sanitation facilities, higher awareness about health issues and better family planning practices in urban area, etc. Mortality rates in the study area were somewhat lower that the national average of 24.7.

Table 12.10 : Percentage Distribution of Female Respondents under Different Household Categories by Their Life Time Experience of Child Mortality

Area	Farm	Non-farm	Fisherman	Urban	All HH
Project	24.6	28.8	20.0	12.8	23.9

CHAPTER 13

LIVESTOCK, POULTRY AND KITCHEN GARDENING

13.1 The Role of Livestock Poultry and Kitchen Gardening Under CPP

If controlled flooding can be achieved under CPP, the scope of livestock and poultry rearing and kitchen gardening will improve tremendously. Needless to say, modern production techniques relying more on stall feeding than grazing and ranching will have to be resorted to. But the experience in other regions of the country demonstrate that farmers and housewives can easily learn and adopt these modern techniques when the opportunities arise.

In assessing the existing situation in the three study areas it needs to be kept in mind that the prevailing conditions have not been conducive to livestock or kitchen gardening on account of frequent flooding in recent years, particularly the devastating flood of 1988, which had damaged, or caused loss of, much of the existing stock of animals, birds and trees.

13.2 A Ownership of Livestock by Rural Households

Tables 13.1A and 13.1B show the position of farm and non-farm households in the 3 study areas in respect of various domestic animals.

Table 13.1A : Livestock Position in Farm Households in 3 Study Areas

	% h'h' owning	average per h'h'	% h'h' owning	average per h'h'	% h'h' owning	average per h'h'
Bullock	30.0	1.6	35.1	1.4	29.0	1.4
Cow	44.3	1.5	46.6	1.3	41.2	1.3
Ox	19.1	1.1	7.6	1.1	6.9	1.1
Calf	51.9	1.5	36.6	1.5	33.6	1.4
Buffalo	-	-	2.3	1.7	1.5	1.5
Sheep	0.01	1.0	1.5	1.5	0.01	1.0
Goat	12.2	1.5	17.6	1.2	23.7	2.2

Cows were clearly the most commonly owned animals in the farm households, between 41 and 47 percent of them owning between 1 and 2 cows on average. There was a matching prevalence of bulls and oxen as well as calves, which were more numerous in the Project area compared to the other two areas.

Non-farm households showed a much lower level of livestock ownership. Only 11 to 15 percent households in the 3 areas owned cows, on average 1.1 to 1.4 per household.

Buffaloes were non-existent in the Project area, although a small proportion of households (1-3 percent) reportedly owned them in

the other two areas. Goats were relatively more abundant in the Control area, where 24 percent farm households and 19 percent non-farm households were found to possess between 2 and 3 goats on average.

Table 13.1B : Livestock Position in Non-Farm Households in 3 Study Areas

	% h'h' owning	average per h'h'	% h'h' owning	average per h'h'	% h'h' owning	average per h'h'
Bullock	7.5	1.5	8.3	1.5	8.3	1.4
Cow	10.5	1.1	12.0	1.4	15.0	1.3
Ox	7.5	1.0	9.0	1.0	6.8	1.0
Calf	21.8	1.2	18.8	1.2	22.6	1.2
Buffalo	-	-	0.8	1.0	1.5	1.5
Sheep	0.01	5.0	0.8	8.0	0.01	1.0
Goat	12.8	2.3	13.5	0.8	18.8	2.4

The market prices of the livestock in possession of farm and non-farm households are shown in Table 13.2 separately for the 3 study areas. Prices quoted were in general higher for the Project area, not an unexpected finding, because of its proximity to the district HQ. However, comparison of price differentials should be done cautiously because of possible differentials of age and sizes of the livestock units in the 3 different study areas.

Table 13.2 : Prices of Livestock in 3 Study Areas

	Project		Adjacent		Control	
Items	Farm	Non-farm	Farm	Non-farm	Farm	Non-farm
Bullock	6649	5800	5159	5500	5142	5409
Cow	6095	4321	4636	4759	4491	4725
Ox	4520	3720	1510	1530	3944	3477
Calf	2457	2240	1452	1019	2327	2620
Buffalo	-	-	9167	3000	10000	-
Sheep	700	300	775	400	400	-
Goat	1113	1629	1083	1022	1313	1032

13.3 Poultry

Poultry birds, including chickens, ducks and pigeons, should do well in Sirajganj both within CPP and outside because of the existence of several water bodies : rivers, Khals, Beels and derelict ponds, although well dug ponds are relatively scarce.

A picture of household ownership of birds can be obtained from Table 13.3A through 13.3C for farm, non-farm and fisherman households.

Rearing and sale of chickens was widely prevalent (above 90 percent in the Project and Control areas, above 75 percent in the Adjacent area) among the farmers of each study area.

It was also fairly widespread among non-farm and urban households, but dropped to around 20-25 percent households among the fishermen communities in the Project and Adjacent areas. Particularly farm and non-farm households earned in the range of 500-700 takas on average during the previous year. The earnings of participating urban and fisherman households were somewhat less, but never below 300 takas on average.

Table 13.3A : Ownership and Rearing of Poultry Birds in Farm Households

		Project			Adjacent			Control		
		Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon
Present	%	16.0	91.6	3.8	19.7	75.0	3.0	17.6	90.1	1.5
Number	mean	2.7	10.7	17.2	2.8	7.5	4.8	4.1	7.8	18.0
Production	%	7.6	82.4	3.8	7.6	66.7	3.0	6.9	80.9	1.5
of Bird	mean	13.5	23.5	57.0	13.1	19.7	10.0	8.6	21.2	39.0
Death of	%	8.4	70.2	1.5	10.6	61.4	0.7	9.2	80.2	1.5
Bird	mean	1.6	9.8	7.0	6.0	11.4	15.0	3.9	11.6	19.5
Birds Sold	%	6.1	30.5	3.1	6.1	26.5	-	5.3	30.5	0.8
	mean	11.4	8.4	14.0	3.1	5.4	-	4.1	6.4	7.0
Eggs Sold	%	18.3	67.2	-	12.1	53.8	-	13.7	71.8	-
	mean	110.8	165.2	-	105.5	118.3	-	106.9	145.6	-
Birds Value	%	19.1	90.8	3.8	18.9	74.2	3.0	16.8	90.1	0.8
	mean	117.4	356.3	317.6	104.8	231.8	112.5	134.3	242.0	200.0
Eggs Value	%	18.3	67.2	-	12.1	53.8	-	13.7	71.8	-
	mean	161.1	323.3	-	179.1	240.1	-	221.1	289.2	-

Participation in duck rearing is in the range of 16-20 percent farmers, 11-19 percent among non-farmers and 7-9 percent among urban and 5-20 percent among the fisherman households. Ducks were usually kept in smaller quantities and hence incomes were proportionately lower.

Pigeon rearing was relatively rare and its incidence rarely exceeded 3 percent. This bird was not reared for commercial purposes.

Table 13.3B : Ownership and Rearing of Poultry Birds in Non-Farm Households

		Project			Adjacent			Control		
		Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon
Present	%	11.3	76.7	0.8	18.9	53.8	3.8	14.3	80.5	0.8
Number	mean	2.1	8.2	17.2	3.4	7.2	14.4	2.5	6.3	4.0
Production	%	3.8	60.9	0.8	10.6	50.0	3.8	0.8	71.4	0.8
of Bird	mean	8.8	18.3	8.0	9.4	15.0	17.4	22.0	18.9	26.0
Death of	%	3.8	62.4	-	10.6	37.9	1.5	5.3	65.4	0.8
Bird	mean	2.2	7.6	-	5.7	7.2	2.0	2.7	11.3	12.0
Birds Sold	%	3.0	24.8	-	7.6	22.0	6.1	4.5	26.3	0.8
	mean	6.3	5.3	-	3.5	5.1	52.2	5.1	5.0	4.0
Eggs Sold	%	8.3	56.4	10.8	12.9	41.7	0.8	5.3	66.9	-
	mean	99.4	124.9	10.0	79.6	105.9	60.0	91.4	112.1	-
Birds Value	%	10.5	75.9	0.8	18.9	53.0	3.8	13.5	80.5	0.8
	mean	108.6	218.0	100.0	98.2	218.6	401.6	65.1	179.8	46.0
Eggs Value	%	8.3	56.4	-	12.9	41.7	0.8	5.3	66.9	-
	mean	149.7	246.2	-	144.5	210.0	160.0	176.4	225.8	-

Table 13.3C : Ownership and Rearing of Poultry Birds in Urban Households

		Project			Adjacent			Control		
		Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon
Present	%	9.1	56.4	-	7.3	65.5	5.5	7.0	73.7	1.8
Number	mean	2.8	5.7	-	2.5	4.8	15.3	2.3	9.4	13.0
Production	%	3.6	36.4	-	-	54.5	5.5	1.8	61.4	1.8
of Bird	mean	7.0	18.0	-	-	12.6	61.0	4.0	22.5	30.0
Death of	%	3.6	40.0	-	1.8	56.4	5.5	1.8	59.6	1.8
Bird	mean	3.5	7.5	-	4.0	6.1	20.0	1.0	9.4	15.0
Bird Sold	%	1.8	5.5	-	-	18.2	5.5	3.5	19.3	-
	mean	4.0	11.7	-	-	4.6	17.3	1.5	7.5	-
Eggs Sold	%	5.5	12.7	-	1.8	40.0	-	1.8	38.6	-
	mean	183.3	133.6	-	10.0	65.8	-	100.0	72.0	-
Bird Value	%	9.1	56.4	-	7.3	65.5	5.5	7.0	71.9	1.8
	mean	162.0	193.9	-	113.8	153.5	233.3	62.5	243.2	200.0
Eggs Value	%	5.5	12.7	-	1.8	40.0	-	1.8	38.6	-
	mean	236.3	324.3	-	25.0	132.0	-	200.0	137.0	-

Table 13.3D : Ownership and Rearing of Poultry Birds in Fisherman Households

		Project			Adjacent			Control		
		Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon	Duck	Chic-ken	Pigeon
Present	%	20.0	25.5	1.8	32.7	23.6	-	5.5	52.7	-
Number	mean	2.7	4.6	10.0	2.2	6.0	-	3.3	4.7	-
Production	%	7.3	21.8	3.6	-	20.0	-	1.8	50.9	-
of Bird	mean	4.8	8.7	14.0	-	17.3	-	8.0	11.7	-
Death of	%	5.5	25.5	3.6	12.7	14.5	-	3.6	56.4	-
Bird	mean	3.0	5.4	4.5	2.6	14.1	-	4.0	6.9	-
Birds Sold	%	3.6	1.8	3.6	3.6	3.6	-	3.6	20.0	-
	mean	2.0	6.0	6.5	1.0	7.5	-	3.0	5.1	-
Eggs Sold	%	12.7	10.9	-	25.5	18.2	-	1.8	41.8	-
	mean	142.9	121.8	-	51.4	56.9	-	200.0	65.7	-
Bird Value	%	20.0	21.8	1.8	32.7	23.6	-	5.5	52.7	
	mean	114.5	117.9	150.0	73.2	127.7	-	98.3	122.6	-
Eggs Value	%	12.7	10.9	-	25.5	18.2	-	1.8	41.8	-
	mean	241.6	297.0	-	106.0	114.8	-	400.0	132.2	-

13.3 Kitchen Gardening

Kitchen gardens are important sources of vegetables and fruits for the family. In this sense it supplements protein needs. Besides, kitchen gardening is the source cash earning for the household. Mostly women are engaged in kitchen gardening.

Table 13.4A : Homestead Vegetables in 3 Study Areas

	Project	Adjacent	Control	Total
Production (mds)	106.8	59.9	61.0	76.2
Sale (%)	19.2	10.5	8.9	12.9
Flood damage (%)	n	39.6	-	118.4

Note : n = insignificant.

Table 13.4B : Homestead Vegetables of Different Household Categories in the Project Area

	Farm	Non-farm	Fisherman	Urban	Total
Production (mds)	244.6	51.3	1.2	19.3	106.8
Sale (%)	39.4	14.9	0.1	0.9	19.2
Flood damage (%)	n	-	-	-	-

Note : n = insignificant.

13.4 Homestead Woodlots

Trees on the rural homestead have traditionally provided fruits, fuel, fodder, timber, herbal medicine and shade. The trend of deforestation resulting from increased population pressure, declining trends in other sources of energy and a general lack of awareness about the environment have taken toll of village woodlots and homestead trees. The present status of trees on the homestead in the 3 study areas and in different homestead categories are shown in Tables 13.6A and 13.6B. There appears to be a reasonable similarity between the study areas and the household categories about the prevalence pattern in respect of major trees like mango, jackfruit, etc

Table 13.5A : Homestead Trees in 3 Study Area : Prevalence of Major Species (%)

Tree Species	Project	Adjacent	Control	Total
Mango	12.0	13.2	10.1	11.6
Jack	10.8	12.8	9.8	11.0
Jam	5.5	3.9	3.5	4.3
Lichi	0.9	0.5	0.6	0.7
Guava	6.4	5.4	6.4	6.1
G-nut	3.4	4.4	4.6	4.1
B-nut	2.3	1.9	1.5	1.9
Banana	9.0	11.3	10.6	10.3
Bamboo	7.9	8.5	8.3	8.2
Nim	1.6	1.2	0.9	1.2
Teak	-	0.1	-	0.1
Mahogani	2.4	1.3	2.2	2.0
Exotic	0.2	0.2	-	0.1
Others	37.7	35.3	41.4	38.4

Table 13.5B : Homestead Trees in Different Household Categories in the Project Area : Prevalence of Major Species (%)

Trees Species	Farm	Non-farm	Fisherman	Urban	Total
Mango	10.8	12.0	13.7	12.2	12.0
Jack	11.1	10.9	10.9	10.9	10.8
Jam	4.5	4.5	3.1	3.7	5.5
Lichi	0.6	0.4	0.4	1.9	0.9
Guava	5.9	6.0	5.4	7.7	6.4
G-nut	4.6	3.5	1.7	5.4	3.4
B-nut	2.0	2.0	0.4	1.9	2.3
Banana	9.5	10.9	13.3	9.5	9.0
Bamboo	9.0	8.4	7.8	5.4	7.9
Nim	1.7	1.0	-	0.9	1.6
Teak	-	0.1	-	0.3	-
Mahogani	2.0	2.2	0.2	1.5	2.4
Exotic	0.1	0.2	-	0.3	0.2
Others	37.9	37.9	42.9	38.5	37.7

CHAPTER 14

FISHERY BY NON-FISHERMEN

14.1 Role of Subsistence Fishery

The role of subsistence fishery in the survey area of Sirajganj should be assessed in light of two important factors, namely its definition and the changes in its overall scope.

14.1.1 Subsistence Fishery : A Definitional Problem

Farm and non-farm households in rural Bangladesh have traditionally engaged themselves in fishing activities primarily for the purpose of domestic consumption. Both rich and poor households have been involved in this act. While the rich would prefer to go for a leisurely culture of some carps in their own ponds, the poor would take recourse to capture fishery in the rivers, canals, beels and the moonsonal flood plains, which are generally considered common property resources open to all for small scale fishing. Professionalism in such activities was generally absent and their productivity was consequently low.

However, occasions would arise when the catch was large enough to provide a surplus or, as is likely in case of the poor, there was need for some additional (or perhaps the only) income. On such occasions fish would be sold in various informal rural markets, primarily the bi-weekly Haat by these non-professional fishermen.

On the other hand, there is a recent trend towards pond culture as a result of breakthroughs in hatchery technology, availability of milled fish meal, supportive credit policies and a general awakening of entrepreneurship in this country. Pond culture is set to spread not only among rural households who are not professional fishermen of the traditional variety, it will also be picked up fast by various city-based entrepreneurs. They may all be well on their way to professional pisciculture.

The point being made here is that a time has come when subsistence fishery cannot be simply defined as fishing activities of farm and non-farm households. So, this definitional problem should be kept in mind in this chapter, where the term is being used to mean fishery by any one other than the traditional fisherman, whatever their level of production skill or propensity to sell the produce in the market.

14.1.2 The Changing Scope of Subsistence Fishing in Sirajganj

Ever since the construction of the Brahmaputra Right Embankment (BRE), the region as a whole has undergone a transition from a flood plain to a vulnerably flood-protected area which implies greater unpredictability and severity of floods. This has taken

toll of fishery. The flood plain fishery has virtually disappeared without a compensating growth of pond culture. The latter for two reasons. First, the soil quality has visibly deteriorated in the survey area because of the sand deposits brought on by 'breached' floods, as opposed to the alluvial sediment associated with the slowly rising floods of the past. Second, the occasional flooding is quite severe and makes it virtually impossible to protect fish ponds. As a result potential entrepreneurs shy away.

There is another factor which has had a negative impact on subsistence fishery. The land-based transportation system has developed significantly in the post-BRE era, and with it a network of rural markets is gradually emerging. Sirajganj area is also benefiting from the existence of the largest fish farm of Bangladesh in its proximity which is rapidly expanding its production. The role of subsistence fishery in Sirajganj area is likely to decline further as the flood plains shrink and the markets develop.

14.2 Prevalence of Subsistence Fishery

The prevalence rate of subsistence fishery was not found to be high in the three study areas, the average for which was about 13 percent, as shown in Table 14.1. The highest rate (20%) of incidence was in the Adjacent area, presumably reflecting a better position of the open water bodies in this area. The lowest rate was found in the Project area (9%) which contains Sirajganj town and has rather poor soils on account of sand deposits from floods caused by breaches in the BRE.

Table 14.1 : Incidence of Subsistence Fishery by Farm and Non-Farm Households in 3 Survey Areas

Type of fishing	Project	Adjacent	Control	Total
Open Water only :	**11**	**43**	**5**	**59**
Farm	6	25	-	31
Non-farm	5	18	5	28
Ponds only :	**5**	**4**	**12**	**21**
Farm	4	2	12	18
Non-farm	1	2	-	3
Both :	**7**	**5**	**8**	**20**
Farm	5	4	8	17
Non-farm	2	1	-	3
Total	23	52	25	100
Incidence rate (%)	8.7	19.7	9.5	12.6

14.3 Subsistence Open Water Fishery

The preferred fishing grounds appear to be derelict ponds for

farmers and Beels for non-farmers, both groups using the river to a lesser extent. Arrangements are almost always lease-free, treating these bodies as common property resources within the territorial confines of adjoining villages/Mauzas.

Period : It seems to be evenly spread throughout the year in derelict ponds, while being confined to Jaistha-Aswin in the rivers. In Beels, there was a concentration over the period Ashar to Agrahayan with a peak in Bhadra-Kartik.

The highest number of catchdays was seen in the Adjacent area where subsistence fishermen on average spent 64 catch days. By comparison the typical farmer or non-farmer were engaged in subsistence fishery on 38 days only in the Project area.

The output of subsistence fishery is not generally sold in the market. However, a proportion of subsistence fishermen did sell; this was seen particularly among non-farm households. Table 14.3 shows the amount of total sales reported in different areas of the Survey. It should be noted that it has no direct relationship to catchdays.

Table 14.2 : Subsistence Capture Fishery : Catch Days in Different Water bodies

Catch days	Project	Adjacent	Control	Total
Rivers	200	1448	605	2253
Canals	-	482	45	527
Beels	175	156	383	714
Borrow pits	-	110	-	110
Floodplains	-	215	-	215
Ponds	500	934	477	1911
Total	875	3345	1510	5730
(average)	(38.0)	(64.3)	(60.4)	(57.3)

N.B. The averages (in percentages) are based on relevant cases.

The non-farm households were more prone to selling than the farm households except in the Control area where more farmers (8) carried out capture fishery than the non-farm fishermen (5). Also these farmers in the Control area engaged in both capture as well as culture fishery, and are therefore more likely to have a disposable surplus.

Table 14.3 : Subsistence Fishery : Sale Value

HH Type	Project	Adjacent	Control	Total
Farm	-	2,400	23,375	25,775
Non-farm	1,150	56,300	16,275	73,725
Total	1,150	58,700	39,650	99,500
Average (takas)	64	1,223	3,050	1,259

14.3 Pisciculture in Subsistence Fishery

Culture fishery as a subsistence activity was not found to be significant in the study area at present. It was confined to only 4.5 percent farm and non-farm households in the Project area, even less (3.4%) in the Adjacent area and somewhat more (7.5%) in the Control area.

The total pond area covered in all three areas together barely exceeded three acres with an average pond size of 28 decimals.

Reported productivity in the cultured ponds was rather poor, estimated around 6 maunds per acre, and was low compared to the Adjacent as well as Control areas, where productivity was estimated around 16 and 12 maunds respectively.

Flooding of ponds and fish disease were cited as the principal problems of pisciculture in this area. All the ponds were flooded in 1988 and nearly half of them in 1987.

Rui and Catla were the most popular species chosen for pisciculture, followed by Magur and Punti.

Cultured fishery was done entirely in own ponds.

Economics of pisciculture : Pisciculture was reportedly an uneconomic activity in the Project area, although not so in the Adjacent and Control areas. The comparison of costs and output per acre is shown in Table 14.4.

It may be noted that the average value of output per acre was estimated to be lower than the cost of production per acre in both the Project and the Adjacent areas. This may either reflect inefficiency in pisciculture or deliberate under statement of benefits and over statement of costs.

Table 14.4 : Costs and Outputs in Subsistence Pond Culture

	Project	Adjacent	Control	All
		(in 000 takas)		
Cost of production/acre	3.6	7.6	6.7	5.8
Value of output/acre	2.1	5.5	11.7	7.2

It is possible that people in the Project area understated their production and/or overstated their costs.

14.4 Comments

At present capture fishery is not playing a large role for farmers or non-farmers. Whether this role needs to, or can, be enhanced under CPP will depend on

- the overall income opportunities of farm and non-farm households ;
- prospects of increased supply of fish in the local market, either by increasing professional fishery in the area or by supply from adjoining areas, such as Joysagar Fish Farm in Nimgachhi;
- need felt by the farmers and non-farmers for engaging in capture fishery as a subsistence activity.

The low profile of pisciculture in the Project area possibly connotes/reflects a number of things :

- technological problems, such as poor soils on account of frequent breaches in BRE and consequent deposition of sand;
- opportunities of income from various urban informal sector activities as a result of being attached to Sirajganj town;
- inadequate promotion of fisheries.

Theoretically, under CPP one should have the opportunity of achieving the best of both the worlds, namely

- enhanced open water fishery by maintaining adequate water levels in the Beels and canals throughout the year, and allowing natural recruitment of fish fries and juveniles in relevant seasons, and
- boost in pond culture, by improving pond status, disseminating intensive fish culture technology and arranging for the required technical assistance and financial resources.

In practice, however, subsistence fishery in the open water is likely to disappear with economic progress and an increasing division of labour. The compulsion for efficiency in production is bound to be felt soon, particularly as the Silver Revolution in West Bengal sends cheap fishes through the borders.

Fishery has to be taken as a serious business. Both open water capture fishery as well as pond culture has to be done professionally. In such a situation subsistence level capture

fishery cannot last for ever, except as a recreational activity of the better off people. In that case, it will not be for subsistence.

Pond culture, however, has much greater prospects for those who are not professional fishermen. It is a relatively simple technology which can be rapidly acquired and combined with other agricultural activities. Integrated agricultural farming is already appearing as a profitable venture in several districts of Bangladesh. In this regard, the existence of Joysagar Fish Farm (JFF) in the vicinity is a major help. JFF is achieving extremely encouraging results in not only boosting production through semi-intensive and intensive culture, but also setting new examples in participatory management of both Khas as well as private ponds.

The problem of poor water-retaining capacity of the soils, as generally reported, will remain a constraint. There are however two ways to overcome this constraint :

- Strategy one : an improvement of the soil retaining capacity should be possible through soil engineering; Bogra Academy and SRDI may be approached for assistance;

- Strategy two : innovate new methods, such as Magur culture in concrete containers. The economics of such techniques should be explored as early as possible.

CHAPTER 15

QUALITY OF LIFE

15.1 Introduction

It is generally accepted now that the ultimate objective of all development activities is to improve the human condition and enhance the quality of life. There are many indicators of life's quality and it is difficult to choose a set that will be universally satisfactory. The household survey has a large number of variables to choose from which will be available in the database for future use and reference. However, presented here are a few indicators to convey a sense of the present human condition in Sirajganj CPP area and its surrounding regions. The indicators presented here are mostly on physical conditions of living. This is supplemented by the respondents' perception of their own condition, first in terms of hunger and then in terms of satisfaction of basic needs which is defined in a broader fashion than normally done.

15.2 Hunger

The incidence of hunger in the 3 study areas for different household categories within the Project area is shown in Tables 15.2A and 15.2B.

As a measure of hunger the indicator chosen is the number of mealtimes in a year which went by without adequate food intake. Likewise, the extent of starvation can be measured by the number of mealtimes that went by for a family without a meal.

Table 15.2A : Incidence of Hunger and Starvation in 3 Study Area

	Project	Adjacent	Control	Total
Hungry mealtimes in a year	12.8	20.6	22.2	18.5
Starved mealtimes in a year	4.2	9.8	6.8	7.0

Among the three areas the Adjacent area appeared to be the poorest, considering both hunger and starvation. Within the Project area both Non-farm and Fishermen households appeared at the bottom.

Table 15.2B : Incidence of Hunger and Starvation in Different Household Categories in the Project Area

	Farm	Non-farm	Fisherman	Urban	Total
Hungry mealtimes in a year	3.8	19.0	21.9	9.9	12.8
Starved mealtimes in a year	0.8	7.3	4.9	4.1	4.2

15.3 Shelter

The shelter status will be assessed in terms of three basic factors, namely its structural quality and adequacy of facilities and space.

15.3.1 Structural Quality of the Main Bedroom

Tables 15.3.1A and 15.3.1B show the condition of the main bedroom in surveyed households in respect of the building materials used in its roof and walls.

Table 15.3.1A : Quality of Housing: Structure of the Main Bedroom in 3 Study Areas

	Project	Adjacent	Control	Total
Pucca roof + pucca wall	1.6	0.2	0.8	0.8
Tin roof + pucca wall	2.9	12.8	12.0	14.0
Tin roof + kutcha wall	44.1	25.1	25.0	26.6
Kutcha roof + kutcha wall	51.4	62.1	62.2	58.5

Pucca houses are very few and far between, the highest proportion being located in the Project area. The most dominant mode continues to be a kutcha house (59%). However, tin roof houses

Table 15.3.1B : Quality of Housing: Structure of the Main Bedroom in Different Household Categories of the Study Area

	Farm	Non-farm	Fisherman	Urban	Total
Pucca roof + pucca wall	-	-	-	4.8	1.6
Tin roof + pucca wall	18.5	8.3	-	28.5	2.9
Tin roof + kutcha wall	34.2	22.4	26.9	21.2	44.1
Kutcha roof + kutcha wall	47.2	69.1	73.1	45.5	51.4

with kutcha walls appeared to be increasing in number quite rapidly. Between the different household categories the Urban households naturally had a definite edge.

15.3.2 Living Room and Kitchen

The presence of a separate room, distinct from one's bedroom, to spend time during the waking hours is not a luxury for the poor. It is a need for every household and an indicator of a minimal degree of comfort particularly in sickness, study and social interaction. Very few houses were seen to have this facility. The lowest prevalence rate was in Kazipur (2.9%) and the highest in the Project area (5.4%).

Overall, 62.5% households had a separate kitchen and 67.1% had a toilet in the house.

Table 15.3.2A : Quality of Housing: the Facilities Available in 3 Study Areas

Description	Project	Adjacent	Control	Total
Main Bedroom area	377	311	344	344
Separate Living Room	5.4	4.5	2.9	4.3
Separate Kitchen	59.7	64.7	63.6	67.1
Toilet in the House	74.3	63.4	63.6	67.1

The fishermen seemed to have the poorest standards of housing. None of these households had a separate living room and only a third had a toilet.

Table 15.3.2B: Quality of Housing : the Facilities Available in Different Household Categories of the Project Area

Description	Farm	Non-farm	Urban	Fisherman	Total
Main Bedroom area	514	269	517	171	377
Separate Living Room	6.1	2.5	8.5	-	5.4
Separate Kitchen	81.8	47.5	62.4	53.3	59.7
Toilet in the House	80.2	60.1	85.5	34.7	74.3

15.4 Electricity, Water and Sanitation

Tables 15.4A and 15.4B show the status of households in respect of electricity, tubewell water and sanitary toilets. The Project area showed the expected edge over the other two areas in

Table 15.4A : Electricity, Water and Sanitary toilets in 3 Study Areas

% Houses with	Project	Adjacent	Control	Total
Electricity	14.7	6.4	7.2	8.7
Tubewell	96.2	86.4	92.0	91.5
Sanitary toilets	18.1	8.5	13.1	13.4

electricity because of its proximity to Sirajganj town. When the Project area was separated by different household categories, the urban area showed a much higher percentage of houses with electricity (69%) and sanitary toilets (44%). Surprisingly, the fisherman households showed a higher incidence of electricity compared to Farm and Non-farm households.

Table 15.4B : Electricity, Water and Sanitary toilets in Different Household Categories of the Project Area

% Houses with	Farm	Non-farm	Urban	Fisherman	Total
Electricity	4.6	3.8	69.1	10.9	14.7
Tubewell	96.9	99.2	92.6	90.9	96.2
Sanitary toilets	12.2	12.9	44.4	9.7	18.1

15.5 Treatment of Children Who Died

The nature of treatment a family has been able to afford for its children who eventually died is a tell-tale indicator of its position in respect of knowledge, availability and affordability of medicare. Table 15.5A shows the proportions of sons and daughters (the first two mentioned by the household) who died without any treatment (excluding Jhar-phuk).

Table 15.5A : Percentage of Children Who Died without Treatment in the 3 Study Areas

	Project	Adjacent	Control
Son1	24.5	15.8	39.8
Son2	14.2	7.3	34.5
Daughter1	26.9	14.5	35.1
Daughter2	16.8	7.8	29.8

Table 15.5B shows the picture in respect of farm, non-farm, fishermen and urban households in the entire study area.

Table 15.5B: Percentage of Children Who Died without Treatment in Different Household Categories of the Study Areas

	Farm	Non-farm	Fishermen	Urban
Son1	27.9	26.8	17.1	12.5
Son2	15.3	13.9	8.5	6.0
Daughter1	25.7	19.8	24.3	14.7
Daughter2	16.8	13.0	7.5	5.3

A quick scanning of the results will indicate that gender differentials are not pronounced. However, there are significant differentials between the birth order of the child, the three study areas and the four household categories. Higher proportions of death without treatment is seen amongst farm and non-farm households and in the Control area. The highest proportion (40%) was in the Control area in respect of 1st (reported) son's death, and the lowest was seen in the urban area in respect of 2nd reported daughter's death.

15.6 Education

Formal education is perhaps not viewed by most poor people as a basic need in the sense that its lack does not cause immediate threat to life. But education in its broader meaning is perhaps the most basic of basic needs, because without it all other basic needs cannot be met. There is, however, a close relationship between formal and informal education, and in the long run therefore education is considered to be the most important of all indicators of the state of the human condition. Unfortunately, the type of data required to capture the level and content of that broader education are not easily available, and was not attempted in this survey. The indicators used here are

therefore the conventional one based on a suitable question on the level of education.

Table 15.6A and 15.6B show the literacy rate and educational levels in the 3 study area and in various household categories of the Project Area respectively.

Table 15.6A : Literacy and Education in the 3 Study Areas

	Project	Adjacent	Control
Illiterate	44.9	47.0	52.0
Pre-primary	21.6	22.7	22.7
Primary completed	24.1	20.7	17.0
Secondary completed	3.0	4.1	4.1
Higher	5.9	4.9	3.6
Others	0.4	0.7	0.6

Table 15.6B : Literacy and Education in Different Household Categories of the Study Area.

	Farm	Non-farm	Fishermen	Urban	All
Illiterate	40.4	55.3	60.9	20.9	44.9
Pre-primary	25.7	18.8	17.1	19.3	21.6
Primary completed	26.1	19.2	11.1	37.1	24.1
Secondary completed	2.0	2.7	1.5	7.6	3.0
Higher	5.3	4.0	1.5	14.0	5.9
Others	0.6	-	-	1.1	0.4

15.7 Satisfaction of Basic Needs : People's Perceptions

It is ultimately the perception of the people about their own human condition by which the success or failure of a programme's contribution will be judged. In that sense, it was considered important to have some benchmark on how people view their present level of satisfaction of basic needs (This question was added by the Consultants).

The results of the query in respect of food, clothing, shelter, medicare, education, transport and cultural ('man does not live by bread alone') needs are summarised in Table 15.5A and 15.5B.

Table 15.7A : Satisfaction of Basic Needs in 3 Study Areas

Basic Needs not Satisfied wrt	Project	Adjacent	Control	Total
Food	0.8	5.4	0.8	2.3
Clothing	3.6	11.4	4.0	6.5
Shelter	5.7	13.4	6.1	8.4
Medicare	21.6	42.9	35.5	25.3
Education	45.2	45.2	35.3	42.1
Transport	21.6	37.6	30.6	30.0
Culture	64.7	72.0	70.7	69.2

Overall, there seemed to be a reasonable degree of satisfaction in respect of the three most important items, namely food, clothing and shelter, although there are some areas where the problem is still significant, eg in the Adjacent area in respect of clothing and shelter (11 and 13 percent).

However, when it comes to medicare, education, transport and culture, the lack of basic need satisfaction is high ranging between 25 and 70 percent.

Focusing on the Project area which was found to be relatively better than the other two areas, considerable differences were observed between the different household categories (Table 15.5B). On the whole the non-farm and fisherman communities seemed to be bearing the brunt of poverty, defined in terms of the 5 traditional components (food, clothing, shelter, medicare and education). They were also worse sufferers in respect of transport needs. However, every community seemed to suffer from dissatisfied cultural needs.

This should give some food for thought to CPP planners, particularly on how to build cultural infrastructures to admit of a desirable flow and retain undesirable outflow of cultural goods and services.

Table 15.7B : Satisfaction of Basic Needs in Different Household Categories of Project Area

Basic Needs not Satisfied wrt	Farm	Non-Farm	Urban	Fisherman	Total
Food	-	1.5	-	2.1	0.8
Clothing	-	6.0	3.6	6.3	3.6
Shelter	1.5	11.3	1.8	6.3	5.7
Medicare	5.4	29.3	12.7	16.7	21.6
Education	19.7	50.4	17.4	55.3	45.2
Transport	10.0	35.3	16.4	20.8	21.6
Culture	62.3	72.9	56.4	57.8	64.7

CHAPTER 16

FLOOD

16.1 Flood Defined

There is no universally accepted definition of flood, although there is a point of inundation at which everybody agrees that a flood has occured. The findings on people's perception on what is a flood in Sirajganj CPP area are summarised under Tables 16.1A and 16.1B. The first table shows the perceptions of heads of households in the three different study areas and separately for women in the households. The second table shows the perceptions of different household categories in the project area.

Table 16.1A : Conceptual Watersheds on Flood in 3 Areas : CPP Household Survey, Sirajganj

Definitions of a Flood	Household Heads' (Essentially Male) Perceptions (cumulative (%)				Women's Perception 3 Areas
	Project	Adjacent	Control	3-Areas	
1. Sapling inundation	4.8	9.4	1.9	5.4	6.5
2. Standing crops inundated	25.4	31.0	36.7	31.1	37.3
3. Roads inundated	66.6	65.3	76.2	69.5	62.6
4. Water on the yard	94.2	88.3	97.9	93.6	94.5
5. Water on the floor	100.0	100.0	100.0	100.0	100.0

Table 16.1B : Conceptual Watersheds on Flood in Different Household Categories : CPP Household Survey, Sirajganj

	Farm	Non-farm	Fisherman	Urban	Total
1. Sapling inundation	6.1	3.8	7.2	1.8	4.8
2. Standing crops inundated	34.3	29.6	12.6	7.2	25.4
3. Roads inundated	84.0	68.2	30.7	56.2	66.6
4. Water on the yard	98.5	94.7	79.8	96.2	94.2
5. Water on the floor	100.0	100.0	100.0	100.0	100.0

A visible inundation of saplings, say around 25 percent, is where the definition of flood begins in the rural area, albeit for a small proportion of respondents. When inundation reaches about half the saplings 6.5% women and 5.4% household heads (mainly men) would call it a flood.

The farm (34%) as well as rural non-farm (30%) household heads, however, do not in general call it a flood till the waters have swept across the mature crops in the field.

It is not until the roads are inundated, that a flood begins to gain wide recognition, drawing serious attention for the first time from fishermen (31%) and urban households (56%).

By this time 84 percent farmers, and 68 percent non-farm household heads will call it a flood; however a majority of the fishermen (69%), and large proportions of urban (44%) and female (37%) respondents are still not convinced.

It takes water to reach the homestead of nearly 50% of the community's households for a majority of the fishermen community (80%) to recognise it as a flood, although a substantial number of them (20%) still holds out. By this time however, over 94% of all other communities, including the urban people, are convinced.

Universal recognition of flood occurs in the Sirajganj Study area with water on the floor of more than 50 percent of the households in the community.

Comments :

- There is a potentially sharp contradiction between farmers and fishermen on the question of what is a flood. This should be borne in mind in any public debate or discussion of flood issues with either, and particularly both, groups of people.

- In this definitional contradiction the rural non-farm households think very much like the farmers while the urban household heads and women appears to be hovering between the two extremes.

16.2 Perceptions on Benefits and Disbenefits of Floods

Consistent with the variation observed in conceptualising flood among the different respondent groups, differences also exist in respect of their perception about the benefits and disbenefits of floods. The findings are summarised in Tables 16.2A and 16.2B.

Table 16.2A : Perceptions on Benefits of Flood in 3 Survey Areas CPP, Sirajganj

Perceptions	Perception of Heads of Households (%)			
	Project	Adjacent	Control	Total
More harmful than beneficial	78.3	77.0	87.4	81.0
Benefits and harms evenly balanced	12.3	8.0	7.5	9.0
More beneficial than harmful	9.4	15.0	5.1	9.8

Table 16.2B : Perceptions on Benefits of Floods in Different Household Categories : CPP Household Survey, Sirajganj

Perceptions	Farm	Non-farm	Fisherman	Urban	Total
More harmful than beneficial	85.6	84.3	32.7	90.9	78.3
Benefits and harms evenly balanced	11.4	12.1	21.8	5.5	12.3
More beneficial than harmful	3.1	3.0	45.4	3.6	9.4

Notes : Beneficial = a blessing, more benefit than harm, not really harmful;
Ambivalent = benefit-harm evenly balanced, damages can be coped with;
Harmful = harmful, more harm than benefit, very harmful.

An overwhelming majority in all 3 areas viewed floods as harmful, the range varying from 77% in the Adjacent area to 87% in the Control area.

In the Project area, except for fishermen, all the respondents were overwhel-mingly of the opinion that floods are harmful, the largest proportion being in the urban category (>90%).

The dominant, although not majority (45%), view of the fishermen community was in favour of floods.

Among those holding a mixed view on floods, the largest proportion was among the fishermen, followed by the non-farm and farm households.

Comments :

- The contradiction between farmers and fishermen is further sharpened when one compares their opinion on flood related issues,keeping in view the definitional differences. More importantly, the fishermen appeared to be quite isolated from majority opinions which aggravates their minority community syndrome.

- Standard democratic practice would favour disregarding their views on the FAP or compartmentalisation, if there was no possibility of resolving their conflict with the vast majority; and this is perhaps what happened in the past in designing FCDI projects.

- However, fish being a very important part of our diet, culture and economy, due weight should be given to the reasonable and legitimate views of the fishermen, specially in respect of their recommendations on improving fisheries as a whole.

- In planning for compartmentalisation in respect of fishery, a joint session with fishermen, farmers and other interest groups is recommended, once preliminary plans are drawn up by the fisheries experts in consultation with the hydrologists, agronomists and landuse planners.

16.3 Experience of Flooding During the Last Five Years.

Flooding was reported to have been experienced by Project Area farm and non-farm households in 3 out of the last 5 years. There was some room for controversy in answering the question on the experience of flooding. As stated earlier in respect of definitions, different people understand different things by a flood. So, while controversies are highly unlikely about the floods of 1987 and 1988, some households which might have been on high ground, could still have said they did not experience flooding. The findings are summarised below :

Table 16.3A: Percentages of Households Reporting Experience of Flooding During the Last Five Years (1987 to 1991)

	1987	1988	1989	1990	1991
Farm	64	98	82	77	-
Non-farm	64	100	88	73	-
Fishermen	24	91	100	-	2
Urban	35	100	46	29	-

It is obvious that even inside the Project Area, there was considerable variation in reported experience of flooding. It would connote areal variations in topography and distance from the BRE as well as individual perceptions on flooding. There may also be a factor of memory lapse while recalling events

dated 6 to 7 years.

About a tenth of the fishermen reported no experience of flooding even in 1988, known as the year of the worst flood ever in this country.

There was wide variation among the different household categories in respect of their understanding of the causes of the flood they experienced. For example, reasons stated for the 1988 Flood, which was universally reported as experienced except for a few fishermen, are shown in Table 16.3B.

Table 16.3B : Causes of Flood as Perceived by Different Household Categories in the Project Area

Causes of flood	Farm	Non-farm	Fisher-men	Urban
	(percentages)			
Early rain	-	-	3.6	-
Excessive rain	-	-	-	-
Early river flood	8.5	-	7.3	-
Excessive river flood	-	9.8	50.9	12.7
Rapid water rise	-	-	25.5	1.8
BRE Breach	90.0	87.9	3.6	87.3
N.A.	1.6	2.3	9.1	-

While the 1988 Flood was reported to have been caused by all the three major listed above (BRE breach, rapid water rise and excessive river flood), it is interesting to note the divergent priorities put on them by different respondent categories. Fishermen operating in the rivers would naturally detect the rapid and excessive rise in river water long before the farmers or non-farm villagers would notice it. For the latter group it is not till the BRE has breached that they experience a flood.

The differences in perceptions and definitions appear to influence statements on experience of floods and their causality in recent years. Also recalling events of five plus years in the past is not easy. Far more accurate records of the occurrence and extent of flooding may perhaps be obtained from high resolution satellite images (such as SPOT). Nevertheless, household data do reveal some interesting insights on the attitudinal differences between the various interest groups, and their underlying causes.

16.4 Damages from Floods in Recent Years

Flood generally damage houses, crops and kitchen gardens, while inflicting losses on cattle and poultry. Since crop damages were covered under agriculture, given below is a brief summary of damage to houses and kitchen gardens and losses of livestock and poultry, for the year 1988.

Table 16.4 : Percentage of Households Experiencing Damages/Losses in 1988 Flood in the Project Area

	House damage	Kitchen gardens damaged	Livestock lost	Poultry lost
Farm	65.6	91.0	3.8	19.1
Non-farm	-	81.1	41.8	40.0
Fisherman				
Urban	-	61.8	1.8	25.5

16.5 What is to be Done about Floods : People's Recommendations :

Respondents were asked to mention two recommendation which they considered to be most urgently needed to be done, in the event of an impending flood as also for a long term solution to the problem. The responses are summarised separately for four relevant time periods.

16.5.1 Pre-flood Measures

Pre-flood measures recommended by the respondents are summarised in Table 16.5A.

Table 16.5A: Recommended Pre-flood Measures by Different Household Categories in the Study Area

Recommended Measure	Farm	Non-farm	Fisher-men	Urban	Women
Build/Strengthen embankment	70.0	55.3	41.8	60.0	54.7
Prepare in advance for relief	24.6	41.7	29.1	34.5	18.2
Timely warning	3.1	3.0	21.8	3.6	26.8
Other measures	2.3	-	5.2	1.8	31.4

Strengthening of existing embankments or building new ones is the most dominant recommendation from all categories of respondents, including fishermen. As expected, farmers are the most vocal in this regard, 70 percent of them recommending this measure, with the urban community a close second (60%). A surprisingly large proportion of fishermen (42%) also opted for this recommendation.

Interestingly it is the women who appeared to be more interested in timely warning then any other group, being closely followed by the fishermen.

16.5.2 Flood Period Actions Recommended

Various actions recommended for the flood period have been broadly summarised in Table 16.5B.

Table 16.5B : Recommended Flood Period Measures by Different Household Categories in the Study Area

	Farm	Non Farm	Fisher men	Urban	Women
Shelter	27.9	39.7	33.3	38.2	41.7
Flood & water	18.6	16.8	37.0	27.3	22.7
Transport	34.9	26.7	16.7	25.5	16.6
Health & sanitation	14.7	7.6	3.7	5.5	3.2
Others	3.9	9.2	9.3	3.6	15.8

There are no surprises in these recommendations. The differences between the groups in respect of their emphasis on the broad categories listed above are essentially marginal. Women and non-farm household heads appear more concerned about shelter than farm household heads for example, possibly vindicating the traditional conservatism of the farmer and an attachment to his land. Transport, ie mobility, during a flood seems to be his most dominant concern. What is slightly surprising is women's indifference towards health and sanitation during a flood.

16.5.3 Post Flood Actions Recommended

Interesting variations between the groups re-emerge when it comes to recommendations for post flood measures, as is seen in the summary Table 16.5C.

Table 16.5C : Recommended Post Flood Measures by Different Household Categories in the Study Area

	Farm	Non Farm	Fisher men	Urban	Women
Drainage canal etc	6.7	5.3	23.6	-	32.4
Housing: credit/TA	14.3	62.6	41.8	-	52.4
Agricultural rehab	31.1	13.0	3.6	-	8.0
Water & Sanitation	28.6	12.2	21.8	-	6.1
Others	19.3	6.9	9.1	-	1.1

Non-farm households are most concerned about housing; about 63% recommended. A majority of the women also voiced the same sentiment.

Predictably the farmers gave top priority to agricultural rehabilitation through credit and input arrangement.

Strengthening and maintenance of embankments, both BRE and others, came out as the strongest long term recommendation from all categories except the farmers who gave greater weight to

sluice gates and bridges, ie structures to allow controlled flooding.

16.5.4 Long Term Measures Recommended by People

The recommended long term measures are summarised in Table 16.5D. These recommendations give plenty to ponder over while drawing up compartmentalisation plans. The intergroup conflicts need to be carefully handled and interests of both upstream and downstream areas taken into consideration as well.

Table 16.5D : Recommended Long Term Measures by Different Household Categories in the Study Area

	Farm	Non Farm	Fisher men	Urban	Women
Excavate/reexcavate canals	3.7	4.5	27.8	1.8	19.0
Planned construction of sluice gates/ bridges etc	38.2	22.7	13.0	30.9	12.8
Strengthen/maintain embankments	18.3	36.4	40.7	40.1	32.9
Build new embankments	5.3	7.6	-	10.9	19.5
River train/ dredge	9.9	8.3	9.3	3.6	5.6
Others	25.2	20.5	9.3	2.7	10.2

CHAPTER 17

CREDIT

17.1 Introduction

In Bangladesh credit can be one of the important instruments to pull the economy up from its present state of backwardness to a 'take-off' state. It can fulfill the gap created by an acute shortage of capital.

Sirajganj survey area, too, has the problem of capital shortange. In this chapter some important issues like sources of credit, its extent, rate of interest, problems, etc will be discussed.

17.2 Credit Needs

Information on the credit needs and its satisfaction are presented in Table 17.1. From these it appears that there was a wide gap between the needs of credit and the satisfaction of such need in the study area. In the Project area about two-thirds of the respondents reported that they were in need of credit. Out of that only 17.0 percent had received credit in the last year preceding the interview. This means that about 47.0 percent of the household could not meet their requirements of credit. Likewise, a wide gap was reported to exist in the proportion of different categories of household. The highest gap was estimated among the non-farm and the lowest among the urban households.

Table 17.1 : Credit : Needs and Satisfaction

Household Type	Project		Adjacent		Control	
	N E E D		N E E D		N E E D	
	felt	satisfied	felt	satisfied	felt	satisfied
Farm	79	48	68	45	78	49
Non-farm	70	55	74	54	74	33
Fisherman	58	46	78	35	60	50
Urban	78	44	83	35	71	44
Total	73	43	74	45	73	43

About 3 in every 4 households expressed their need for credit. Of those who needed it 43 to 45 percent had their needs satisfied. This was the general picture of credit need and its satisfaction in the three study areas. There was very little variation in this overall picture in this area.

Within each area, however, differences existed between household categories. For instance, the fisherman households in Project as well as Control areas were less expressive or demanding in terms

of their need : only 58 to 60 percent of them said they needed credit, as opposed to farm households in the Project and the Control areas of whom 78-79 percent felt the need.

Further breakdown among the farm housholds of the Project area in terms of needs and its satisfaction is shown in Table 17.2.

Table 17.2 : Percentage Distribution of Farmers by Credit Needs and Credit Availability in the Project Area

	Needs	Avail
Pure Share Cropper	85.7	-
Marginal Farmer	77.8	19.4
Small Farmer	71.4	16.3
Medium Farmer	65.6	21.9
Large Farmer	33.3	16.7
Total	69.7	17.6

17.3 Sources of Credit

Sample households received loans from different sources. These sources were classified into non-institutional (non-formal) and institutional (formal) categories. Data on the sources of credit are presented in Table 17.3.

Table 17.3 : Sources of Credit by Household Categories in the Project Area

Source of Credit	Project				
	Farm	Non-farm	Fisher-man	Urban	All HH
Non-institutional:					
Friends/Relatives	65.1	25.6	-	37.3	49.3
Money Lenders & others	1.7	24.9	100.0	25.5	14.3
Sub-total	66.8	50.5	100.0	62.8	63.6
Institutional:					
Commercial Bank	2.1	8.5	-	35.9	11.4
Rajshahi Krishi Unnayan Bank	23.5	9.4	-	-	14.6
Grameen Bank	6.7	29.0	-	-	9.1
Cooperatives & others	0.9	2.6	-	1.3	1.3
Sub-total	33.2	49.5	-	37.2	36.4
Total	100.0	100.0	100.0	100.0	100.0

It is clear from this table that a major part of the loans was disbursed from non-institutional sources. On the other hand, institutional sources were responsible for the disbursement of a slightly more than one-third of the total loan money.

In the non-institutional sector friends and relatives had the major share. But among the fisherman, non-farm and urban households money lenders played a significant role. Indebted fisherman households received 100 percent of their loan money from money lenders, while the indebted urban and non-farm households 26 percent and 25 percent from them respectively.

In the institutional sector, Rajshahi Krishi Unnayan Bank (RKUB) had the lion's share (15 percent), followed by Commercial Banks (11 percent) and Grameen Bank (9 percent). Cooperatives and NGOs still had a minor role in the credit sector. It is also important here to mention that in the formal sector farm households relied the most on Rajshahi Krishi Unnayan Bank (24 percent), non-farm household on Grameen Bank (29 percent) and urban households on commercial banks (36 percent).

17.4 Rate of Interest (Non-institutional)

In most cases, indebted household had to pay high rates of interest to non-institutional sources. In the Project area, 75 percent of the loan cases had more than 50 percent interest rate. On the other hand, interest rate in formal credit was in most cases below 20 percent. From data in annexure, it is also clear that all the fisherman loanee had taken loan from money lender and had to pay a rate between 51-100 percent. Friends and relatives generally provide loan without interest and these loans are generally for a very short period.

Table 17.4 : Average Loan Taken by Households in Different Study Areas

Area	Farm		Non-farm		Fisherman		Urban	
	Inst	Non-inst	Inst	Non-inst	Inst	Non-inst	Inst	Non-inst
Project	854	815	436	445	-	1600	1009	1699

17.5 Credit Institutions

The Project area is served by several branches of Rajshahi Krishi Unnayan Bank, Grameen Bank and Sonali Bank. Besides, Sirajganj Pourashava which is one of the 9 compartments of the Project area is served by almost all the nationalised and private commercial banks of the country. Moreover, Sirajganj town is well connected by Sirajganj-Kazipur road, Sirajganj - Bhadraghat road (part of Sirajganj - Bogra road) and other branch roads. Important centres like Bhadraghat, Pupilbaria, Shahangachha, Banglabazar, etc are also served by bank branches. Therefore, in Bangladesh context

the Project area has better bank service facilities. It has been already mentioned that 36.0 percent of the total loan in the Project area was disbursed by the loan giving institutions. But in the rural area Rajshahi Krishi Unnayan Bank disbursed 24.0 percent of the total loan to farmers and 9.0 percent to non-farmers, while Grameen Bank - 7.0 percent to farmers and 29.0 percent to non-farmers. Share of commercial banks was low - 2.0 percent to farmers and 9.0 percent to non-farmers. Fishermen were found out of the purview of these institutions. They were left with the money lenders. On the other hand, among institutions urban area was almost exclusively served by commercial banks.

Although the Project area is relatively better served by bank branches, yet a significant proportion of households were still outside bank services. There were various obstacles in obtaining credit from institutional sources.

CHAPTER 18

FORMAL AND INFORMAL INSTITUTIONS

18.1 Introduction

Sustainable development requires mass participation. Appropriate formal and informal institutions at different levels are needed to ensure such participation in various important programmes of development. This chapter attempts to review the existing level of awareness of the respondents about the existence of local level institutions such as cooperative societies and NGOs, and their participation in these institutions. It also takes up the important issue of who can best represent the views of the masses.

18.2 Cooperative and NGO Coverage

18.2.1 Cooperative Coverage

Awareness of cooperatives in the Project area was 47.0 percent. Among the fisherman community awareness was the highest at 58.0 percent, while among the urban dwellers it was the lowest at 31.0 percent. Participation of household members in cooperatives was reported to be low. Only 11.5 percent households had members with cooperatives. The fishermen had the highest participation rate at 36.0 percent. While the urban household had the lowest participation rate at about 4.0 percent. The average number of members per participating household was 1.4. Among the participating farm household membership rate was the highest at 1.7. All other household categories had less than average (Table 18.1).

Table 18.1 : Existence of Cooperatives in Different Study Areas.

Study Area	Awareness	Participation	Av. number of member
Project :			
Farm	44.3	9.8	1.7
Non-farm	51.5	6.0	1.0
fisherman	58.0	36.4	1.3
Urban	46.9	11.5	1.4

18.2.2 NGO Coverage

A slightly more than a half of the male respondents knew about the existence of NGOs in their locality. Awareness level among the non-farm households was the highest (66.0 percent), while among the fisherman households, it was the lowest (9.0 percent). Although awareness level was moderate, participation rate was very low at 1.3 percent. Fisherman and urban communities had no participation in any of the NGO activities. The participating households had 2 members on average (Table 18.2).

Table 18.2 : Existence of NGO in Different Study Areas

Study Area	Awareness	Participation	Av number of member
Project :			
Farm	64.1	2.3	2.7
Non-farm	66.2	1.5	1.0
Fisherman	9.3	-	-
Urban	27.8	-	-
Sub-total	51.2	1.3	2.0

18.3 Services and Facilities

Various services and facilities were provided by the cooperative societies and NGOs to their members in the study areas. Farm households were reported to participate mostly in the credit and saving programmes and the non-farm and fisherman households in the tubewell and credit programmes. An insignificant proportion of households also participated in the training programme organised by these cooperative societies. Services like advice on input use, procurement of agricultural input, marketing etc were also mentioned by some members. Almost the same services were provided by the NGOs on a limited scale.

18.4 People's Participation : Institutional Framework

Although there has been considerable articulation of the need for and debate about public participation in the Flood Action Plan, it is still unclear : what is the best way to ensure it. An important issue in this regard is who can best represent the views of individuals in respect of reflecting their hopes, fears and aspirations. The question of representation assumes importance because it is not possible always to consult everybody over every issue. Any democratic system has to depend on a set of public representatives who can accurately reflect the position of their constituency and also educate and motivate them towards progressive policies and programmes which may initially appear as unacceptable to many.

The Household Survey in Sirajganj specifically asked respondents about who their best spokesperson was in matters related to development. The answers are shown in Tables 18.3A and 18.3B for households heads, predominantly male, and in Tables 18.4A and 18.4B for women. There are a number of interesting and important insights and conclusion to be drawn from them. These are briefly listed below.

18.4.1 Communication Gaps between Elected Public Representatives and their Constituency

All the elected public representatives fared rather poorly in having the confidence of their constituency as their spokesperson. The worst showing was by Members of Parliament who obtained only 0.4 percent vote from the household heads and 0.3

percent from the women in these households. The best performance among elected functionaries was by Union Parishad Chairmen, obtaining 6.5 percent votes of the household heads and 7.7 percent from women. The Ward Members were closely behind.

Table 18.3A : Household Heads Opinion About Best Spokesperson in 3 Study Areas

	Project	Adjacent	Control	Total
Self	16.3	14.9	17.1	16.1
Spouse	.5	.3	.8	.5
Clan Chief	15.2	17.3	16.3	16.3
Matbar	40.4	53.5	45.5	46.4
School Teacher	2.9	1.9	3.2	2.7
Most Educated person in the village	1.9	2.9	2.4	2.4
NGO Worker	.3	-	-	.1
Ward Member	8.3	3.2	5.9	5.8
UP Chairman	9.4	5.3	4.8	6.5
Municipality Chairman	.5	.3	1.3	.7
Local MP	.5	.3	.3	.4
Others	3.7	.3	2.4	2.1
Total	33.3	33.5	33.3	100.0

The results indicate an alarming communication gap that appears to have developed, as a result of the modus operandi of our political system. The MPs proximity with grass roots constituency appears to be limited to periods of election and the exigencies of parliamentary business gradually pull them away from their constituency and keep them bound to Dhaka. To a lesser degree this also happens in case of the Thana Council and Municipality Chairman.

Whatever the reasons underlying the communication gap, it needs to be taken note of in developing an appropriate institutional framework to ensure public participation. The MPs on their part must find bridges so that their role as a public representative becomes truly meaningful.

18.4.2 Matbar : the Best Spokesperson

The traditional village leader seems to have weathered all the adverse writings of village study experts and city based intellectuals and obtained an overwhelming confidence vote from the respondents of this survey. They obtained a remarkable 49% overall vote of confidence from the household heads and 46% from the women.

Table 18.3B : Household Head's Opinion About Best Spokesperson in Different Household Categories in the Project Area

	Farm	Non-farm	Urban	Fisher-men	Total
Self	13.1	11.9	29.1	27.3	17.1
Spouse	-	-	5.5	-	.8
Clan Chief	16.2	17.2	5.5	25.5	16.3
Matbar	46.9	53.0	25.5	43.6	45.5
School Teacher	5.4	3.7			3.2
Most Educated person in the village	3.8	3.0	-	-	2.4
Ward Member	4.6	4.5	18.2	-	5.9
UP Chairman	5.4	6.0	3.6	1.8	4.8
Municipality Chairman	-	-	7.3	1.8	1.3
Local MP	-	-	1.8	-	.3
Others	4.6	.7	3.6	-	2.4
Total	34.8	35.8	14.7	14.7	100.0

It is evident that the Matbars need in some way to be drawn into the institutional framework for public participation. They most certainly would be a suitable candidate for bridging the existing communication gap between higher echelon public representatives and the grass roots. It is of course necessary also to be aware of the prospect of changing them into a barrier rather than a bridge, thus causing a more serious type of problem, namely receiving wrong signals from the grass roots. But, if effectively used, this traditional institution has a lot to offer.

18.4.3 Spouse confidence

Both husbands and wives seem to have a lack of confidence in each other's ability to reflect their views on development issues. While husbands would virtually never agree to have their wives represent them, only 6.5 percent wives would accept their husband for the same role. This is a remarkable finding which should be noted by sociologists who seem to think that women continue to be totally subservient to husbands.

18.4.4 No Confidence in Intellectuals and NGOs

There was a remarkable absence of confidence in some institutions traditionally regarded as enjoying respect and confidence in rural areas, such as the school teacher and the most educated person in the village. It reflects the gradual degradation of the formal educational institutions and products thereof. The most educated person in the village may no longer be the humble. University student who organises cleaning of the village pond and holding of a school drama during the vacation. Instead he may be a half baked college-leaver turned into a political activist, or worst still, a Mastan.

Table 18.4A : Women's Opinion About Best Spokesperson in 3 Study Areas

	Project	Adjacent	Control	Total
Self	1.9	2.9	1.3	2.0
Spouse	8.8	3.2	7.4	6.5
Clan Chief	19.3	21.9	16.0	19.0
Matbar	48.9	41.7	58.0	49.6
School Teacher	1.9	1.3	.8	1.3
Most Educated Person in the Village	1.6	1.3	2.4	1.8
Ward Member	3.7	10.2	5.1	6.3
UP Chairman	7.0	9.6	6.6	7.7
Municipality Chairman	1.6	.3	.5	.8
Local MP	.3	.5		.3
Others	5.1	7.0	1.9	4.6
Total	33.3	33.3	33.5	100.0

The NGOs received nil vote. One may argue that there was no active national NGO in the area, since Grameen Bank is not really regarded as an NGO. However, some households admitted to be aware of the existence of NGOs.

Table 18.4B : Women's Opinion About Best Spokesperson in Different Household Categories of the Project Area

	Farm	Non-farm	Urban	Fisher-men	Total
Self	-	-	10.9	1.8	1.9
Spouse	10.7	5.3	12.7	9.1	8.8
Clan Chief	22.1	18.0	1.8	32.7	19.3
Matbar	46.6	57.1	40.0	43.6	48.9
School Teacher	.8	2.3		5.5	1.9
Most Educated person in the village	3.1	.8	1.8	-	1.6
Ward Member	3.1	1.5	12.7	1.8	3.7
UP Chairman	8.4	8.3	5.5	1.8	7.0
Municipality Chairman	-	-	10.9	-	1.6
Local MP	-	-	1.8	-	.3
Others	5.3	6.8	1.8	3.6	5.1
Total	35.0	35.6	14.7	14.7	100.0

CHAPTER - 19

FAMILY PLANNING PRACTICES

19.1 The Population Problem Economic Development and Family Planning in Bangladesh

The population of Bangladesh has been growing naturally at the rate of 2-3 percent over the last four decades. At this rate the population double in every 25 to 35 years thus nullifying developmental gains achieved during this period. Such a rate of growth of the population cannot be sustained in Bangladesh for too long. About this there is a general consensus by now. There is, however, considerable debate about how to reduce the growth rate without adopting Draconian measures. Making available contraceptive services at the door step of eligible couples has been advocated by those who believe in the thesis of 'unmet demand'. On the other hand, there are those who say that there is no basic motivation for reducing family size when the technology is backward and basic security to life, including old age security etc, are missing. So development has to precede any significant decline in fertility. The course of Demographic Transition in industrialised countries are cited to prove of the point.

The Compartmentalisation project in Sirajganj provides a unique opportunity of combining both perspectives and prescriptions, and obtain a rapid decline in fertility through a simultaneous and synergistic impact of effective service delivery and improved human condition. The enhanced pace of development under CPP will make it possible to deliver the services smoothly and effectively, making it easier for women with a hidden demand to come forward. At the same time development will have its own impact by ushering in mechanisation, improving labour productivity, child survival and ensuring income security.

For reasons stated above the consultants felt it was necessary to have some benchmarks on the current state of affairs in respect of family planning. Some simple questions on contraceptive practice by eligible couples and the source of their supply were added to the survey questionnaire for women. The reasons for non-use was also enquired upon. The findings are presented in this Chapter.

19.2 Contraceptive Prevalence Rate (CPR) :

Contraceptive prevalence rate (CPR) is the ratio of currently married women below 50 years of age who are at present using contraception to total eligible women (currently married and below 50 years of age). The findings are presented in Table 19.1. It appears from this table that about 46.0 percent of the currently married women below 50 years of age, were reported as current users of contraception, against a national average of 40.0 percent (Contraceptive Prevalence Survey 1991). The CPR in

Rajshahi Division was higher than in any other division. The Study areas are in Rajshahi Division. So, it is not unlikely that CPR in the study areas were higher.

Table 19.1 : Contraceptive Prevalence Rate (CPR) in the Study Areas

Study area	Farm	Non-farm	Fisherman	Urban	Total
Project	40.8	38.5	40.4	56.5	42.1
Adjacent	36.0	44.7	44.7	41.9	41.4
Control	60.4	53.7	44.9	48.9	53.8
Total	45.7	45.1	43.2	49.3	45.6

The highest CPR (54 percent) was found in the Control area, followed by the Project area (42 percent) and Adjacent area (41 percent).

Within the Project area, it is natural that the highest CPR was reported in the urban area (Sirajganj Pourashava), where better facilities were available. Among rural households CPR was at a level of 40.0 percent (41.0 percent for farm households and 39.0 percent for fisherman households.

19.3 Family Planning Methods

Family planning methods are grouped under two broad headings :

- Modern methods : oral pill, condom, IUD, terminal (tubectomy and vasectomy) and other modern methods like injection, foam/jelly, etc.
- Traditional methods : withdrawal, abstinence and safe period.

The findings on currently used methods in different study areas is presented in Table 19.2. It is seen that modern methods were predominantly used in the study areas; 88 percent were reported to be currently using one of the modern methods, while about 12 percent used the traditional methods.

Oral pill emerged as the main family planning method in all the three study areas; 51 percent of the current users were using this method, followed by terminal methods (18 percent) and other method (13 percent). Condoms and IUD were less frequently used.

There were some variations in the method-specific use rates in the different study areas. Current use of oral pill was the highest in the Control area (54.0 percent), followed by the Project area (52.0 percent) and Adjacent area (48.0 percent). Terminal methods had relatively more users in the Adjacent (25.0 percent) and Control (21.0 percent) areas, while other methods - in the Project area (23.0 percent).

Table 19.2 : Family planning methods currently used in different study areas

Methods	Project	Adjacent	Control	Total
Modern Methods :				
Pill	51.5	48.4	53.9	51.4
Condom	4.5	0.8	3.9	3.1
IUD	1.5	1.6	3.9	2.4
Terminal	9.0	25.4	20.8	18.4
Other modern methods	23.1	8.7	7.8	13.0
Sub-total (modern methods)	89.6	84.9	90.3	88.4
Traditional method	10.4	15.1	9.7	11.6
Total	100.0	100.0	100.0	100.0

19.4 Sources of Family Planning Methods

In order to significantly raise CPR, easy availability of family planning methods to the door-step of the users is essential. From this view point, the source of supply is an important issue in family planning. The findings in this regard are shown in Table 19.3. It is seen from this table that family planning workers, namely Family Welfare Assistants (FWA) posted at ward levels and Family Planning Assistants (FPA) posted at union levels were the major sources of supply. FWA is a female worker. One of her main duties is to undertake home visit and distribute suitable methods (non-clinical) to an eligible woman. FPA, a male worker, is also responsible for the distribution of methods to a limited scale. Shops were mentioned by 13.0 percent respondents as their supply source.

It can be concluded that FP workers and shops were the main sources of non-clinical methods namely pill, condom, injection, vaginal methods (foam/jelly etc.). On the other hand, for the supply of clinical methods (sterilisation, IUD, etc.) hospitals were mentioned as the most important source. Twenty one percent of the current users obtained their methods from this source. Another 7 percent had obtained it from clinics, probably from Family Welfare Clinics (FWC). Table 19.3 also shows that relatively more women were reported to get sterilised either in the hospital or clinic in the Adjacent and Control areas.

Table 19.3 : Sources of F.P. methods in different study area

Sources	Project	Adjacent	Control	Total
Clinic	7.3	5.7	7.2	6.7
Hospital	9.8	27.0	25.9	20.9
FP Worker	69.1	49.5	49.6	56.0
Shop	10.6	12.6	14.4	12.6
Others	3.2	5.4	2.9	3.8

19.5 Reasons for Non-use of Methods

In the study areas, majority (54 percent) of the eligible female respondents were not currently using any methods. Policy makers and programme managers should know why such a big proportion was not using any methods at the time of the survey. With a view to answering this question, reasons for non-use were analysed and presented in Table 19.4. It appears from this table that 45 percent of the non-users were not using any method because they were currently pregnant or desiring more children. Due to a fear of side effects, another 21 percent did not use any method. Unwillingness of husbands and elderly people was mentioned by 13 percent respondents as their reasons for non-use. Difficulties with supply were faced by 3 percent respondents. Two percent were not using any method due to their perceived notion about religious restrictions.

Table 19.4 : Reasons for non-use of FP methods in different study areas

Reasons for non-use	Project	Adjacent	Control	Total
Desiring more children	32.0	39.9	40.1	37.3
Currently pregnant	10.2	5.6	8.8	8.2
Unwillingness of husband	6.1	8.4	9.5	8.0
Unwillingness of elderly people	2.7	7.7	4.1	4.6
Husband staying outside	5.4	8.4	3.4	5.7
Difficulties with supply	2.0	4.2	2.7	3.0
Religious restrictions	4.8	1.4	0.7	2.3
Fear of side-effects	29.3	18.9	16.3	21.1
Others	9.5	5.6	14.3	9.8

On the basis of the above discussion it can be said that FP service facilities are to be improved so that people have no fear of side effects. Motivational elements of the programme are to be strengthened, so that husbands and elderly people would understand the seriousness of the problem. Regular supply at the doorstep of users is necessary but this did not come out as a major problem. Training of religious leaders (including Imams) should be strengthened. If these are done, CPR will be expected to rise appreciably and hence population growth rate will be further slowered down.