

**CASE STUDY ON THE SOCIO-ECONOMIC CONDITIONS
AND ALTERNATIVE LIVELIHOOD STRATEGIES OF FISHER
COMMUNITY IN TERA KHADA UPAZILLA UNDER
KHULNA DISTRICT**



**A Project Thesis
By**

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Examination Roll No: MS-000620
Session: 1999-2000**

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**The project Thesis submitted to the Fisheries and Marine
Resource Technology Discipline in Partial fulfillment of the
requirements for the**

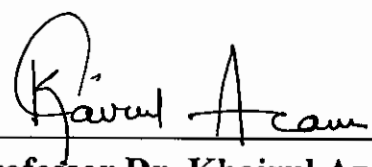
**Degree of
Masters of Science
In
Fisheries and Marine Resource Technology**

July, 2003

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DISTRICT**

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Declaration

The results submitted in this project thesis are entirely of candidate's own investigations and no part of the results has been accepted for any degree, nor it is being concurrently submitted for any degree.



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Dedicated

To

My Beloved Parents and Nephew Rion

ACKNOWLEDGEMENT

All my admiration and indebtedness go for the Supreme Creator and Ruler of the Universe, Almighty God whose compassion retains me alive and enables me to pursue my education in Fisheries and Marine Resource Technology Discipline, Khulna University, Khulna and to complete my thesis for the degree of Master of Science (M.S) in Fisheries and Marine Resource Technology.

I express my deepest sense of gratitude, indebtedness and profound regard with solemnity to my supervisor Sk. Mustafizur Rahman, Assistant Professor, Fisheries and Marine Resource Technology Discipline, Khulna University, Khulna for his scholastic guidance and continual effective help to execute this thesis work successfully and for patience in going through the manuscript.

I would like to express my heartiest gratitude and profound respect to Prof. Dr. Khairul Azam, Head, Fisheries and marine resource Technology Discipline, Khulna University, and Khulna for his kind co-operation, during the study period and help in various steps of this project thesis.

I recall with warm appreciation and indebtedness for the support, guidance and suggestion extended to me by all my respected teachers in Fisheries and Marine Resource Technology Discipline, Khulna University.

I am very much grateful to the Fish farmers of Terakhada upazilla for their cooperation and support. I also grateful to Fisheries officer, LGED officer and Land officer of Terakhada upazilla for their cooperation and for supplying information.

I like to express my best wishes and sincere thanks to my friends Biswajit and Hasu and juniors specially Tuhin and Rony (Motu) who encouraged and helped me to conduct the survey and thesis.

Last of all, I express my deepest gratitude to my parents and to my family for standing all the way by my side.

July, 2003



The Author

ABSTRACT

The investigation was carried out on the socio-economic conditions and alternative livelihood strategies of fishermen at Terakhada upazilla in Khulna district during August to September, 2002. The information was collected from 275 fishermen covering 11 villages under Terakhada upazilla. From the survey it was found that out of 275 fishermen 205 were male and 70 were female. A large portion (49%) were aged between 26 to 40 years and majority of them were Hindus (66%). 70% of the fishermen were found as married. It was found that 90 % of fish farmer were literate at various stages of education. The size of average household was 6.00 person where 3.30 were male and 2.70 were female. The sex ratios of fish farmers were 100: 81.82. A total of 1.45 children were attending school per household of which 0.81 were boys and 0.64 were girls. There were 0.28 children per household dropped out from school where 0.15 were boys and 0.13 were girls. Sixty five percent (65%) fish farmers lived in katcha house and 60% did not use electricity. The main occupation among fish farmers was agriculture (38%). In the study area, 65% fish farmers had below 50 decimal agricultural lands. Yearly income of 25% farmers was below Tk. 12,000. Most of them (56.36%) have a single pond with an area between 11-20 decimal. These areas were free from flood, cyclone and other natural calamities. Among all ponds 65% were perennial. Fifty five percent (55%) have their own pond and the rest were multi-ownership or leaseholder. Seventy (70%) farmers did not prepare fish pond before stocking and only 40% use pesticides, 50% fish farmers use lime and fertilizer. Carp polyculture was practiced in 70% ponds and major cultured species were rui, catla, mrigal, silver carp, grass carp, common carp, rajpunti and nilotica. Results of this study revealed that various types of fishing gears were found to operate in Terakhada upazilla which were broadly classified into nets, traps and wounding gears. All farmers harvested fish partially. The average fish production was 7.50kg/decimal. Ninety-five (95%) farmers had no training in fish culture and never went to fisheries expert for any advice. Among the fish farmers, 45.09% borrowed money from NGO's. 30.18% borrowed for agriculture and only 17.82% for fish farming. Daily common food items for fish farmers were fish and dal. Seventy two percent (72%) of farmers took 3 meals per day and 92% used tube well for drinking water and 63% used closed pit for sanitation. Majority of fish farmer (34.91%) were affected by fever and 47.27% of them were taken treatment from the quack or nurse.

CONTENTS

	Page No
ACKNOWLEDGEMENT	I
ABSTRACT	II
CONTENTS	III-XI
LIST OF TABLES	VII
LIST OF FIGURES	VIII-IX
LIST OF PHOTOGRAPHS	X
LIST OF ABBREVIATIONS	XI
CHAPTER 01: INTRODUCTION	
1.1 Background of the Study	1
1.2 Objective of the Study	2
1.2.1 Overall objective	3
1.2.2 Specific objective	3
1.3 Rationale of the objective	3
CHAPTER 02: REVIEW OF LITERATURE	4-9
CHAPTER 03: MATERIALS AND METHODS	
3.1 Study area	10
3.2 Site selection	10
3.3 Field survey and observation	10
3.4 Fishermen Category	10
3.5 Questionnaire survey	11
3.6 Indicators used	11
3.7 Collection of Data	12
3.7.1 Primary source	12
3.7.2 Secondary sources	12
3.8. Data Analysis	12
CHAPTER 04: RESULTS AND DISCUSSION	
4.1. Livelihood Conditions of the Fishermen:	15
4.1.1. Sex:	15
4.1.2. Age Group	15
4.1. 3. Religion	16
4.1.4. Marital status	17
4.1.5. Family Condition	17

4.1.5.1. Family type	17
4.1.5.2. Family Size	18
4.1.6. Housing condition	19
4.1.6.1. House type	19
4.1.6.2. Use of electricity	19
4.1.7. Educational Status	20
4.1.7.1. Education Level of fishermen	20
4.1.7.2. School Going Children of fishermen	21
4.1.7.3. School drop out Children of fishermen	21
4.1.7.4. Causes of school drop out	22
4.2. Main Occupation	23
4.3. Type of Fish Farmer	23
4.4. Assets	24
4.4.1. Pond ownership	24
4.4.2. Own agricultural land	25
4.4.3. Number of cultural pond	25
4.4.4. Total area of culture pond	26
4.4.5. Poultry and livestock's	26
4.5. Food and Nutrition Intake	26
4.5.1 Food item intake by the fishermen	26
4.5.2. Number of meal per day	28
4.6. Health and Sanitation	28
4.6.1. Sources of drinking water	28
4.6.2. Sanitation practice of the fishermen	29
4.6.3. Effect of disease	29
4.6.4. Nature of treatment	29
4.7. Pond Preparation	30
4.7.1. Use of pesticides	30
4.7.2. Use of lime / fertilizer	31
4.8. Fish Culture and Production	31
4.8.1. Types of pond	31
4.8.2. Pattern of fish culture	32
4.8.3. Major culturable fish species	32

4.8.4. Major fish species recorded in the catches by different fishing gears	33
4.8.5. Fish Production	33
4.9. Preventive Action for Fish Disease	33
4.10. Fisheries Experts' Advice to Fish Farmer	34
4.11. Fishing Methods	34
4.11.1. Fishing Gears operated in the study area	34
4.11.2. Fishing Traps used in the study area	35
4.11.3. Description of wounding gears used in the study area	36
4.11.4. Boat used in fishing in the study area	37
4.12. Drying Procedure of Fish	38
4.13. Marketing System	39
4.14. Income and Expenditure from Fish Culture	40
4.14.1. Monthly Income	41
4.14.2. Yearly Income	41
4.15. Economic Condition	42
4.15.1. Money Borrowing	42
4.15.2. Purpose of borrowing money	43
4.16. Institutions and Organizations	44
4.17. Mobility of the Villagers	45
4.17.1. Men's Mobility	45
4.17.2. Women's Mobility	46
4.18. Infrastructure of the Upazilla	47
4.19. SWOT Analysis of Terakhada Upazilla	48



CHAPTER 05: ALTERNATIVE LIVELIHOOD STRATEGIES

5.1 Reasons Behind Choosing the Occupations	49
5.1.1 Agriculture	49
5.1.2 Daily labor	49
5.1.3 Livestock rearing	50
5.1.4 Poultry & pigeon	50
5.1.5 Petty trade	50
5.1.6 Multi purpose tree species Plantation	50

5.1.7 Handicrafts	50
5.1.8 Making of net	51
5.1.9 Rice making for sells from buying low cost paddy	51
5.1.10 Fruit and vegetable cultivation	51
5.2 DFID Suggested Alternative Option for Fishermen of Bangladesh	52
5.2.1 New Options (Where there is access to land)	52
5.2.2 New Options (Land less)	52
5.3 Strategic Recommendation from the Present Study	52
5.3.1 Resource level	52
5.3.2 Community level	54
5.3.3 NGO level	54
5.3.4 Government level	55
5.3.5 University and institutional level	56
CHAPTER 06: CASE STUDY	57-62
CHAPTER 07: PROBLEMS AND RECOMMENDATIONS	63-66
CHAPTER 08: REFERENCES	67-71
CHAPTER 09: APPENDICES	
Appendix-1	72-75
Appendix-2	76
Appendix-3	77-80
Appendix-4	81-92

LIST OF TABLES

SL. No.	Table	Page No.
		72
Table-1:	Age group of fish farmer	72
Table-2:	Literacy status of respondent's fish farmer	72
Table-3:	Number of cultural pond of Fish farmer	73
Table-4:	Total pond area of Fish farmer	27
Table-5:	Community wealth ranking of twenty-five fish farmer of Terakhada upazilla.	73
Table-6:	Sanitation practice of Fish Farmer	73
Table-7:	Diseases of Fish farmer	74
Table-8:	Nature of treatment of the Fishermen	32
Table-9:	Major fish species cultured in the study area	33
Table-10:	Major fish species caught in the study area	33
Table-11:	Total fish production in the study area	74
Table-12:	List of some dry species observed in the study area	75
Table-13:	Sources of borrowing money	75
Table-14:	Purposes of borrowing money	51
Table-15:	Reasons behind the Group wise alternative ranking of Terakhada upazilla.	

LIST OF FIGURES

SL. No.	Figure	Page No.
		13
Figure-1 :	Schematic diagram of methodology of the study	14
Figure-2:	Location of study area in Terakhada Upazilla	15
Figure-3:	Proportion of sex	16
Figure-4:	Age group distribution of fishermen	16
Figure-5:	Religion status of fish farmer	17
Figure-6:	Marital status of fishermen	18
Figure-7 :	Family type of fishermen	18
Figure-8:	Family size of fishermen	19
Figure-9:	Housing condition of fishermen	19
Figure-10:	Utilization of electricity	20
Figure-11:	Educational status of fishermen	21
Figure-12:	School going children of fishermen per Household	22
Figure-13:	Proportion of drop out school boys and girls	22
Figure-14:	Causes of school drop out	23
Figure-15:	Occupation of fishermen	24
Figure-16:	Types of fish farmer	25
Figure-17:	Ownership of pond	25
Figure-18:	Agricultural land ownership	26
Figure-19:	Food and nutrition intake of fishermen	28
Figure-20:	Number of meal per day	29
Figure-21:	Drinking water source of fishermen	30
Figure-22:	Pond preparation	30
Figure-23:	Use of pesticides in culture pond	31
Figure-24:	Use of lime/fertilizer in cultured pond	31
Figure-25:	Pond types of fishermen	32
Figure-26:	Pattern of fish farming	38
Figure-27:	Flow diagram of drying process of fish in the study area	40
Figure-28:	Four levels of fish markets in the study area	41
Figure-29:	Yearly income status of fishermen	

Figure-30:	Flow diagram of credit sources for fish farmers in Terakhada upazilla.	43
Figure-31:	The Venn diagram of the villagers of Terakhada Upazilla	44
Figure-32:	Mobility of male of Terakhada Upazilla	45
Figure-33:	Pattern of women's Mobility in Terakhada upazilla	46



LIST OF PHOTOGRAPHS

SL. No.		Page No.
Photograph -1:	The author with the fisherman family at Ajagarah village	76
Photograph -2:	The author with the fisherman family at Terakhada village	76

LIST OF SKETCHES

SL. No.		Page No.
Sketch -1:	Dominant gears used in Fishing at Terakhada Upazilla	77
Sketch -2:	Dominant traps used in Fishing at Terakhada Upazilla	78
Sketch -3:	Dominant wounding gears used in Fishing at Terakhada Upazilla	79
Sketch -4:	Boat used in Fishing at Terakhada Upazilla	80

LIST OF ABBREVIATIONS

BBS	Bangladesh Bureau of Statistics.
BRAC	Bangladesh Rural Advancement Committee.
BARC	Bangladesh Agricultural Research Centre.
BFDC	Bangladesh Fisheries Development Corporation.
CPP	Compartmentalization Pilot Project.
CODEC	Community Development Centre.
CIRDAP	Centre for Integrated Rural Development for Asia and Pacific.
CARE	Co-operative for American Relief Everywhere.
DoF	Department of Fisheries.
DANIDA	Danish International Development Agency.
DFID	Department For International Development.
FAO	Food and Agricultural Organization.
FMRT	Fisheries And Marine Resource Technology
GO	Government Organization.
IPFC	Indo- Pacific Fisheries Commission.
LGED	Local Government Engineering Department.
NGO	Non-Government Organization.
PRA	Participatory Rural Appraisal.
RRA	Rapid Rural Appraisal.
SWOT	Strength, Weak, Opportunity and Threats.
SRF	Sundarbans Reserve Forest.
VGf	Vulnerable Group Feeding.
UNDP	United Nations Development Programme.

CHAPTER ONE
❖
INTRODUCTION



1.0 Introduction

1.1 Background of the study

Bangladesh is situated in the subtropical region has an area of 1, 47,570 sq. km. It is an agro based riverine country with a huge delta of water resources. The inland fishery of Bangladesh is one of the most productive resources in the world. The fisheries resources of Bangladesh represents about one percent of the total world fish catch (FAO, 1997).

Bangladesh is blessed with a vast tract of waterbodies in the form of rivers, canals, depressions (haors, baors), reservoir, Kaptai Lake, ox-bow lakes (baors), ponds, tanks, seasonally flooded areas and Bay of Bangal. According to an estimation, the inland fisheries resources covers an area of 4.46 million hectares of which 90% comprises capture fisheries and 10% closed water culture fisheries (DoF, 1995). Inland open water is the major sources of fish production in the country. Now only about 42% of total fish production comes from inland open water. But production from closed water bodies is increasing very sharply due to dissemination of adaptive technologies and effective extension services rendered by DoF (2000).

Fish and fisheries play an important role in the flourishing of social and economic life of Bangladesh in terms of income, nutrition, employment and foreign exchange earnings. The people of Bangladesh depend on fish as the principle source of animal protein. It contributes around 5.3% to the GDP and 5.77% to foreign exchange earning through export. Fish provide 63% of national animal protein consumption (DoF 2002). Fisheries provides livelihood to about 12 million people of the country directly or indirectly and other ancillary fishery activities. The sector provides employment of about 12% of the total population (Sikdar, 1999).

Fishing in Bangladesh has traditionally been an occupation primarily of members of particular lower caste Hindus (such as Rajbansi, Malo, Halder and Kaibarto etc). But at present Muslims are involved in this occupation as professionally & commercially being considered as having low social status. While a core of full time fisher folk of particular castes are still to be found in most flood plain areas of the country, there is now a days a wider range of rural people becoming more and more involved in fisheries. In addition, a very large number of people are engaged in subsistence fishing and in activities related to the fisheries sector. Fishing in Bangladesh has traditionally an occupation primarily of

the traditional caste fishermen, the non traditional fishermen, jal mohal lease holders and trawler or mechanized boat owners (who are not fishermen) and the public who catch fish for subsistence purposes.

There is no denying the fact that fishermen and fishing community as a whole the poorest and most disadvantaged group of Bangladesh. Fishermen's villages are mostly located in inaccessible areas, where there is little communication, developmental or social impact. They have no other activities except fishing, which can not be carried out throughout the year, and in idle periods, they lack alternative employment opportunities. Their socioeconomic development is negligible. As fishermen are the main forces behind harnessing the enormous fishery resources their contribution is inevitable. Hence it is essential to know the livelihood status of fishermen.

Terakhada Upazilla is situated on the northern side of Rupsha Thana (Khulna district), eastern side of Kalia Thana (Narail district) and western side of Mollahat Thana (Bagerhat district). It has an area of 72.73 sq.km. It was upgraded to upazilla in 1987 by a Government order. It is surrounded by the river Chitra. In Terakhada Upazilla, there are 99 villages under 6 Unions. There are 1300 ponds (Area 98 hactres); 33 Dighis (Area 64 hactres); 750 ghers (Area 698 hactres); 5 Khas Ponds (Area 2.68 hactres); 16 closed water bodies (Area 63.07 acres); 44 chingri depots and 9 fishermen co-operative society in this upazilla (Source LGED office and Thana Fisheries Office, Terakhada, 2002).

1.2 Objective of the study

The climate of Terakhada is suitable for fish farming and fish farming has been practiced here from the very past. Traditionally, Terakhada is called the country of "Kuwait" due to the tremendous role in fisheries in earning foreign currency. But there is no study so far has been carried out about the status of fishing community in this region. Now a days they are facing huge problems to lead their livelihood and continuing their fishing activities. There fore, there is needed to understand and improve the socio-economic conditions of these fisher communities as well as to create awareness among them for conservation and management of fisheries resources to improve their livelihood. On the above discussion, the study was designed under the following objectives:

1.2.1 Overall objective: To assess the current status and problems of fisheries of the study area with a view to develop a sustainable management system.

1.2.2 Specific objectives:

- To identify the prospects and potentiality of the fisheries resources.
- To collect information about the present scenario of the fishermen.
- To collect various information on fisheries activities of fishermen.
- To explore the credit source for fish culture or agriculture.
- To identify and study of the alternative livelihood strategies of the fishermen in the study area.
- To recommend changes in the current fisheries management system with a view to improving the sustainability of local fisheries.

1.3 Rationale of the study

By achieving above mentioned objectives, we will have acquired knowledge of the livelihood of fishermen and current trends of existing fisheries management systems, participatory activity of other stakeholders as well as habitat, availability and value of some commercial species. By understanding the existing situation we will develop a framework, which would help in guiding the policy-makers to develop future strategy for managing the fisheries resource and thus improve the livelihood of fishermen. This will also help the researchers to get a base line indication about the livelihood of fishing community in this area.

CHAPTER TWO
❖
REVIEW OF LITERATURE

2.0 Review of Literatures

The present study has been conducted on the Socio-economic condition & livelihood pattern of fishermen communities at Terakhada Upazilla in Khulna District. The fishermen communities have been affected socio-economically from the very past and there are no alternatives for them. Studies on the socio-economic aspects of fishermen though not very rare, with respect to the problem they are faced with, however the situation arising out all over the country. As such, effects were made to the review relevant literatures on the socio-economic aspects of the fishermen communities and change in the impacts of environment and fish production in the river and other water bodies system, in general. The fish farmers are considered as a low class profession and fishermen are traditionally poor. They live from hand to mouth. And they are socially, economically and educationally disadvantaged communities and lack their own financial resources. The followings are the accounts of review.

A survey on the professional fishermen was done in the project area in Tangail district under the Compartmentalization Pilot Project (CPP, 1996) and reported that highest (42%) family size of the fishermen community was between 3-4 person. The community had 53% literacy rate, about 95% functionally were landless, 89% used tin as a roof material and 79% used stalk as a material for construction of living house, 52% were owner of jhaki jal (cast net), 54% earned 50 taka daily, 70% took loan from moneylender and 69% fishermen were fishing individually, 35% had no any disease and 41% did not use any latrine.

Ahmed (1996) found that the full time fishermen in Tangail district were 84%. The fishermen population consisted 66% people who were under 40 years of age. He said, as usual as elsewhere; majority of the population was Hindu 57%. The population having 94% married and 41% illiterate person. There were 94% fishermen who had their own house; the house hold size was 5.8 person per house, there were 1.17 children attending school per house. In the community 12% had electricity connection in their house, 24% had subsidiary occupation, 81% were found fishing throughout the year, 50% sold their catch in the market directly, per house hold had ownership of 22 decimal of land, 98% used tube-well water for drinking, 6% used sanitary latrine for defection, 42% borrowed money and 92% were members of some associations, clubs and co-operatives.

Ahmed (1999) studied the socioeconomic conditions of the coastal fishermen and reported that 73.33% earned taka 50 per day and rest of the fishermen 26.67%, daily income were less than Tk.50 during the fry catching season. Most of their housing condition was poor, their house were made of mud and one kind of weed leaves (locally known as Golpata), 68.33% Muslims and 31.67% Hindus, 70% fishermen belonging to age group below 40 years, family size 6.4, 75% of the fishermen were illiterate, less than 5% fishermen went to village doctors for their treatment. Most fishermen used pond water due to lack of tube-well.

Al-Muhit (2000) carried out a study on the fishermen communities of the Dhaleswari River. He studied that the vast majority (90% and 91.66%) of fishermen engaged in full time fishing. This study also revealed that maximum fishermen caught fish individually, and more than 97% fishermen were members of different associations.

Andriantsoa *et al.* (1995) conducted to evaluate the socioeconomic structure of the lakeside population of 4 lakes in Madagascar: Aloatra, Kinkony, Itasy and Mantasoa. Data were collected regarding the total number of the lake side population; list of lakeside "fokontany" number of population by "fokontany" number of fishermen by "fokontany"; and, average size of family. Details on the type of fishing craft, fishing gear, investments and trade are also provided.

BARC-CIRDAP (1987) jointly organized a workshop on socio-economic aspects of fishing community in Bangladesh and its role in rural development. They recommended that the integrated and multidisciplinary approach encompassing both the technological and the socio-economic variables should be adopted and an articulated fisheries policy to this effect should be formulated delineating the objectives, targets and relative priorities of this sector.

Bhaumik and Pandit (1991) concluded that the study was undertaken in four large beels of West Bengal to investigate different aspects of socio-economic status of the fishermen. Maximum number of them undertook fishing in beels for 211-240 days per year and observed certain conservation measures to improve the fish population. The average individual catch varied between 3 and 4 Kg/day. They earned between Rs. 401-500 per month during off-season, their activities were observed to be restricted towards

exploitation of weed fish from the beels whereas a large section engaged themselves as daily laborer, during this period and the income varied between Rs.210-300.

Bhaumik and Saha (1994) carried out a study to assess the socioeconomic conditions of the fishermen engaged in fishing in some estuaries of the Sundarbans. He found majority of them (41.5%) operated bag net. About 24% of them were under taken fishing operation for 241-260 days and 39.6% spent 12 hours per day for fishing. On an average 29% of them caught 131-150 Kg. fish per month.

Badruzzaan (2002) studied on the livelihood status of fish farmer in Sailkupa Upazilla under Jhenidah district and reported that 80% didn't prepare their ponds, 18% partially prepared and 2% fish farmer fully prepared their pond. Maximum fish farmers (60%) did not use any pesticides, 30% fish farmers use thiodin and 10% fish farmers use Hilton. Monthly average income was 1000Tk / head.

Chantarasri (1994) presented socioeconomic data on Sundarbans Reserve Forests (SRF) fishermen. The majorities of fishermen were found to be poorly educated and married and age between 20-40 years. Significant number of both younger (less than 15 years) and other older males (greater than 60 years) also operate in the SRF. These age groups are associated with the prawn seed and crab fisheries (Pena, 1994). Most fishermen were Muslims, though substantial minorities were Hindus. Fishing trips to the SRF typically last 10-12 days per month. Fishing was usually carried out in-group, though a few fishermen belong to the Co-operatives. Most fishermen had their fishing gears, which they caught less than 40 Kg of fish each month and monthly earnings were between 2000-3000TK. Over half of all fishermen owned a small amount of land and half owned cattle. The majority of fishermen were in debt for money borrowing to buy fishing gear and food. Fishing usually take place from partially covered wooden boats between 5-7 m. long.

Chowdhury (1990) studied on the socio-economic characteristics of the Hilsha fish marketing intermediates. He also analyzed the costs and margins at different stages of Hilsa marketing and identified the problems of hilsha fish marketing in the selected areas.

DOF (1990) conducted a survey on the socioeconomic conditions of the fishermen in eleven upazillas of the districts of Patuakhali and Barguna under Fisheries Extension Development Project and reported that rate literacy among fishing communities was far

less than other areas. Their economic condition was so bad that they often could not afford educational expenses for their children. This study reported that about 70-80% fishermen were laborers (work in other boat and gears). About 70% of fishermen had an average daily income of taka 20-25, and the rest 30% taka 25-40.

A similar study was conducted by DoF (1993) on fishermen community of the Chanda beel, Gopalganj and revealed that there were 22% professional and 74% non professional fishermen, model age group of the fishermen was 35-39, sex ratio was 110:100 (male: female), household size 6.4, 64% were Hindus, 45% literate, 85% individually fishing, 5% members of co-operative, 34% being aware of NGO programs, 89% was land owner, 48% cattle owner, 2% pond owner, 51% ditch owner, 49% living in catcha house, 100% use tube-well water, 2% use electricity, 98% did not lend money and average household income was 15000Tk/year.

Fishermen and their families in the South East Asia often are considered to be among the poorest of the poor (Bailey, 1994)

Haque (1993) conducted an economic study on small-scale marine fishermen of the coastal areas of Bangladesh. He studied the socio-demographic characteristics of small-scale marine fishermen by gear. The study showed the pattern of employment for household heads and family members by gear

Hye (1988) studied in order to establish basic information on the socio-economic conditions of Kaptai lake fishermen. It was found that 400 to 500 fishing units were engaged each year of which seventy five percent are floating gill nets and others are seine net (tengra jal) dip net (dharma jal), long line (chara barshi) etc.

In Bangladesh, most of the fishermen are illiterate and few have primary level of education (Rahman, 1994a). Coastal fishermen of Bangladesh have a low level of education (Bailey and Doulman, 1994)

Mahabubullah (1986) studied socioeconomic scenarios of the Polder fishing communities of Bangladesh. He reported that maximum 44% household size was 6-8 members per household, age at first marriage was 15-20 for female (54%) and 20-25 for male (52%), 87% below 45 year age, 77% illiterate, 95% owner of household land, 93% had no crop land, 3% had no draught animal, 64% had no boat, 61% had no gear, 40% maintained tin

shade house, 82.3% had no animal and poultry, 41% used tube-well water for drinking, cooking, bathing and washing, 55% had no disease, 98% reported that fishing was their main source of income and 71% of them earned 4000Tk. and above per month.

Mannu (1999) studied the socioeconomic conditions of the sea going fishermen at Kuakata and reported that 92% of the fishermen were married, 96% belonging to 18-40 age group, 72% were full time fishermen, 20% had subsidiary occupation, 36% had their own living house, 16% possessed crop land including house, ranging between 30 decimal to 5 acre, 28% live in khas land, 12% live jointly with their parents, 89% earn on average 25 thousand Tk. per year, 14% earn from other sector too, 88% saying fishing as beneficial, 8% saying living from hand to mouth, only 2% owing of a trawler, 4% fishing during winter and rainy season and 3% claiming becoming debtor instead surplus earner.

Rabbani and Sarker (1997) presented socio-economic data on Sundarbans Reserve Forest fishermen. The majority of the fishermen in the Sundarbans Reserve Forest were found to be aged between 21-40 years. The majority of the fishermen were married and 36% of the fishermen were unmarried. Both Muslim and Hindu fishermen were operating in the Sundarbans. Majorities of them were Muslims. The fishermen who were operating in the Sundarbans were mostly illiterate. Only 22% of them could read. Sixteen percent of the fishermen had been found who can read and write. The level of literacy of fishermen was very poor. Income of the fishermen was low. The monthly income of the majority of the fishermen ranges from 2000Tk. to 3500Tk. About 38% of the fishermen earned 2500-3000 Tk/month.

Rahman (1992) established some basic information on socio-economic characters of Kaptai lake fishermen. It was found that about four hundred to five hundred fishing units are engaged each year in the lake area.

Ray and Dorairaj (1998) conducted a socio-economic survey during 1991-95 on the fishermen community in South Andaman (India). The literacy rate varied from 19.85 to 66.07%. In middle Andaman literacy of male varied between 28.92 to 27.81%. The estimated income fluctuated from the lowest range of Rs. 816-1225 monthly to Rs. 7866-10200 in South Andaman. The average monthly expenditure per family in different localities ranged between Rs. 845 and 2800.

Samad (1993) conducted a study on riverine fishing in the water segment of the Jamuna river named Jallaskjarpur jola under the sadar thana of Sirajgonj district, in order to analyze the socioeconomic conditions, availability, utilization and repayment of credit of the fishermen, the profitability of fishing and the problems of fishermen community with sixty fishermen comprising of 30 head fishermen (boat and net owner) and 30 general fishermen (labor of ordinary)

Sazzad (1993) studied on Hilsha fishery in the river Meghna in Chandpur district with sixty sampled boats for four gears motorized gulti jal, chandi jala and current jal. He found that Hilsha fishing was profitable but the distribution of profits appeared to be inequitable and exploitative between boat owners and crews.

Shamima (2000) carried out a study on Gallamary fishing community in Khulna district. She reported that 61.11% fishermen were Hindus, 38.89% were Muslims; sex ratio was 100: 90.50 (male: female); school drop out children 0.61 person per household of which 0.28 were boys and 0.33 were girls; most of the fishermen's (94%) floor materials were katcha; 20% used electricity; 58% took 2 meals per day and 20% took 4 meals per day; 40% fishermen had their own pond and 52% fishermen suffered from fever.



CHAPTER THREE
❖
MATERIALS AND METHODS

3.0 Materials and Methods

3.1. Study area

The study was conducted at Terakhada Upazilla in Khulna District during August to September, 2002. A comprehensive study was undertaken for obtaining detail information. 275 fish farmers of 11 villages were also interviewed during the survey.

3.2. Site selection

The land of Terakhada upazilla is comparatively higher than adjacent area and free from flood. In Terakhada Upazilla there are 1300 ponds (private); 33 dighis (private); 5 ponds (public); 750 ghers (private); 16 closed water bodies (public) and one river named Chitra. These are suitable for fish culture. Carp polyculture and prawn culture are common here from many years ago but the culture system has done as traditional method. In this upazilla, large scope of fish culture would be possible if fish farmers adopt improve technology. For this reason, Terakhada upazilla was selected for the study to identify socio-economic condition and alternative livelihood strategies of fish farmers. This study acts as exhibitor for fish farmer of Terakhada upazilla.

3.3. Field survey and observation

For collecting data on various aspects of livelihood and technological issues, field surveys were made in the eleven villages of Terakhada upazilla. On an average twenty five fishermen were selected randomly from each villages of this upazilla (selected 11 villages). Thus, the total numbers of 275 fishermen were considered in the study area. A range of Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) were applied with different degree of effectiveness.

3.4. Fishermen Category

In the study area the fishermen communities were divided into two groups such as professional fishermen and subsistence fish farmers. Two hundred and seventy five (275) fishermen households were selected randomly from both professional fishermen and subsistence fish farmers groups.

3.5. Questionnaire survey

To collect data on various aspects of socio-economic status and alternative livelihood of the of the selected area, questionnaire preparation is crucial important. Before preparing the final questionnaire, a draft questionnaire was developed keeping in view the specific objective of the study. The draft questionnaire was pre-tested in the study area by interviewing with few fishermen. The final questionnaires were then developed in the logical sequence, so that the fishermen could answer chronologically. The prepared questionnaire is shown in Appendix-4.

3.6. Indicators used

For obtaining detail information about the socio-economic conditions of fishermen, the following parameters were collected.

❖ Sex	❖ Yearly income
❖ Age group	❖ Number of cultural pond
❖ Religion	❖ Total area of cultural pond
❖ Type of fish farmer	❖ Pond ownership
❖ Marital status	❖ Type of pond
❖ Family size	❖ Pattern of fish culture
❖ Women's mobility	❖ Fishing gears used
❖ Education	❖ Fishing traps used
❖ School going children	❖ Boat used
❖ School drop out children	❖ Cultured major species
❖ Causes of school drop	❖ Harvested major species
❖ Housing condition	❖ Pond preparation
❖ Use of electricity	❖ Use of pesticides
❖ Money borrowing	❖ Use of lime/fertilizer
❖ Purposes of borrowing money	❖ Fish production
❖ Food and nutrition intake	❖ Drying procedure
❖ Number of meal per day	❖ Marketing system
❖ Sources of drinking water	❖ Income and expenditure
❖ Sanitation practice	❖ Prevention against fish disease
❖ Main occupation	❖ Fisheries expert's advice
❖ Owner of agricultural land	❖ Effect of disease
❖ Yearly income	❖ Nature of treatment

3.7. Collection of Data

In order to fulfill the objectives of this study, relevant information and literature were collected from the two sources, which are:

3.7.1 Primary source

The primary data were assembled through field survey at the village level by using a structural questionnaire. Data on fish farming activities were collected both by physically observation and interview with farmers at the *beel*, gher and pond side throughout the culture period. Technological issues were asked to fish farmer as per the questionnaire.

3.7.2 Secondary sources

Further relevant information on livelihood status of fish farmers were collected from Bangladesh Bureau of Statistics (BBS), Fisheries office, Local Government Engineering Department (LGED) office and Land office of Terakhada upazilla.

3.8. Data Analysis

Collected information obtained from the survey were accumulated, grouped and interpreted according to the objective as well as parameters. Some data contained numeric and some contained narrative facts. The data were then presented in graphs and tabular forms. For processing and analysis purpose, SWOT Analysis, MS Excel and MS Word have been used. Descriptive statistics such as frequency distribution, cross tabulation, Pie charts etc. have been used for data analysis and presentation.

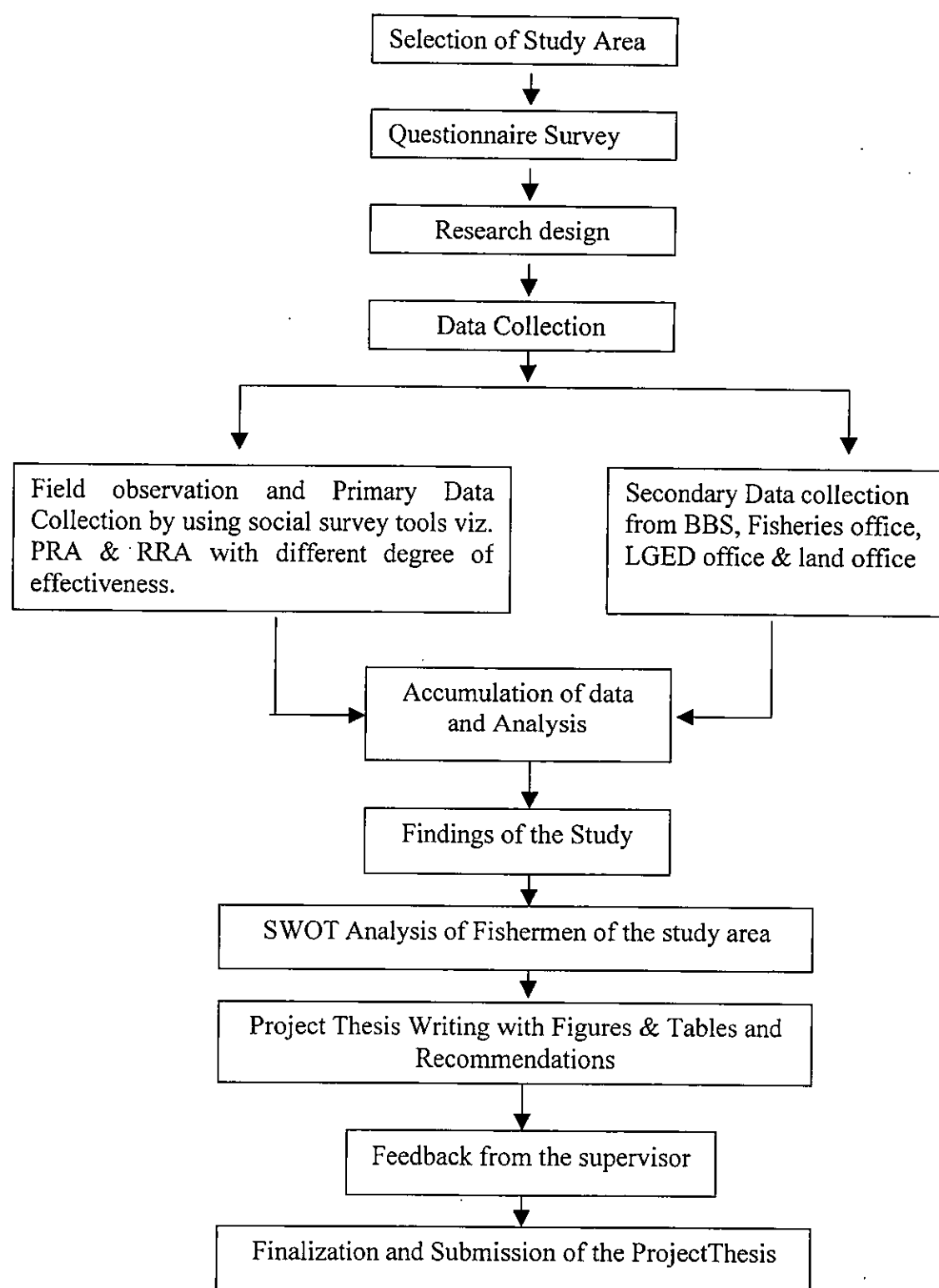


Fig-1: Schematic diagram of methodology of the study

THE BASE MAP OF TERA KHADA UPAZILLA

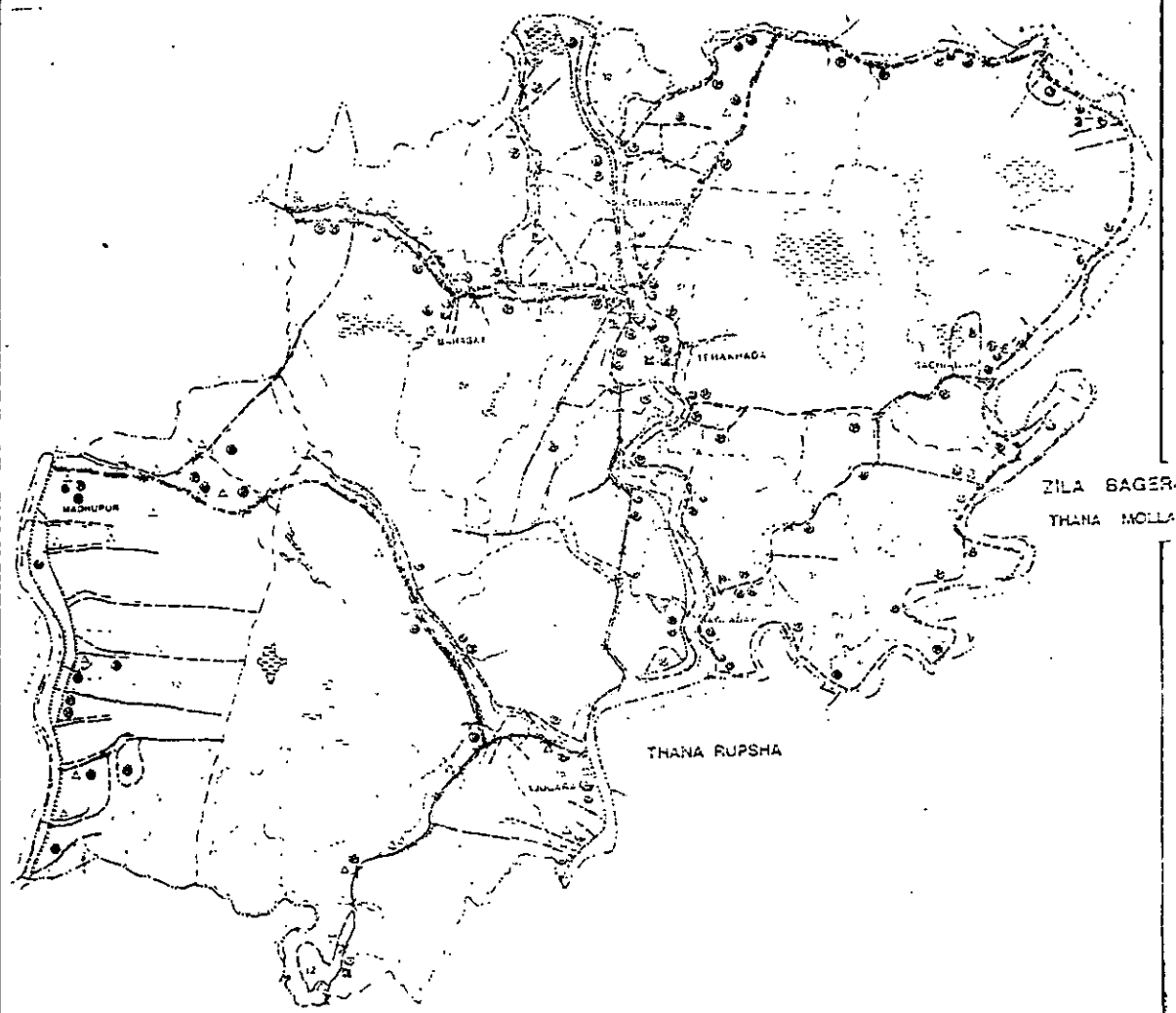


Fig-2: Location of study area in Terakhada Upazilla

CHAPTER FOUR



RESULTS AND DISCUSSION

4.0 Results and Discussion

4.1. Livelihood conditions of the fishermen:

A total of 275 fish farmers were interviewed in 11 villages at Terakhada upazilla. Wide ranges of indicators were collected in various aspects of livelihood characteristics of the fisher communities. The indicators included sex, age group, religion, marital status, education, family size, the member of the school-going children of the households, school drop out, condition of living house, use of electricity etc. A detail analysis were made on these parameters and presented in this section.

4.1.1. Sex:

The survey was conducted among the 275 fish farmer usually involved in fish cultures of which 205 (75%) were male and 70 (25%) were female (Figure-3). Generally, women were involved in house hold works and they could not afford to go out for fishing in a large scale due to trafficking and other social problems. Whereas, male were free from those barriers and engaged themselves in culturing fish and fishing in rivers, beels, canals and other depression etc.

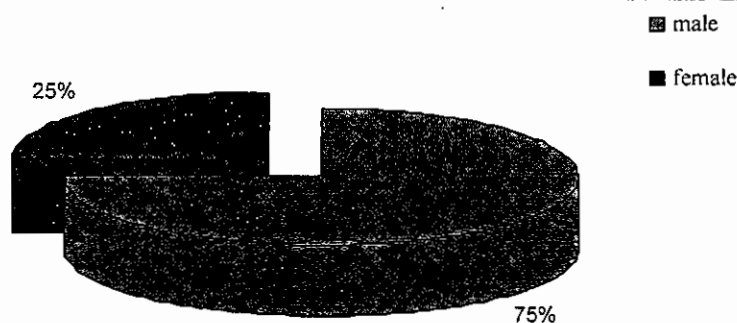


Fig-3: Proportion of sex ratio

4.1.2. Age Group

From the figure-4, it was found that 28%, 49%, 12.7%, 8.36% and 1.82% of fishermen were belong to age group in < 25, 26-40, 41-55, 56-70 and > 70 years respectively. Results showed that the highest number of fish farmers were between 25-40 age group indicating middle age group was dominant in fishing due to their physical strength. The

study also indicated that majority of the fish farmer (77%) were less than 40 years of age (Table-1). Ahmed (1996) in Taingail and Ahmed (1999) in Barguna and Patuakhali reported that 66% and 70% respectively were under 40 years of age.

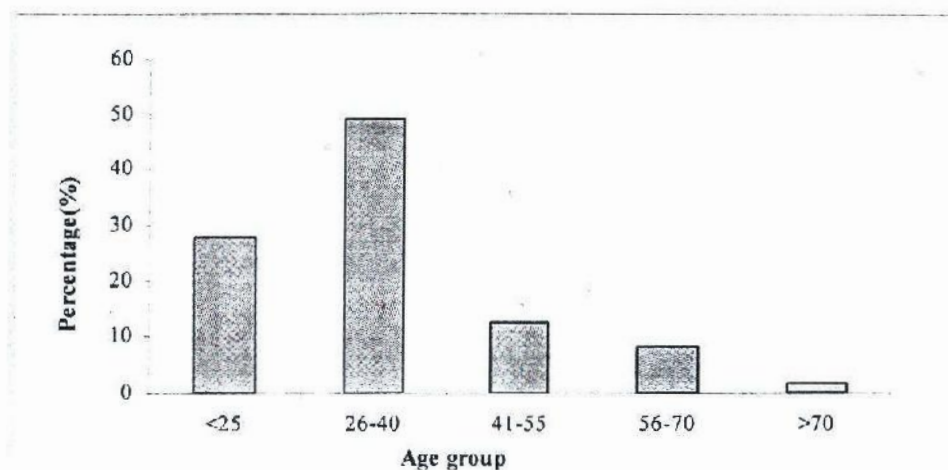


Fig-4: Age group of fishermen

4.1. 3. Religion

Only 93 Muslim fish farmers were found during the survey out of 275 fish farmer i.e. Muslim fish farmers were 34% and Hindu fish farmers were 66%. Other religions were not found. Figure-5, illustrated that the Hindu fish farmer made up the major percentage of the people of the study area. The dominance of Hindus may be understood on the ground of changing socio-economic structure, lack of employment opportunity and realization of the riverine (fresh water) fishing potential as a source of income. Shamima (2000) stated that 61.11% Hindus and 38.89% Muslim fishermen were present in Gollamari Fishing Community, Khulna.

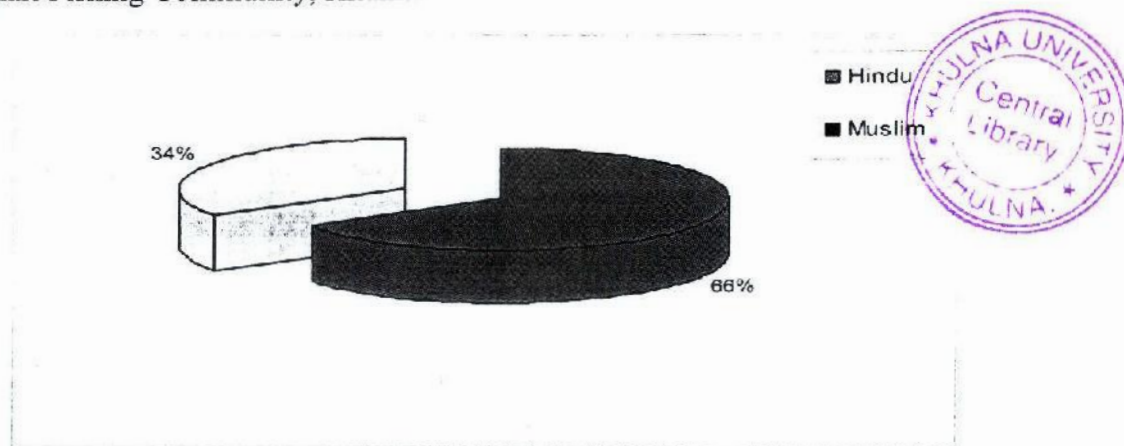


Fig-5: Religion status of fish farmer

4.1.4. Marital status

Among the fishermen community it was found that a large majority of the fish farmers (70%) were married while the percentage of unmarried fish farmers were 24.64 %. 3 oppressed persons were also found in this survey (1.09%). 12 divorced were found in the present study (4.36%) (Fig-6). Ahmed (1996) in Tangail and Mannu (1999) in Kuakata obtained married fishermen were 94% and 92% respectively.

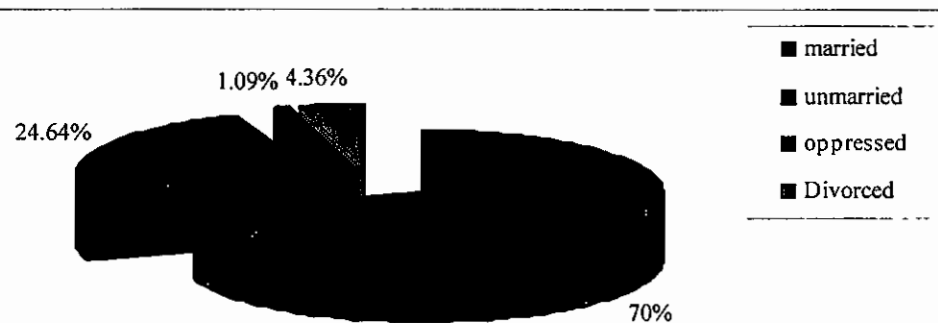


Fig-6: Marital status of fishermen

4.1.5. Family Condition

In the present study, a family was defined as the total number of person living together and taking meals from the same kitchen. The family functions as a unit for income generation, composition, reproduction and social interaction; however, extensive commingling and intermixing occurs among separate nuclear households (Haider, 1997).

4.1.5.1. Family type -

In rural Bangladesh, families are classified into two types: 1) Nuclear family- married couple with children, and 2) Joint family- group of people related by blood and/or by law. In the study area, it was found that 85% of the people lived with nuclear families, and only 15% lived with joint family (Fig-7). In the study area the nuclear family was very popular because of getting greater freedom of movement and economic opportunities, well dress, better education and woman authority.

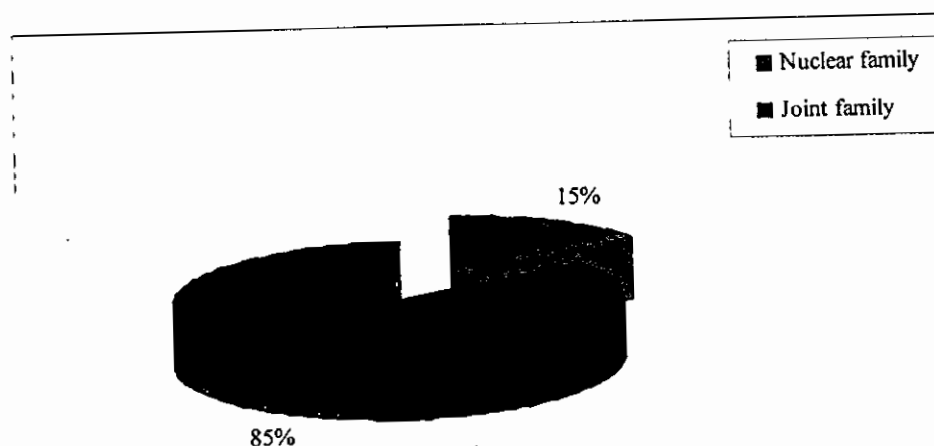


Fig-7: Family type of fishermen

4.1.5.2. Family Size

In the study area it was found that there were a total of 1650 members in the 275 fishermen family of which 900 were male (55%) and 750 were female (45%) (Fig-8). The average size of households were 6 person where 3.30 were male and 2.70 were female respectively. The survey revealed that the sex ratio (male: female) were 100: 81.82. Shamima (2000) reported the sex ratio (male: female), 100: 90.50 in Gallamary fishing community, Khulna district.

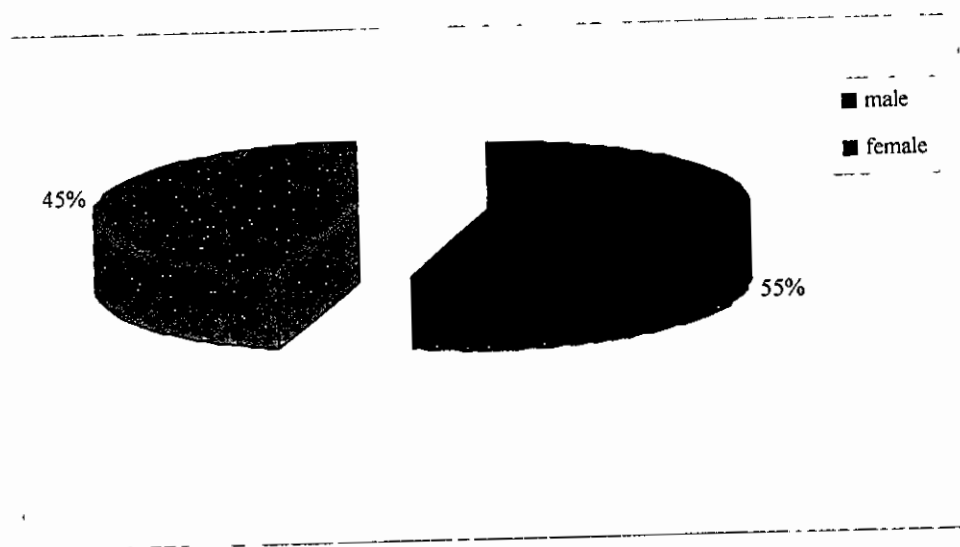


Fig-8: Family size of fishermen

4.1.6. Housing condition

4.1.6.1. House type

Attempts were made to find out the condition of house of fish farmer. It was found that 65% were living in Katcha house (earthen/bamboo with straw or Golpata), 30% were living in Semi-pacca house and 5% were living in Pacca house (Fig-9). Shamima (2000) reported that most of the fishermen floor materials (94%) were katcha in Gollamari fishing community, Khulna district.

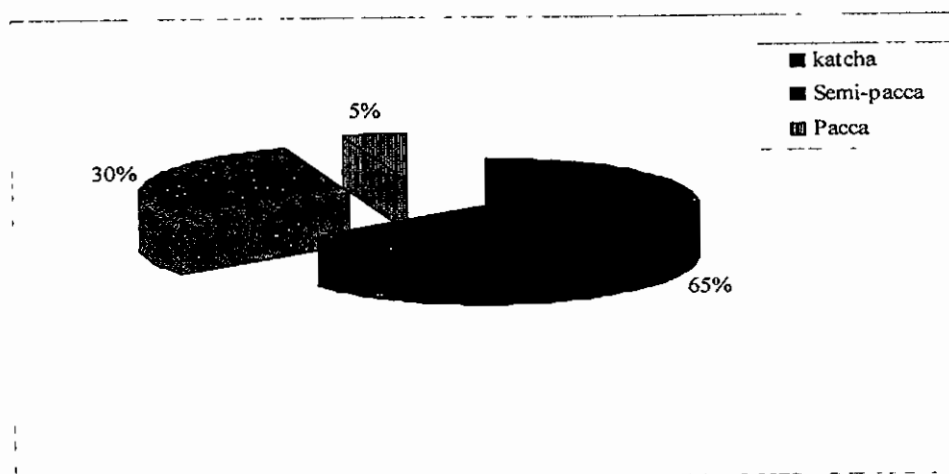


Fig-9: Housing condition of fishermen

4.1.6.2. Use of electricity

The survey expressed that only 40% of the fish farmers were using electricity (Fig-10). DoF (1993) reported from "Third Fisheries Project" that 2% fishermen household used electricity. Shamima (2000) reported that 20% used electricity in Gollamari fishing community, Khulna.

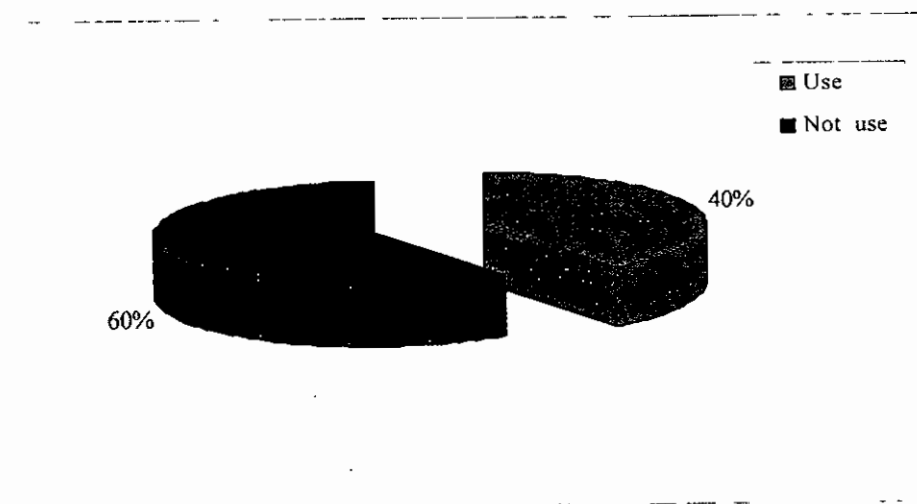


Fig-10: utilization of electricity

4.1.7. Educational Status

There was strong relationship between society and education. Human resource development is largely a function of literacy and educational attainment. Amongst farmers, literacy and education attainment help to develop conceptual skill and also facilitate the acquisition of technical skill, which can have direct bearing on income generation, expenditure and saving activities. Veerina et al., (1990) noted that factors such as literacy have a role in influencing yields through production decisions. Education and farming efficiency are closely related, and education generally has a positive effect on farm productivity, a high rate of illiteracy resulting in low farm efficiency. Atapattu (1994) stated that fish farmers should be properly educated with respect to the importance of management. Education of farmers was also reported to help improve the efficiency of rural households in production (Wang et al., 1996).

4.1.7.1. Education Level of fishermen

Figure-11 revealed that 90% of the fish farmer was literate at various stages of education. However, a person with the ability just to sign was considered as literate. It was observed that large majority of fish farmers (49.09%) were educated belong to education group in class I-V; 25.45% fish farmers were educated belong to the education group of class VI-X; 10.91% farmers were S.S.C. level and 5.45% fish farmers were above S.S.C level in the study area. (Table-2). Roy and Dorairaj (1998) found that 61.91 % have studied up to primary standard in Andaman Fishermen Community, India. Mahabub Ullah (1986) in polder fishing community and Ahmed (1999) in Barguna and Patuakhali obtained literacy rates at 23% and 25% respectively.

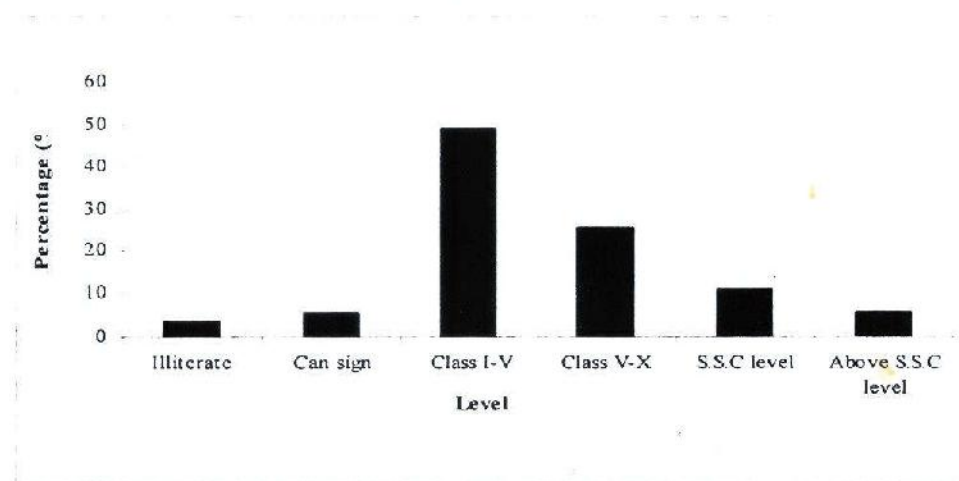


Fig-11: Educational status of fishermen

4.1.7.2. School Going Children of fishermen

It had been found that maximum children in the study area were going to school because of getting various facilities. Besides that the girls up to HSC level were learning without given any fees to the school. Moreover, they were getting scholarship for continuing their education. These facilities triggered them to go to school. So, above reasons percentage of school going girls were high. The findings of the survey showed that out of the total school-going children 60% were boys and 40% were girl. 1.45 children were attending school per household of whose 0.81 was boy and 0.64 was girl (Fig-12). Ahmed (1996) found number of school going children per house was 1.17 in Tangail.



Fig-12: School going children of fishermen per Household

4.1.7.3. School drop out Children of fishermen

From this study, it was found that 55 % boys and 45% girls were dropped out from school (Fig-13). During survey, it was found that total 77 children were dropped out from School. There were 0.28 school drop out children per house in which 0.15 were boys and 0.13 were girls. From the survey result it was observed that girl's drop out was less than boy's. The facts are that the girls are getting various facilities from the Government. The facilities are no tuition fees and scholarship. It is also noted that when a boy grow up, they engage in fisheries activities to support either their father or family for the livelihood. Shamima (2000) reported that 0.61 school drop out children per household where 0.28 was boy and 0.33 was girl in Gallamari Fishing Community, Khulna district.

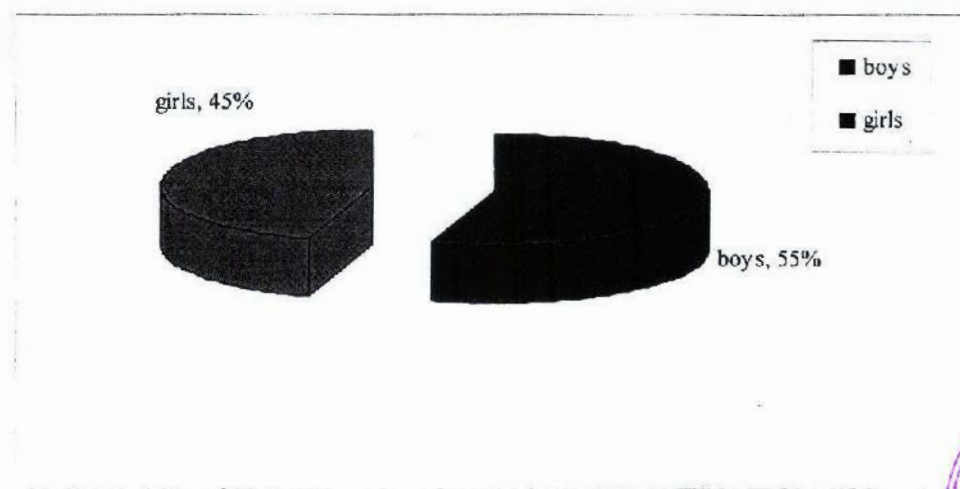


Fig-13: Proportion of drop out school boys and girls



4.1.7.4. Causes of school drop out

From the survey results, it was revealed that 65 % were school drop outs due to economic problem, 30% were due to involvement in income generating jobs and 5% were for social problems or without any cause (Fig-14). DoF (1990) reported that economic condition of fishermen in Patuakhali and Barguna district was so bad that they often could not afford educational expenses of their children.

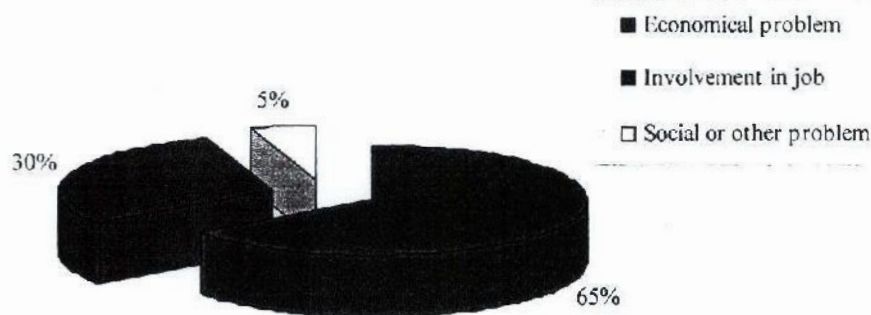


Fig-14: Causes of school drop out

4.2. Main occupation

Occupation is defined as an activity that the people pursue for earning their living. As the survey focused on the fishermen, fishing was obviously their main or primary occupation. There were full time fishermen those solely depended on fishing for their livelihood.

From the Fig-15, it was revealed that the main occupation of fish farmers were agricultural work (38%), while 30% were fish farming, 7% were day labor, 12% were student, 8% were business and 5% were others. Maximum fish farmer (38%) depending on agricultural work as their subsidiary occupation due to less expensive and they were expert and skilled in agricultural work and most of them had no agricultural land but yet they felt satisfy as an agricultural labor because they got money during working. Ahmed (1996) found about 34% fishermen depending on farming as subsidiary occupation in Tangail

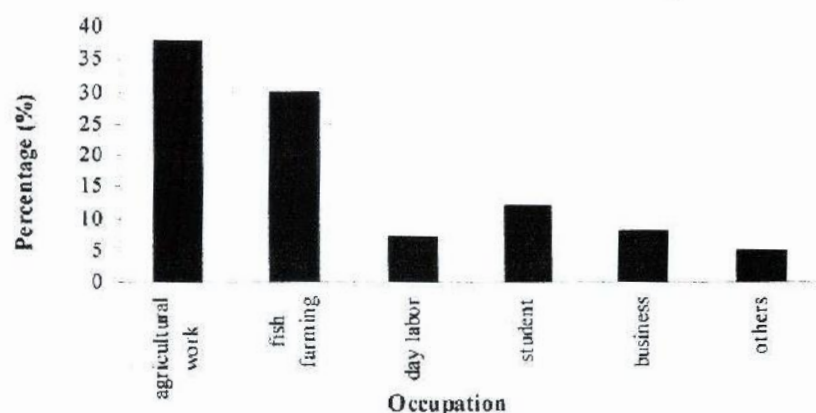


Fig-15: Occupation of fishermen

4.3. Type of fish farmer

In the study area the fishermen communities were divided into two groups, such as professional fishermen and subsistence fish farmers. Two hundred and seventy five (275) fishermen households were selected randomly from both professional fishermen and subsistence fish farmers. From the survey, it was found that most of the fish farmer culture fish for commercial purpose. Only 45 (17%) fish farmers were found to culture fish in pond/gher for amateur purpose and 230 (83%) fish farmers (most of them also fishing in river, beels, canals, drains, depression and other water bodies) cultured fish in

pond/gher or gher only for commercial purpose (Fig-16). Badruzzaman (2002) reported that 78% and 22% of fish farmers cultured fish for commercial purpose and amateur respectively in Sailkupa upazilla under Jhenaidah district.

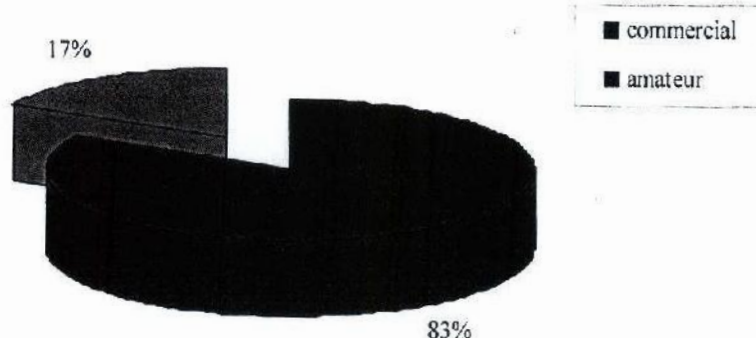


Fig-16: Types of fish farmer

4.4. Assets

The major assets of the fishermen were agricultural lands, cultural ponds, livestock's and poultry, fishing gears and traps etc. The findings are discussed in this section.

4.4.1. Pond ownership

During the survey it was found that 55% fish farmers have their own pond, 25% fish farmers have multi-ownership pond and 20% fish farmers have lease their pond for fish culture (Fig-17). Samima (2000) reported 40% fishermen had own pond in Gallamary fishing communities, Khulna district

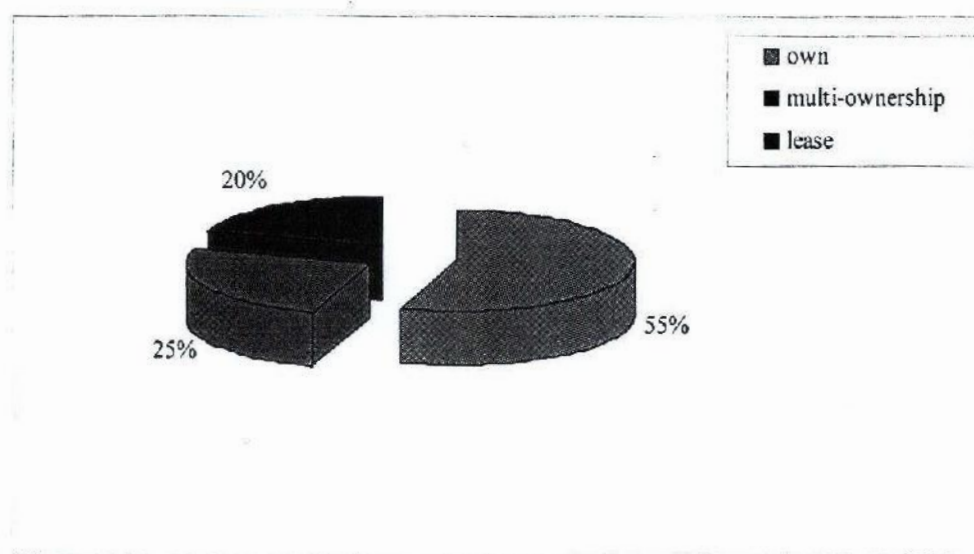


Fig-17: Ownership of pond

4.4.2. Own agricultural land

During the survey it was found that the highest number of fish farmers (65%) have below 50 decimal land, while 25% fish farmers have above 50 decimal land and 10% fish farmers have no land (Fig-18).

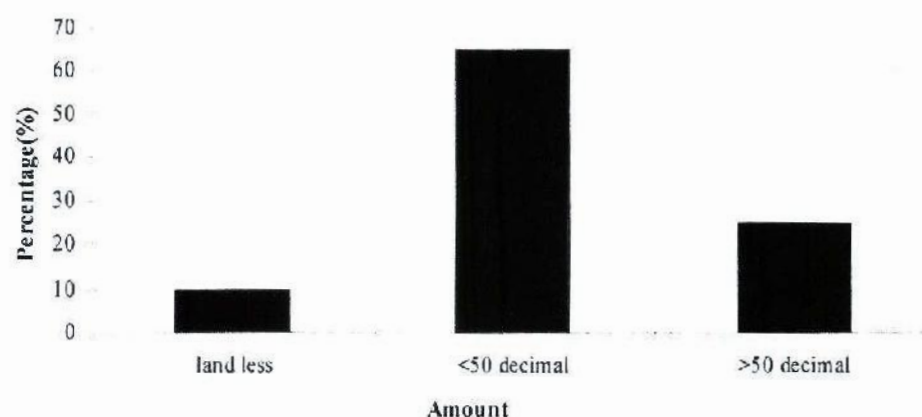


Fig-18: Agricultural land ownership

4.4.3. Number of cultural pond

During the survey it was found the highest number of fish farmers (56.36%) had 1 pond, while 23.64% fish farmers had 2 ponds, 9.09% fish farmers had 3 ponds and only 2.55%

fish farmers had above 3 ponds and the rest of the fish farmer (8.36%) caught fishes from beel, canals, drains and other water bodies. (Table-3).

4.4.4. Total area of culture pond

From the study, it was found that 25 fish farmers (9%) having pond area between 5-10 decimal, 135 fish farmers (49%) having pond area between 11-20 decimal, 75 fish farmers (27%) having pond area between 21-30 decimal, 23 fish farmer (8%) having pond area between 31-40 decimal, and 17 fish farmers (6%) having pond area above 40 decimal (Table-4).

4.4.5. Poultry and livestock's

The study did not reveal an encouraging picture regarding ownership and rearing of livestock's and poultry by the fishermen community. Most of the fishermen families had either no or a very few number of poultry and livestock's in their possession. Community wealth ranking of twenty-five fish farmer of Terakhada upazilla are shown in Table-5

4.5. Food and nutrition intake

4.5.1 Food item intake by the fishermen

Major food items like fish, meat, egg, dal, milk and vegetables of fishermen were show in the figure-19. It was found that intake of fish was highest where as intake of meat was lowest in a month. During fishing, the fishermen keep some fish for themselves. In addition, during selling some fishes are left over. For this fish intake was higher.

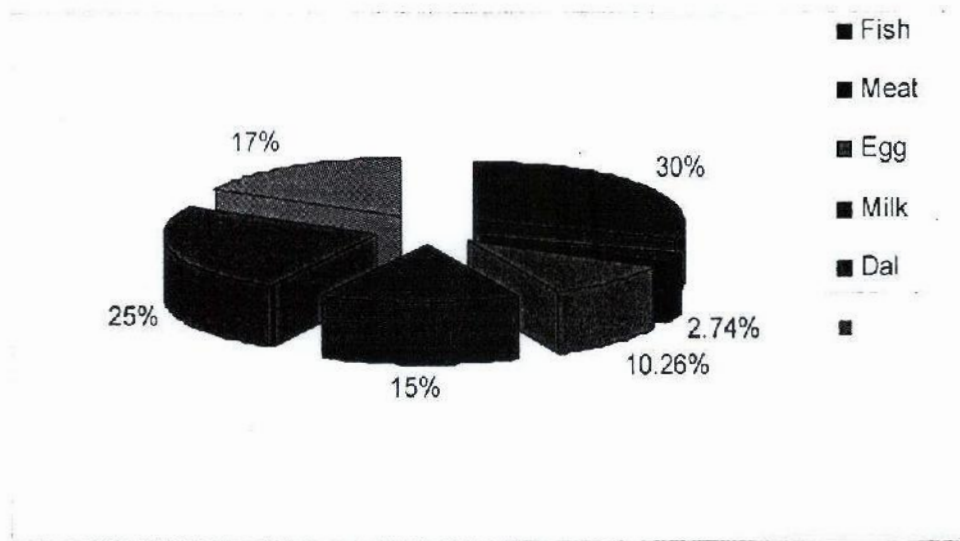


Fig-19: Food and nutrition intake of fishermen

Community Wealth Ranking

Table-5: Community wealth ranking of twenty-five fish farmer of Terakhada upazilla.

SL. No.	Name	Family member	Occupation	House	Land property	Animal husbandry				Craft/Gear	Pond	Rickshaw/van	Tree	Electric goods
						Cow	Goat	Poultry	Duck					
1	Chaitannya Mallick	4	Fishing	Tin shed	13 dec	4	---	13	8	Char, Bair, Pata	1	---	15	---
2	Subash Malakar	7	Fishing	Tin shed	15 dec	2	6	7	9	Boat, Cast net	2	---	30	Radio
3	Khitish Mandol	8	farming	Tin shed	30 dec	---	3	20	3	Dingi nauka, nets	2	---	25	T.V
4	Sawpan Mali	4	Bapari	Pacca	50 dec	9	---	17	14	Ber jal, Cast net	1	---	50	---
5	Tarak Tarapder	5	Fishing	Kacha	45 dec	3	5	10	7	Nets, polo, pata	---	3	22	T.V
6	Saiful Islam	4	Farming	Tin shed	2 bigha	6	---	50	30	---	1	---	100	Radio
7	Md. Babu Laskar	5	Porter	Kacha	--	---	3	12	7	---	---	---	---	Radio
8	Md. Alam Mia	7	Day labor	Kacha	5 dec	---	7	10	11	Net, boat	---	5	8	---
9	Nurul islam	6	Business	Kacha	---	---	---	15	---	---	2	---	---	---
10	Ibrahim Halder	4	Master	Tin shed	66 dec	5	---	10	1	---	2	---	57	T.V
11	Md. Zabeed Mia	9	Trading	Tin shed	1 bigha	6	3	10	4	Net, boat	3	12	25	T.V
12	Md. Sohel Lasker	6	Fishing	Straw	---	---	3	10	5	---	---	---	13	---
13	Md. Samad Dhali	5	Fishing	Golpata	20 dec	2	6	5	---	Chandi Bair, Net	---	1	5	Radio
14	Shyamal Gain	4	Daily labor	Kacha	---	---	---	4	---	---	---	---	---	---
15	Subrata Mali	7	Fishing	Kacha	10 katha	---	---	12	---	Net, boat polo	---	---	40	Radio
16	Shashanka Mali	3	Fishing	Tin shed	40 dec	3	5	---	---	Net	---	---	---	---
17	Rupchand Mallick	6	Depot	Pacca	2 bigha	4	6	---	---	Berjal, kheplajal	1	---	30	T.V
18	Rabin Biswas	4	Paikar	Tin shed	5 katha	---	---	---	10	---	---	---	10	---
19	Sujit Adhikari	---	Student	Golpata	25 dec	3	9	200	---	---	2	3	60	Radio
20	Bagan Tarapder	6	Day labor	Straw	---	---	3	12	5	---	---	1	---	---
21	Sumoti Rani	4	Fishing	Golpata	13 dec	2	5	---	---	Dugar, Thela Jal	---	1	7	---
22	Bindu Bala	5	Labour	Straw	10 dec	3	--	12	--	Moya jal. polo	---	2	15	---
23	Shankar Malder	4	Bepari	Tinshed	48 dec	11	7	---	23	Boat, Ber jal	3	---	32	T.V.
24	Nanda Bala	-----	Fishing	Golpata	23 dec	4	2	4	---	Thela jal, polo	1	--	--	---
25	Harihar Mahanta	7	Fishing	straw	11 dec	2	4	---	7	Khepla jal	1	3	23	---

4.5.2. Number of meal per day

Informations were collected on the extent of the number of meal intake per day. It was found that 40% fish farmers took three meals per day, 50% took two meals per day and 10 % took four meals per day (Fig-20). Samima (2000) stated 58% took two meals per day and 20% took 4 meals per day in Gallamary fishing community, Khulna district.

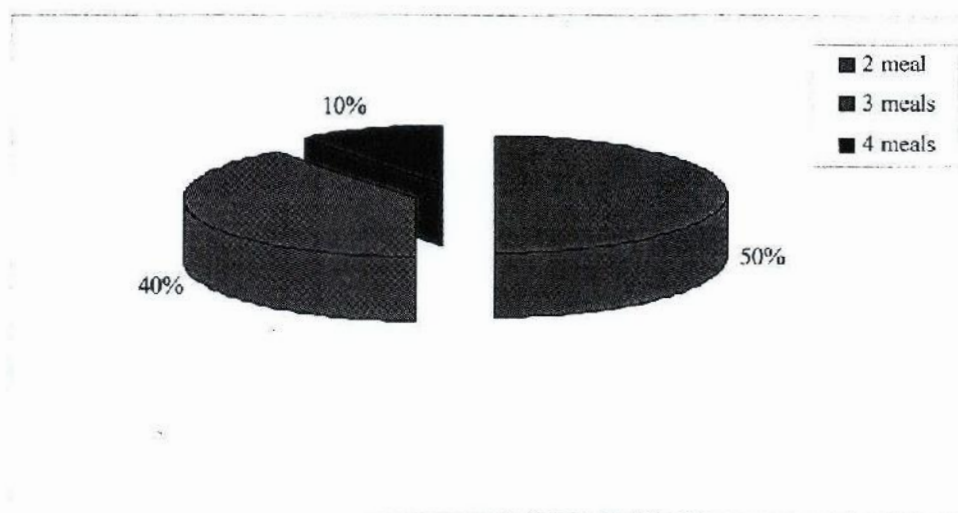


Fig-20: Number of meal per day

4.6. Health and Sanitation

The health and sanitation condition of the villagers were not so good. There are three MBBS doctors, seven Kobiraj, twelve Fokir are the main media for treatment of the villagers. About 90% the villagers are coverage by various types of diseases.

4.6.1. Sources of drinking water

From the Figure-21, it was found that 22% fishermen used deep tube-well water for drinking, 70% used shallow tube-well water, 5% used Indira/ well water and 3% used others sources of water for drinking. In general, women procure drinking water from ponds or tube-wells. Though 92% of the population in the study area used drinking water, this did not mean that all had tube-wells. Most people were found to have their tube-wells, others using Governmental tube-wells, or those belonging to schools or neighbors. A number of schools had tube- wells in the survey area and also government tube-wells were available, but situated a considerable distance away. Ahmed (1999) mentioned that most fishermen used pond water due to lack of tube-well in Barguna and Patuakhali.

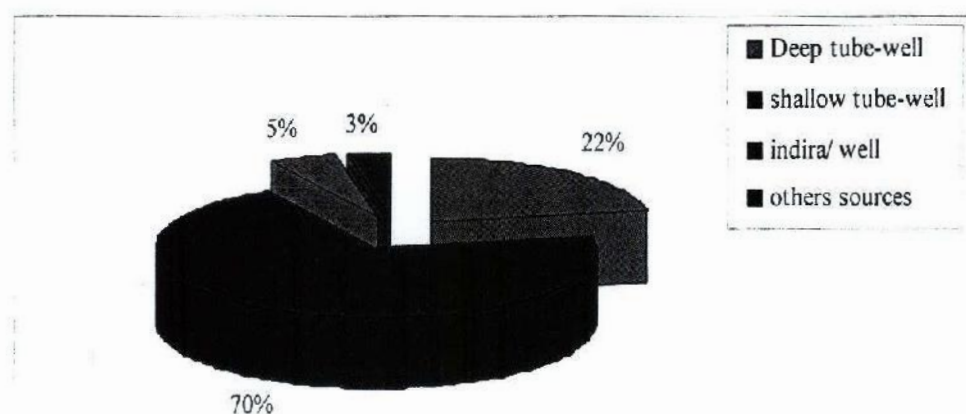


Fig-21: Drinking water source of fishermen

4.6.2. Sanitation practice of the fishermen

Information was collected on the extent of sanitation practice of the fish farmers. Majority of the fish farmers (52%) used Katcha latrines for defecation. Rests were used closed pit, sanitary, open field and open whole latrines (Table-6). CPP (1996) in Tangail obtained 4% fishermen household had no latrines.

4.6.3. Effect of disease:

The study showed that fishermen were suffering from various types of disease including fever, diarrhoea, gastric, dysentery, rheumatic jaundice and malnutrition. It was found that 34.91% fish farmers suffered from fever, 20% fish farmers suffered from gastric, 25.09% from malnutrition, and 10.91% fish farmers suffered from diarrhoea, 5.45% fisherman suffered from jaundice, 1.82% fish farmer suffered from rheumatic, 1.82% fishermen suffered from dysentery (Table-7). Samima (2000) reported that 52% fishermen suffered from fever in Gallamary fishing communities, Khulna district.

4.6.4. Nature of treatment:

Information was collected on the extent of nature of treatment of fish farmers. It was found that 47.27% village people took treatment from quack/nurse, 25.45% received treatment from homeopath, 10.91% received treatment from trained doctor, 5.45% took treatment from qualified doctor, 7.27% received treatment from herbal/unani and 3.64% received treatment from others. (Table-8). Ahmed (1999) in coastal area observed less than 5% fishermen went to village doctor for their treatment.

4.7. Pond preparation

During the survey, it was found that maximum fish farmers (70%) did not prepare their pond, 20% fish farmers partially prepared and 10% fish farmers fully prepared their pond (Fig-22). Badruzzaman (2002) reported that 80% didn't prepare, 18% partially prepared and 2% fish farmer fully prepared of their ponds in Sailkupa upazilla, Jhenaidah.

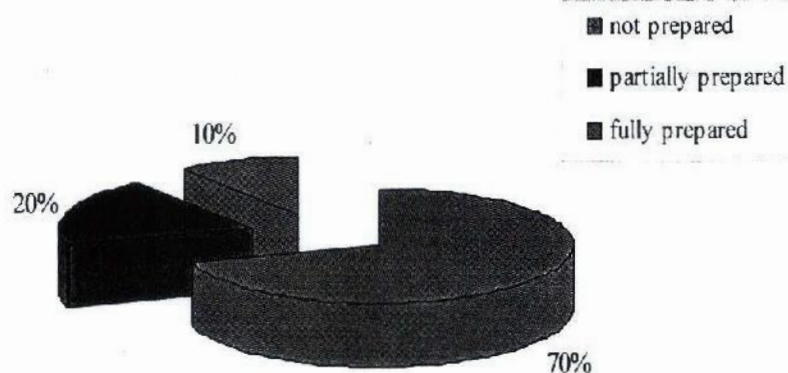


Fig-22: Pond preparation

4.7.1. Use of pesticides

It was found that maximum fish farmers (60%) did not use any pesticides, 30% fish farmers use thiodin and 10% fish farmers use hilton (Fig-23). Very few farmers use rotenone. The same result was observed in Sailkupa, Jhenaidah by Badruzzaman (2002).

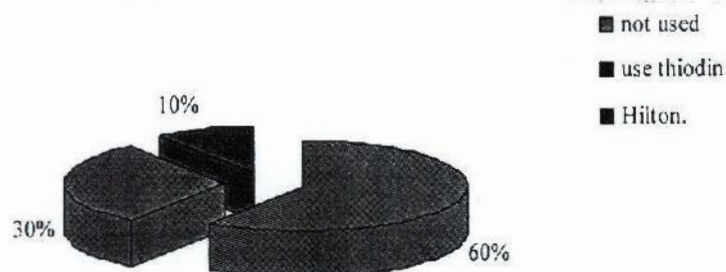


Fig-23: Use of pesticides in culture pond

4.7.2. Use of lime / fertilizer

From the survey it was found that maximum fish farmers (40%) were not using lime and fertilizer in their pond, while 50% fish farmers were using lime and fertilizer partially and 10% were using fertilizer thoroughly but not scientifically (Fig-24).

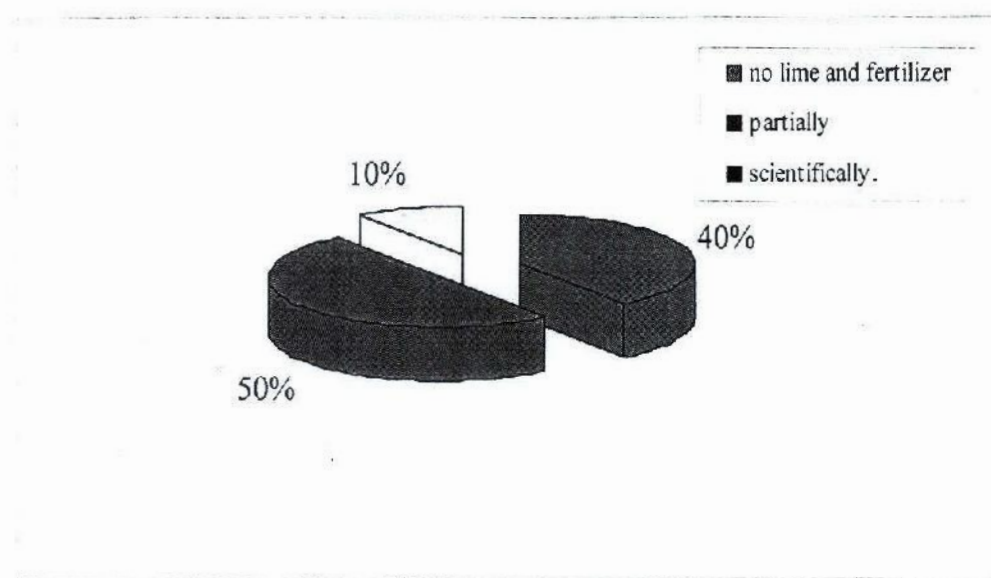


Fig-24: Use of lime / fertilizer in culture pond

4.8. Fish Culture and Production

4.8.1. Types of pond

From the survey informations, it was found that 65% ponds were perennial, while 35 % ponds were seasonal (Fig-25).

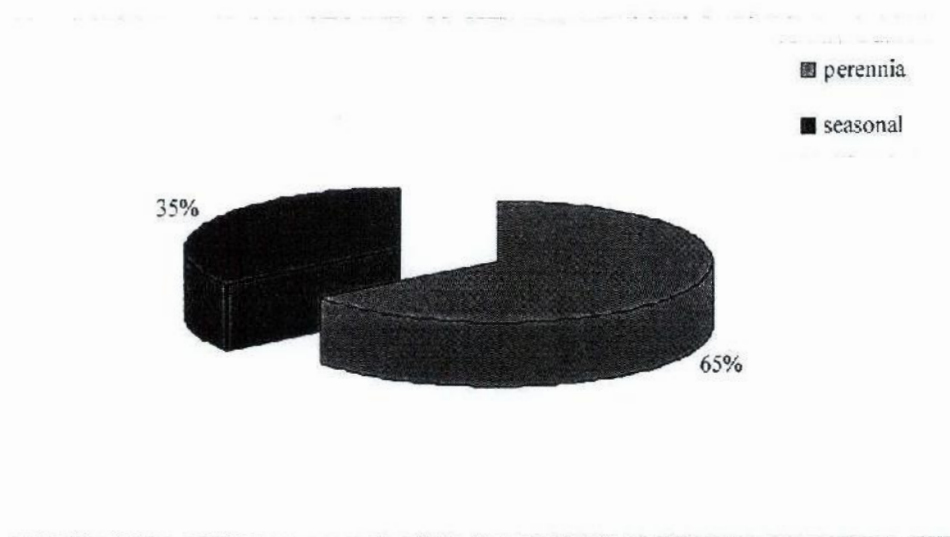


Fig-25: Pond types of fishermen

4.8.2. Pattern of fish culture

During the survey it was found that 70% fish farmers practiced carp culture in their pond and 10% fish farmers practiced fry nursing in their pond and the rest of farmer (10%) caught fish in various water bodies. Other culture patterns were not found in the study area (Fig-26).

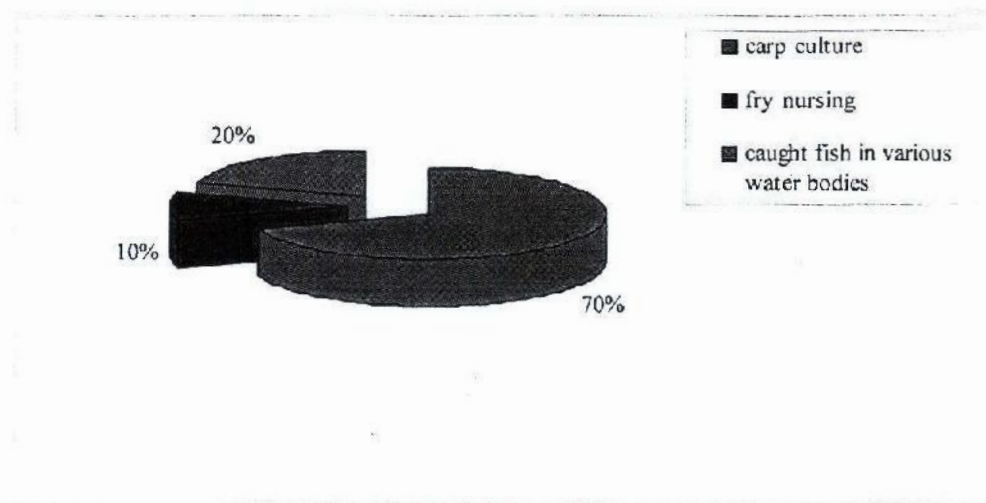


Fig-26: Pattern of fish farming

4.8.3. Major culturable fish species

During the survey a total of 11 different fish species were explored to culture in fish farmer's ponds/ghers. Local and scientific names of cultured species are shown in Table-9.

Table-9: Major fish species cultured in the study area

Local name	Scientific name
Rui	<i>Labeo rohita</i>
Catla	<i>Catla catla</i>
Mrigal	<i>Cirrhinus mrigala</i>
Raj puti	<i>Puntius gonionotus</i>
Nilotica	<i>Oreochromis nilotica</i>
Grass carp	<i>Ctenopharyngodon idella</i>
Common carp	<i>Cyprinus carpio</i>
Silver carp	<i>Hypophthalmichthys molitrix</i>
Thai pangas	<i>Pangasius suchi</i>
Bata	<i>Labeo bata/ Cirrhina reba</i>
Golda chingri (prawn)	<i>Mycrobrachium rosenbegii</i>

4.8.4. Major fish species recorded in the catches by different fishing gears

A total of 22 species of fishes were recorded of different gears used by the fishermen during the study period. Local and scientific names of caught fishes are shown in Table-10.

Table-10: Major fish species caught in the study area.

Local name	Scientific name	Local name	Scientific name
Koi	<i>Anabas testudineus</i>	Tengra	<i>Mystus vitatus</i>
Shing	<i>Heteropneustes fossilis</i>	Gutum	<i>Lpidcephalus guntia</i>
Magur	<i>Clarias batrachus</i>	Golsha	<i>Mystus bleeky</i>
Taki	<i>Channa punctatus</i>	Choto chingri	<i>Macrobrachium malcomsonii</i>
Kolisha	<i>Colisa fasciata</i>	jat puti	<i>Puntius sophore</i>
Air	<i>Mystus air</i>	Tit puti	<i>Puntius ticto</i>
Boal	<i>Walago attu</i>	Rui	<i>Labeo rohita</i>
Baim	<i>Mastacembelus armatus</i>	catla	<i>Catla catla</i>
Baila	<i>Glossobius giuris</i>	Mrigal	<i>Cirrhinus mrigala</i>
chela	<i>Oxygaster phulo</i>	Kalibaush	<i>Labeo calbasu</i>
Bhada	<i>Nandus nandus</i>	Golda chingri	<i>Macrobrachium rosenbergii</i>

4.8.5. Fish Production

The survey result indicated that the almost all fish farmers harvested fish with some exceptional, few farmers (5%) restocked fish after harvesting. A total production of 1203 MT was recorded in the year of 2002. It was found that the fish production in the investigated 11 villages were 7.5 kg/decimal (Table-11).

Table-11: Total fish production in the study area

Type of Fish	Total catch (Metric ton)
White fish	680
Chingri	523
Total	1,203

(Source-Thana Fisheries Office, Terakhada, 2002)

4.9. Preventive action for fish disease

From the investigation, it was found that disease especially gill rot, fin rot, urgulas infestation, dropsy, white spot and black spot in gill occasionally observed more or less in every year. But majority of them did not take any preventive action against disease.

Only few fish farmers (15-20%) had taken action against disease by applying limewater treatment, Sumitheon, Diptarex and adding water.

4.10. Fisheries experts' advice to fish farmer

During the interview with fish farmer, it was found that maximum fish farmer did not visit local Fisheries Office. Only a few of them used to go to the Fisheries Office and had taken advice from them. Whereas most of them were deprived the help from the Government due to their lacking of awareness.

4.11. Fishing Methods

Different types of fishing method used here from prehistoric times and now fishing methods have been modified. Fishing means to capture fish by any ways. Numerous fishing gears operate for fishing in the study area. The fishermen selected their fishing gears depending upon the different operation area. Most of the professional fishermen fishing in day and night from the month of August to January.

4.11.1. Fishing Gears operated in the study area

Different kinds of nets were used in the study area. The nets were not perfect to operate certain condition of weather and fishing spots. Fishing for specific species and area, construction of nets is important. Many fishermen had not their own net but carried out fishing by borrowed net. From the prehistoric time various nets are commonly intention for capturing fish in the study area. These were:

- i. Cast net (Khepla jal)
- ii. Seine net (Ber jal)
- iii. Tana jal
- iv. Dharma Jal (also known as shib jal)
- v. Current net (fash Jal)
- vi. Moya Jal

These were mostly of traditional type and some of them were unique for the particular locality. Jhaki jal (cast net), Ber Jal, Current jal were usually operated by male fishermen. Dharma Jal (also known as Sib jal), Moya jal and Tana jal were generally found to operate by the children and fisher women in the study area. Sketches of dominant gears at Terakhada upazilla are shown in Appendix 3.1(i-vi)

4.11.2. Fishing Traps used in the study area

Various types of traps were found to be used in the study area. These traps were used to luse the fish which were allowed to get in and prevented from escaping. The traps were usually made of split bamboo and tied with rope. Some traps were two sides opening, some were one side opening, but all traps were setting in the shallow and current water area. The professional as well as non professional fishermen were found to be used these traps. These were:

- i. Bair
- ii. Chandi Bair
- iii. Bana
- iv. Charo
- v. Hancha
- vi. Polo

i. Bair

Bair is a tubular shaped basket, made of bamboo sticks and mainly operated in shallow running water and set against the water current.

ii. Chandi Bair

Chandi Bair a basket shaped trap, made of bamboo stick and plates and used in shallow running water body setting at the middle point of paddy field margins and sometime used in riverside with the help of bana.

iii. Bana

Bana is a rectangular shaped trap, made of bamboo sticks arranged in parallel one after another and tied with cane materials or various types of lata (locally available) and found to operate at the opening of drains and the middle point of paddy field margins.

iv. Charo

It is a quadrangular trap in which one side is open. Generally it measures about 1-4 ft. in long, 1-3 ft. in height and 1/2 ft. in width. It has one door that situated on the front side. This door is used to enter the fish in the traps. Another door situated upper surface of the charo, which is used for removing trapped fish. This is also made of bamboo split. This is placed in the low current area and the gap is filled with bana. Small fishes are caught by this trap.

V. Hancha

It is triangular trap which is made of bamboo split. It is about 3.5-4-10 ft. in height, frontal side of hancha there is a bamboo part fixed and behind part is directed on a handle like form. This trap is used in shallow water. It is used for fishing small fishes eg. Puti, Colisa, Guchi etc.

Vi. Polo

This is a bell-bottom shaped trap opening in bottom side and split opening in top side. The bamboo split is fixed with ring like structure with iron wire. The distance of each stick is between 1/2-1 inch. The operator place this polo on its front side and when the fish enter the polo, then a sound produce and the fish caught with hand of the operator through narrow opening of the top. Sketches of dominant gears at Terakhada upazilla are shown in Appendix 3.2 (i-vi)

4.11.3. Description of wounding gears used in the study area

In capturing purposes of fish and fisheries items spears and harpoons were found to be used in the study area. Usually large sized fishes like Gajar, Shoal, Boal, Chital, Fali, and major carps were caught by using spears and harpoons. Spears and harpoons consist of bamboo or wooden shafts with forks or groups of iron points. The forked end of the spears are pointed, sharpened and sometime forked. When the fish float or drift then the hunter throw the spears in a great speed towards the fish and the fish become seriously wounded and then they are to be caught. Various types of spears and harpoon were found to be used for fishing in the study area. These were:

i. Aro

It possesses a fork with 3 simple points and attach with a long bamboo. It is used to kill fish like shoal (*Channa striatus*), Boal (*Wallago attu*) etc.

ii. Ek- kata

A single detachable barbed point. It is attached to the shaft made of bamboo by cord and used to kill small fishes like small taki (*Channa punctatus*), small carps etc.

iii. Jhupi

It possesses a fork with a group of (nearly 8-20) barbed point. The fork is attached with a shaft made of bamboo. A long string is tied at the posterior end of the shaft.



iv. Tin-phala

A long bamboo is splinted frontly in 3 pieces of bamboo stick. Sometimes it found to iron rod each pieces are about 1-2 ft. in long. The bamboo in the behind portion are connected with a bamboo part and serves as handle. The phala is barbed pointed and sharpened. This is very strong spears for proper used to hunting large fish e.g. Boal, Shoal etc.

v. Borshi

Mostly popular gears used in the study area which is made of iron and having a round shape attached with a twine. Bent and barbed with pointed edge to hold bait. This gear shoted at night and hauled in the morning. The most commonly used baits were earthworms, insect larva, small fishes, live frogs, flour paste etc. All types of fish were caught by this gear all the year round.

vi. Konch

Generally it is made of a bunch of iron sticks having sharp edge. A long bamboo stick was used to hold it at the top end. Sometime long ropes are used to prey from long distance. Sketches have been shown in Appendix 3.3 (i-vi).

4.11.4. Boat used in fishing in the study area

The fishermen mainly used non-mechanized boat for fishing in the study area. But often hired motor from the middlemen/traders with high rent. Fishermen also used wooden boat (dingi), which was usually 30 ft in length; 5 ft in width and 2 ft in height. The manufacturing cost for making a new wooden boat was around TK. 7000-10000. In other cases of fishing, fishermen usually used smaller country boats and others crafts, which are usually suitable move in the beel and the river, were observed to operate in the study area. These were:

- i. Jaila nauka
- ii. Khosa nauka
- iii. Donga nauka
- iv. Vella (made by green banana tree) (Appendix-3.4)

4.12. Drying procedure of fish

Drying of fish was also observed in Ajagarah, Sheikhpura, Kamarol and Nachania areas. Few species of fish were dried here for their own as well as commercial purposes. Specially, Taki/Lata, Kajuli, Batashi, Chela, Icha (choto chingri), Chanda, Gochi baim and Gajar were found to be dried on the open field by hanging on rope or scattering on bamboo rack or mat (Table-12). Such type of drying fishes were not hygienic because dirties, flies, insects etc that sometimes causes diseases on it. A flow chart was developed with the commutation of the primary stakeholders that is shown in fig-27.

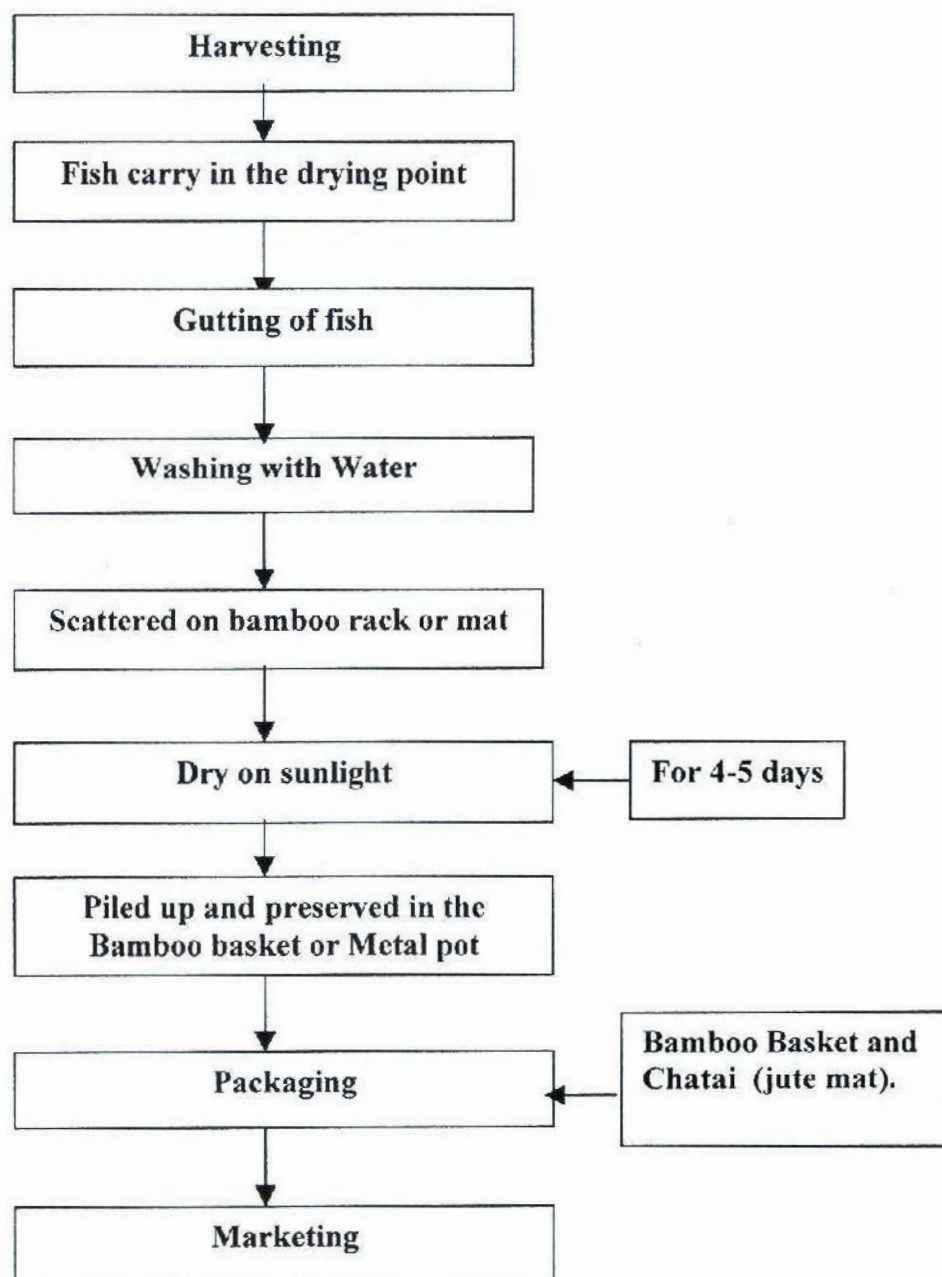


Figure-27: Flow diagram of drying process of fish in the study area.

4.13. Marketing system

It was pointed out that the actual fishermen and the fish farmer in the study area did not get proper prices for their products due to a complex marketing system and the very dominant role of middlemen. There were four distinct marketing system observed in the study area. Namely,

- I. **Primary markets:** This market located near the points where the fish were caught. The aratdars procured the fish from the fishermen, generally through henchmen at pre-determined prices. Only a part of the catches was allowed to be sold locally by local retailers.
- II. **Secondary markets:** In secondary market, fish traders bought fish from the landing centre which is located on the road side or beside the bank of river. The dominant players in this market were baparis/middlemen.
- III. **Higher secondary markets:** In this market, the baparis sold the fish to large wholesalers (pikers) through the local aratdars.
- IV. **Final consuming markets:** In this market, the big wholesalers sold their fish to the retailers who, in-turn, either sell at permanent stores at local markets or paddles it to home on their heads or in rickshaw/vans equipped with ice boxes.

The marketing system of the study area has been drawn as flow chart in fig-29.

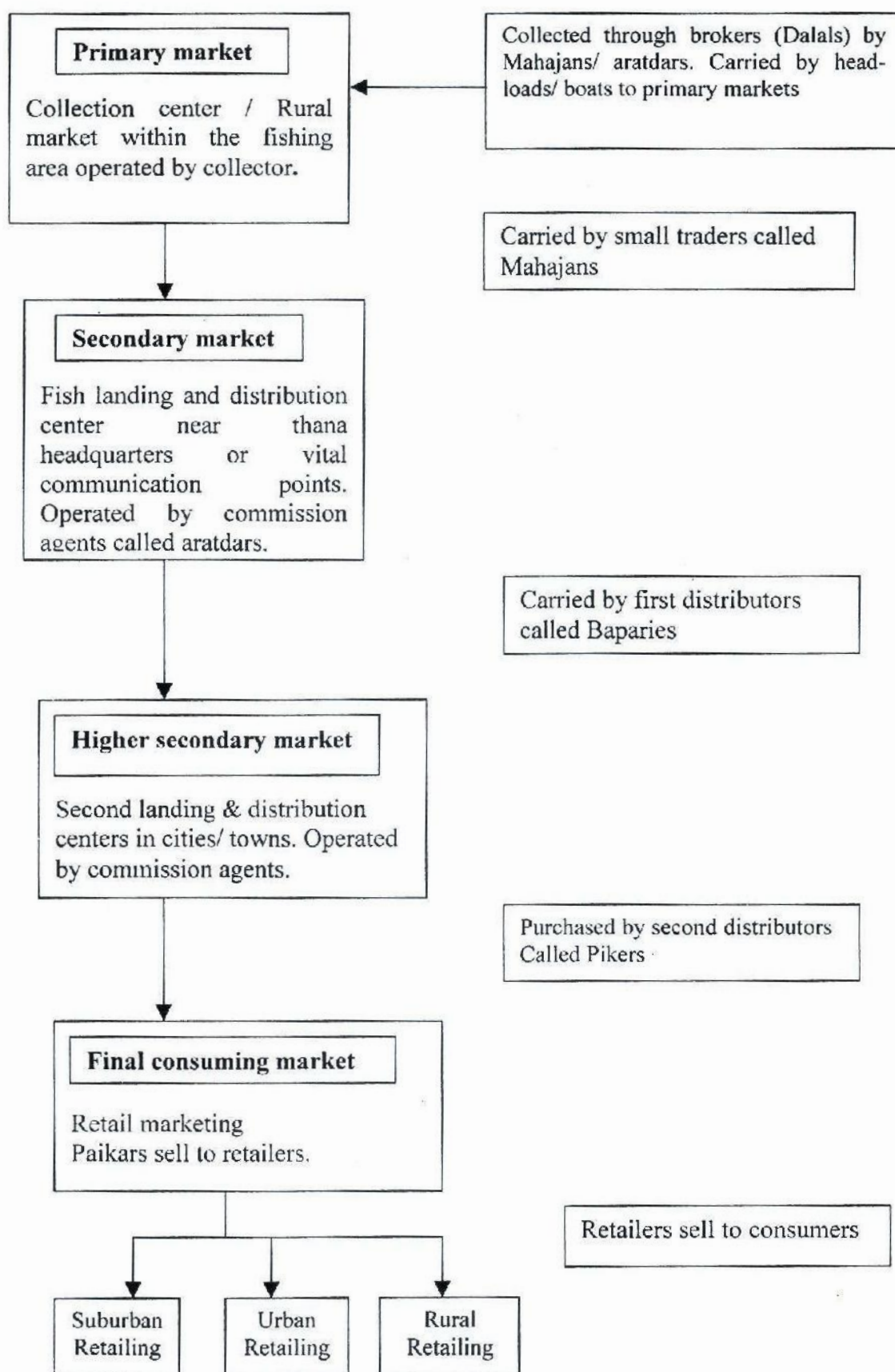


Fig-28: Four levels of fish markets in the study area

4.14. Income and expenditure from fish culture

4.14.1. Monthly Income

The survey results revealed that maximum fish farmers sell their fish product and use their funds for household, other fish use for their own consumption and gift. Monthly average income in this study area was around Tk 1000-1200 per head. Badruzzaman (2002) reported that monthly average income Tk 1000/ head in Sailkupa upazilla, Jhenaidah district.

4.14.2. Yearly Income

The study showed that 25% fish farmer's yearly income below Tk 12,000; 12% fish farmer's yearly income between Tk 18,000-3,0000; 33% fish farmers yearly income between Tk 36,000-48,000; 20% fish farmer's yearly income between Tk 50,000-60,000 and 10 % fish farmer's yearly income above Tk 60,000 (Fig-29). Roy and Derairaj (1998) found that the estimated income fluctuated lowest range of Rs. 816-1225 per month at Choudari to Rs. 7866-10,200 at Panighat in South Andaman, India.

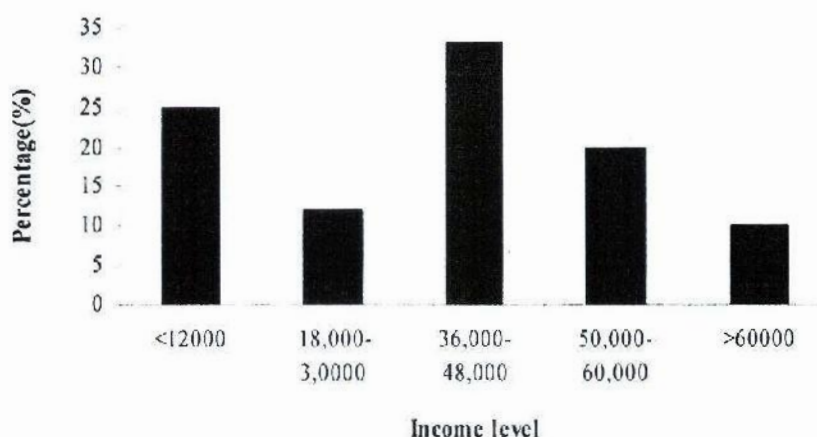


Fig-29: Yearly income status of fishermen

4.15. Economic condition

Economic condition of the villagers was not so good. Maximum of the villagers have the ability to take meals three times a day. The villagers mainly invested their money for rice production, vegetables production, trade (shop keeper), farming (poultry, fishery), and a few for dairies. As they do not have sufficient capital, they have to barrow for investment. The sources of barrowing are NGOs, moneylenders, and sometimes from Krishi bank or businessmen. The have to pay a higher rate of interest for barrowing from NGOs, and moneylenders that hindrance economic development. The people do not prefer to go bank for loan because of its complexity, time consuming, not readily and deduction of 5% by bank employs as under table money. Due to above conditions, presently the villagers saving money through by themselves or co-operatives and thus improving their economic conditions.

4.15.1. Money Borrowing

During the survey, it was found that 45.09% of fishermen borrowed money from the NGO's, 14.91% from relatives, 13.09 % from moneylenders, 6.91% from Banks, 14.91% from neighbors and 5.09% from co-operatives (Table-13). Maximum fishermen borrowed money from the NGO. Though the interest is high in NGO but fishermen are preferred to borrow money from NGO as because their offices are located adjacent to the fish farmer house. Where as the fishermen are less interested to loan from bank due to official formalities and lengthy process. CPP (1996) was reported 70% took loan from moneylenders in Tangail District.

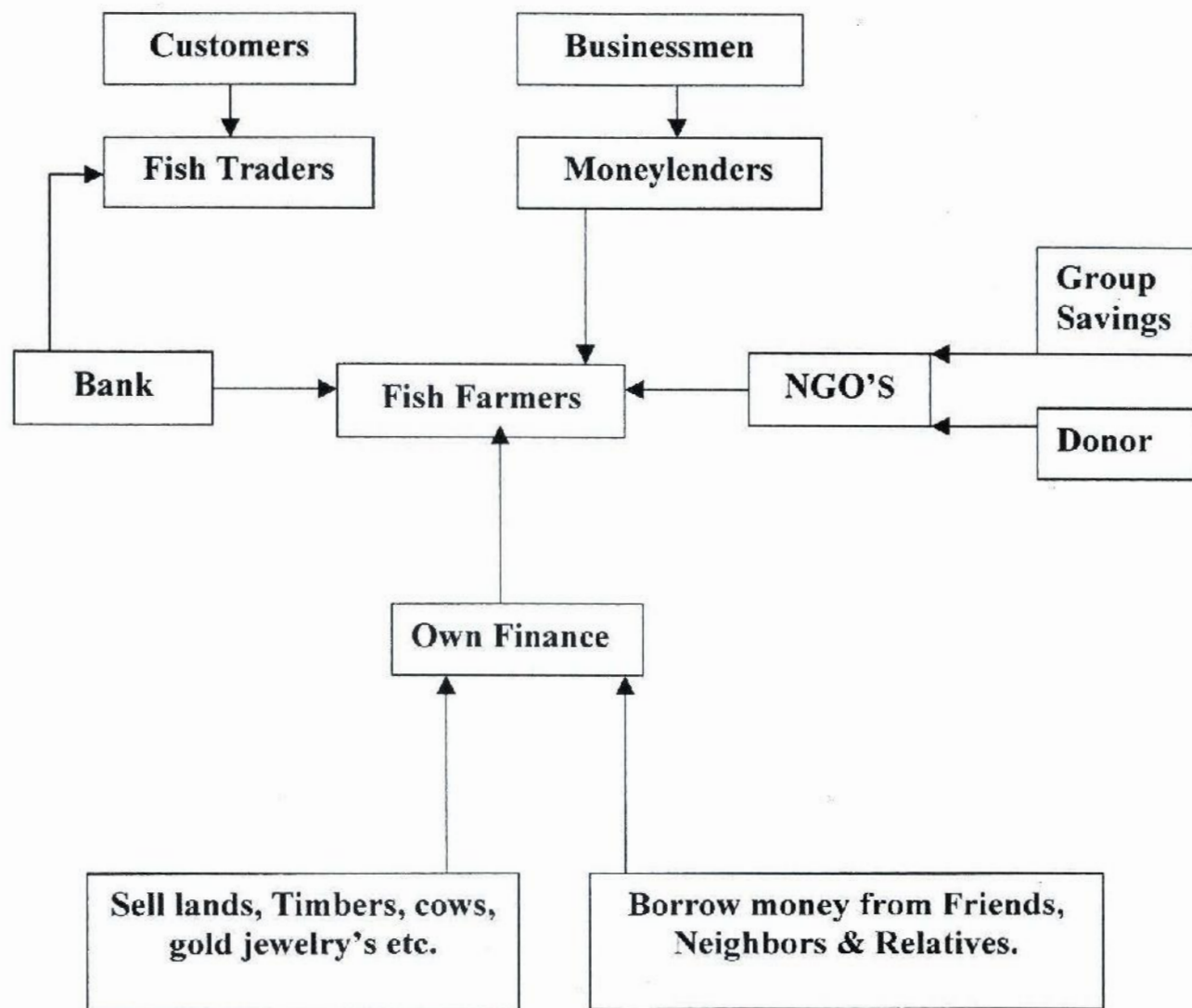


Figure-30: Flow diagram of credit sources for fish farmers in Terakhada upazilla.

4.15.2. Purpose of borrowing money

Investigation indicated that the fish farmer borrowed 30.18%, 22.82%, 17.82%, 10.18%, 12%, 2.90 % and 5.09% money for agriculture, litigation, fish culture, poultry, food, medical and marriage, respectively (Table-14). Maximum fish farmers (30.18%) borrowed money for agriculture purpose due to less expensive and they were expert and skilled in agricultural work. (Chantarasri (1994) presented that majority of the fishermen were indebt for money borrowed to buy fishing gear and food in Sundarbans Reserve Forest (SRF), Khulna district.

4.16. Institutions and organizations

Government organizations at Upazilla level are public administration, police, health and family, BRDB, PDB, LGED, Co-operatives, education, women affairs etc. NGO like, BARC, PROSHIKA, SHAPLA, ASA, PRODIPON and BRIDGE. These institutions provide services to the villagers of the Terakhada Upazilla. The villagers reported that the services other than family planning are very inadequate. The villagers need to receive training on crop farming, vegetables farming, fish farming and family health care from GOS, NGOs but they do not get significant trainings. There are estimated NGOs activities limited to the target groups complementary to the government programs. Different NGOs like BRAC, PROSHIKA, ASA, SHAPLA, PRODIPON work in different areas to avoid duplication. SHAPLA is mainly act on female community. The involvement of NGOs is on micro credit system rather than training programs as reported by the respondents.

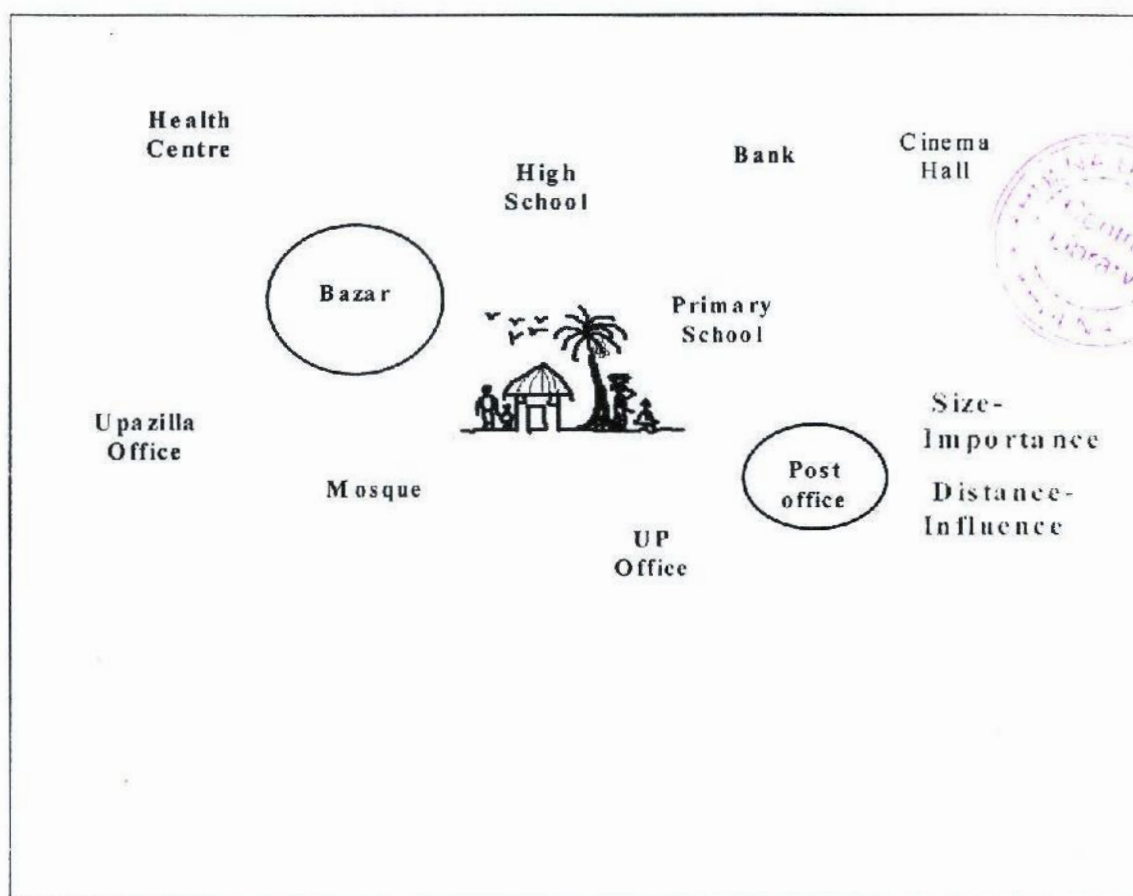


Figure-31: The Venn diagram of the villagers of Terakhada Upazilla

4.17.1. Men's Mobility

Men in fishing community have traditionally be found in fishing, net making and fish processing, gher preparation, vegetables selling, small-scale retail trade of fish and fishery products and livestock rearing and other works.

Mobility of male of Terakhada Upazilla is shown in the figure-32

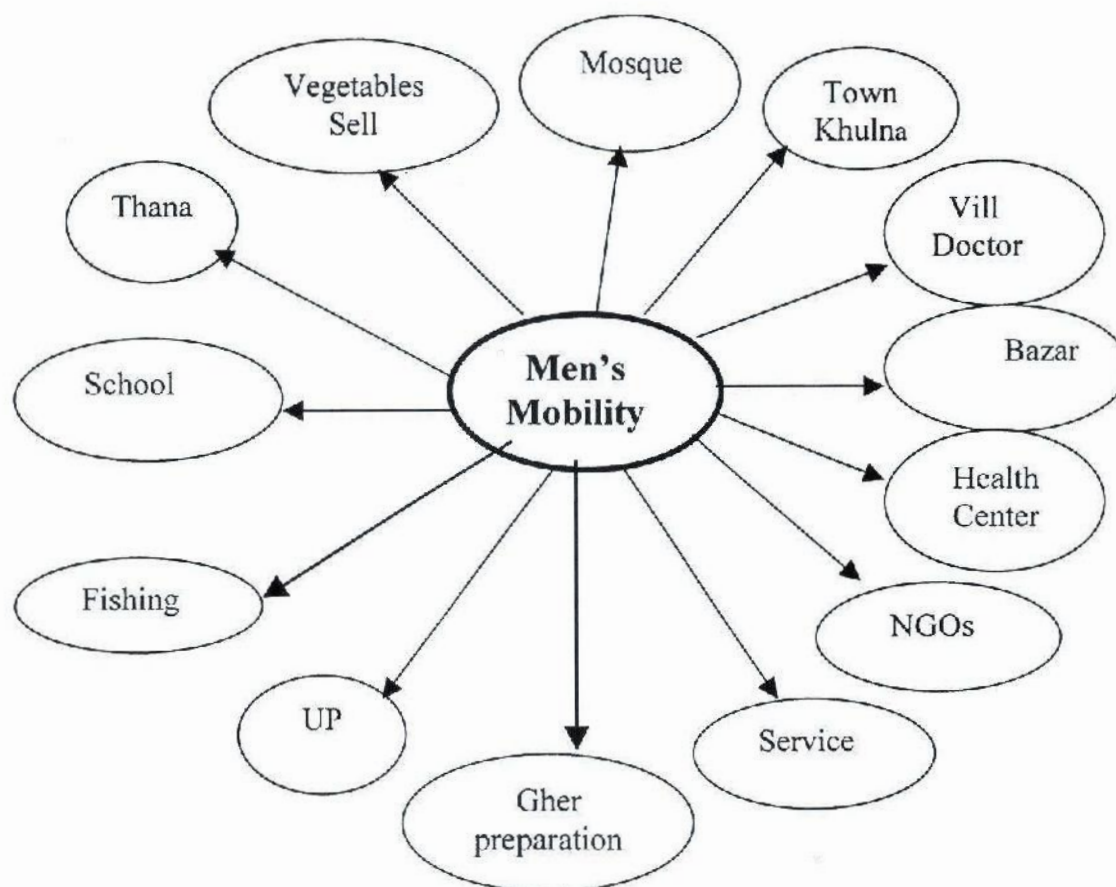


Figure-32: Mobility of male of Terakhada Upazilla

4.17.2. Women's Mobility

Women in fishing communities have traditionally been involved in net making and mending, fish processing, small-scale retail trade of fish and fishery products and livestock rearing. It was estimated that about 80% of the workforce gathering post-larvae in shrimp farming are women and children in coastal region. In the study area, it was found that women were involved in net making, fish and livestock rearing, weighing and packing of fish feed, their daily/family activities, retail selling of fish. Some of them went to court, hospital, market, NGO, bank, school etc. for their children or for their own purposes (Fig-10).

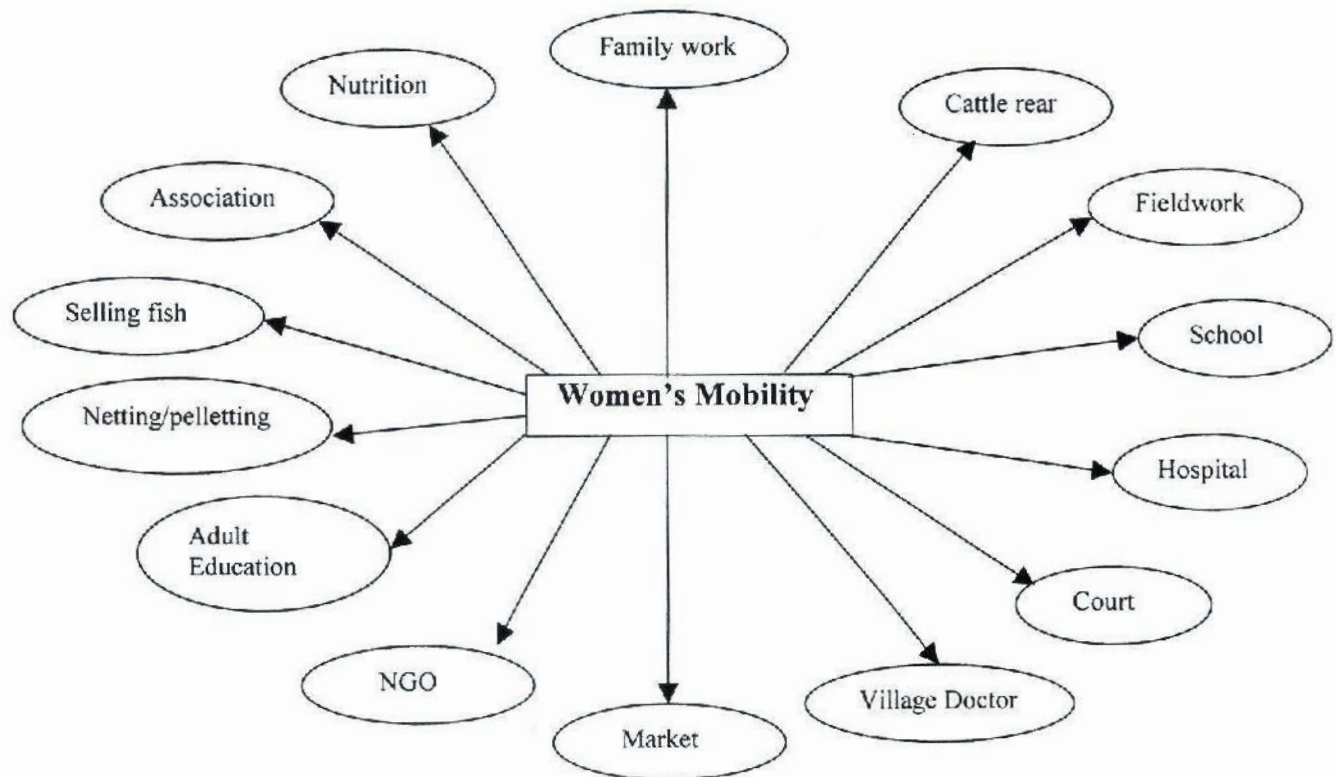


Fig-33: Pattern of women's Mobility in Terakhada upazilla

4.18. Infrastructure

The Upazilla is well connected with Khulna city by pacca road. The village enjoys electricity through PDB. The village is under mobile network. Terakhada Thana was upgraded into Upazilla in 1987 by a government order. A brief description of the Upazilla is given bellow-

- ❖ Area of Terakhada Upazilla- 72.73 Sq. km
- ❖ Total population - 1, 2,992 (Male-52,524; Female-50, 444)
- ❖ Total agricultural land- 13,503.6 hectare
- ❖ No. of Union- 6 (Terakhada, Ajagarah. Modhupur, Barasat, Shagladah.Shachiadah)
- ❖ No. of Villages - 99
- ❖ No. of Private ponds - 1300 (area-98 hectare)
- ❖ No. of Private dighi - 33 (area- 64 hectare)
- ❖ No. of Private gher – 750 (area-698 hectare)
- ❖ No. of Public pond – 5 (area- 2.62 hectare)
- ❖ No. of river - 1(river-54.1 hectare)
- ❖ No. of Hat+Bazar – 10
- ❖ No. of chingri depot- 44
- ❖ No. of fishermen – 10,297
- ❖ No. of fishermen co-operative society-9
- ❖ Fish production- 1,103 MT (White fish-523 MT; Chingri-680 MT)
- ❖ Educational Institutions
 - High school-11
 - Primary school-53
 - Registered Primary school-44
 - College - 1
 - Madrasha -5

4.19. SWOT Analysis of Terakhada Upazilla

SWOT stands on Strength, Weakness, Opportunity and Threats. Strength and weakness focus on the internal factors, while opportunities and threats reflect the influences of the external environment affecting the organization, community or activity (IIRR, 1998). It is a well renowned analytical tool for the researchers to represent the present status of any kind of activity as a summary that can also show the future trends of that activity.

SWOT Analysis of Terakhada Upazilla:

Strengths	Weakness
❖ Diversified skilled labour available in the fishing community.	❖ Lack of leadership and unity, particularly in challenging situation.
❖ The place is suitable for aquaculture.	❖ Big gap between agreement and real action among men.
❖ Women are able to work outside the home without social resistance.	❖ Loose social cohesion
❖ Women's voice is fairly strong.	❖ Lack of initiative among men
❖ Accessible.	❖ Non punctual
Opportunities	Threats
❖ Large number of perennial ponds, canals, depression and other water bodies for aquaculture.	❖ Youth have a tendency to take drugs.
❖ Potential to produce small agro-industry, as the town is nearby to sell the produce.	❖ Polygamy and high growth rate of population.
❖ Availability of seasonal water during monsoon.	❖ Lack of awareness about modern technology.
❖ Transport facility is good.	❖ Have a tendency for migration
	❖ Cultivable land is gradually decreased due to home construction.
	❖ Non availability of good quality fry, fish feed etc.



CHAPTER FIVE

❖

**ALTERNATIVE LIVELIHOOD
STRATEGIES**

5.0 Proposed Alternative Livelihood Strategies of the Fishing community

Most of the fishermen in this area are practiced aquaculture for 6-8 months in a year. They become workless during January to March and August to October. However, the fishermen communities were worried about their problem and seeking the probable alternative occupations.

Introgression with fishermen, the following alternative occupations have been checked out:

- ❖ Agriculture
- ❖ Day laboring (earth work, work in brick field and rickshaw pulling)
- ❖ Livestock rearing
- ❖ Poultry and pigeon farming
- ❖ Petty trade
- ❖ Multi purpose tree species Plantation
- ❖ Handicrafts
- ❖ Making of net
- ❖ Rice making for sells from buying low cost paddy
- ❖ Fruit and vegetable cultivation

5.1 Reasons behind choosing the occupations

The best accepted alternatives to the community of Terakhada upazilla were agriculture and then aquaculture, livestock, daily labor respectively. But poverty and technical assistance were the limiting factor for the community of the study area.

5.1.1 Agriculture

Most of the villagers' first choice was agriculture as an alternative due to their skill and less expensive. Though most of them had no agricultural land but yet they felt satisfy as an agricultural labor because they got money during working.

5.1.2 Daily labor

They took daily labor as their second choice of alternative livelihood strategy and its main cause was that, such occupation did not need any investment. Some of them did not like this occupation because they like independent job. They thought, occupation, as a daily labor could not provide certainty of livelihood.

5.1.3 Livestock

They liked cattle and goat rearing as third option of alternative income. Children could take care of animals after returning school. They have eagerness in livestock but have no capabilities because initially it needs great amount of money investments. In addition, they also worried about the technical support if they face any problem in livestock.

5.1.4 Poultry & pigeon

Considering of child labor this type of occupation also took place as number four. Poultry might be a sustainable alternative occupation but cause of different types of obstacles such as transportation, electricity supply, and lack of telecommunication, this occupation was not sustained. Most of the households had locally available hens and ducks but failed to uphold their livelihood status. Pigeon breeding might be the better alternative occupation of school going children's.

5.1.5 Petty trade

They thought petty trade might be an alternative occupation. They kept this occupation as in number six. Some of them already related with it. Many of them said that they couldn't be sustained in this occupation because when they were in problem they would be must used up their investment. They also interested in paddy and rice trading, fish marketing, vegetable huckster, pedlary, petty shop etc.

5.1.6 Multi Purpose Tree Species Plantation (MPTS)

Though fishing was the primary occupation of the fishermen in the study area, alternative means of income generation sources may be through Multipurpose Tree Species (MPTS) plantation that secure diverse products and services.

5.1.7 Handicrafts

As their seventh alternative livelihood strategy, they chose handicrafts as a sustainable occupation. Mainly, women were interested in this occupation. Some young girls were already engaged with handicrafts. Sewing was the best choice of them. Wall mat, string design in cloths, Nakshi katha and such types of work they could do easily if they got direction and marketing facilities.

5.1.8 Making of net

Making net was one of the most populous, attractive and traditional profession by the fishermen. Both the male and female irrespective of child and old man made net round the year. Some fishermen made net for their own necessary and commercial purposes. Generally, fisherwomen and fishermen make net during leisure and workless time particularly in the month of August to October.

5.1.9 Rice making for sells from buying low cost paddy

Another alternative profession was *Kutali* (person who engage boil paddy and make rice) was available among the fishermen in the study area. It was not only integrated effective physical exertion of the fishermen but also boosted their total social status in the society.

5.1.10 Fruit and vegetables Cultivation

Low capital-intensive fruit and vegetables cultivation was very much popular among the villagers including the fishermen. It required small piece of land and less amount of capital that is available to them. They can even grow vegetables in the gher/pond dike. On supplementing their needs, they sell the rest and satisfy their other requirements.

Community preference ranking: Local fishermen were mainly emphasized the following options which are listed below and represent the group-wise preference of alternative options.

Table -15: Reasons behind the Group wise alternative ranking of Terakhada upazilla.

Community group	Choice ranking of alternatives	Causes
Adult	First choice	Agriculture: They were expert and skilled in agricultural work.
	Second choice	Pity trade: Shop keeping, fruit and fish trading (peddler) in morning and evening where less effort was needed
Older	First choice	Daily labor: Required no investment and easy to access
	Second choice	Aquaculture: Eagerness as they were related with fishing but less opportunity.
	Third choice	Agriculture: Skilled
Female	First choice	Agriculture: Vegetable production and homestead gardening were easy for them
	Second choice	Handicrafts: Skilled
	Third choice	Daily labor: As a household servant
Children	First choice	Poultry & pigeon: Required no hard labor, have better opportunity for school going children

5.2 DFID suggested the following alternative option for Fishermen of Bangladesh.

5.2.1 New Options (Where there is access to land): Home gardening; Duck; Chicken and goat rearing; making fish traps and gear; Oyster and crab cultivation; bee keeping; Cultivation of meley grass for mat weaving; Cultivation of golpata for roof construction; tree nurseries; Shrimp fry nurseries etc.

5.2.2 New Options (Land less)

- Micro-credit can be used for petty trade handi-crafts.
- Better access to khas land.
- Sewing, paper bag making
- Better awareness programs for appropriate fry collection.

DFID also proposed some social protection measures to make the transition to alternative livelihoods such as

- i) Food for Education Program that Target the Children of the Poor in the Coastal Zones;
- ii) Food/Cash for Work and Training;
- iii) Better Targeting of VGF Cards to Fry Collector Women.

5.3 Strategic recommendation from the present study:

Prior to recommending any alternatives we have to consider whether the community accept that and will not hamper the biodiversity or ecology. However, from the present study the following strategies may consider for alternative livelihood occupations of the fishermen.

5.3.1 Resource level

Several alternative income activities may be proposed within the shrimp sector. For example, fishermen in southwestern region may be involved in golda and shrimp nursing. Currently, more than 70 percent of the shrimp farms do not have nurseries on their farms (Anon, 2000b). Stocking of fry in a nursery reduce mortality rate and increase the growth rate of fry. In addition, the technology is simple and the risks are relatively low due to the short production cycle (10-20 days) as well as the area required for nursery is very small (20-50 decimal). For this, fishermen that are landless can get land lease with the assistance of NGOs to start shrimp nursing. For setting up a nursery pond poor fishermen can aggregate in a small group. Access to credit is required to get the lease and construct the

pond. Short-term training would also be required. The fishermen can participate in part time labor that will afford them to bear the expense of nursery operation.

Integrated fish culture can improve and diversifies the livelihood of small-scale poor fishermen and thus can reduce food insecurity and creates wage labor opportunities for landless poor. Households can easily apply this practice in their homestead small *ghers* (where water is not saline) and can easily able to withstand crisis periods by obtaining diversified product. They can grow various vegetables in the gher dike and poultry and live stock rearing in the homestead. For this their daily food quality and quantity will be improved.

Golda cum fish poly culture in the homestead ponds may be a wonderful profitable income source. It is a matter of great hope that in this Upazilla, Golda (*Macrobrachium rosenbergii*) culture technique was initiated and cordially accepted by the community.

Fish culture in cage in the nearby river may be an alternative option for landless poor. For this, NGOs and Government organization have to provide technical and financial support.

Fishermen may also develop specialised income source by driving/pulling rickshaw or van. An insulated rickshaw/ van may be developed. Government or the private sector may show interest to invest them.

Landless fishermen whose livelihoods are threatened for the intended ban on fry collection may turn to wage labor activities related to gher aquaculture. Those include gher maintenance, guarding against poaching, harvesting and transport.

In this area the focus should be on helping the fishermen access to common property resources such as Khas land to be used for home gardening, duck, chicken and goat rearing, tree plantations and cultivation of Hogla for wall construction.

Poultry and Livestock rearing may be a good alternative for them. It is a profitable business. Children and women can take care of animals and poultry easily. But initially it needs money investments. Micro credit from NGOs can solve this problem. On the contrary fishermen initially can make savings by day laboring or rickshaw pulling. Pigeon breeding may be the better alternative occupation of school going children's.

Social forestry of various fruit and wood tree like mango, betel nut, banana, palm, coconut, bamboo, etc. may be a means to enhancing food security and income diversification. Plant nursery may be an alternative option if small area of land can be leased by the help of NGOs.

Handicrafts may be a wonderful alternative livelihood option for the women and young girls. Sewing may be the best choice of them. Wall mat weaving, net weaving, string design in cloths, Nakshi katha and such types of work they can perform easily if they get direction and marketing facilities.

5.3.2 Community level

Community based management and co-management is a new concept and is considered as the most effective management technique in terms of economic and social development. In case of community based management bottom-up decision making process for planning is taken instead of top-down process. The fishermen may form a group and work together. They may lease private land or allocate khas land, road side ditches and can apply integrated cropping or fish culture. In case of co-management there is a sharing of decision making between government and the primary stakeholder (fishing community). By applying this manner, fishermen may allocate public land, Jalmohol, ox-bow lake etc. and they can successfully utilize it for fish or crop production. In addition, they may form a labour gang that would help them in finding various works like construction, earthwork on gher etc. They may form cooperatives among themselves for form economical base. In this context, NGOs may also show interest in investing money.

5.3.3 NGO level

NGOs have to contribute financially, technically and growing consciousness for the development of alternative livelihood for the poor landless fishermen. Micro credit is needed for income generation of the landless poor. It would help them in starting petty trade, culturing fishes, growing crops or rearing poultry or livestock. Again, this would replace the dependence on the Dadandar.

If a ban on fish farming is implemented, particularly women group will be extremely vulnerable to economically and socially. Alternative income options will be limited for them. Their social security will be at risk and various problems like gender difference in works, women's access to public space, appropriate work and remuneration for work, and marriage patterns would not be solved. NGOs have to build support for women's greater

physical and economic mobility and security. This can be done through gender awareness activities. There are signs in our country that women's mobility has improved where NGOs have been operating. There is a need for more social justice work to be supported by NGOs.

NGOs can assist poor people in gaining access to Khas land. They can work as an awareness campaign with the fry collectors so that the poor understand their rights regarding Khas land.

5.3.4 Government level

The Government has to initiate extensive social protection programs for the fishermen to assist them effectively for alternative livelihood options. These social protection measures would be implemented for two or three years and by this time the poor people would be able to gain the skills necessary to pursue sustainable livelihood options. If these measures can not be taken, people may be forced to seek unsustainable livelihood options, such as collecting wood from forests, in order to survive.

Social protection programs will vary from one context to another. For instance, in regions where natural disasters are frequent such as coastal region, social protection measures could be cyclone centre is essential. The areas where shrimp fry collection bans are being proposed, measure should be taken for alternative livelihood.

While fishermen are seeking alternative livelihood options during seasonal ban periods, food or money for work opportunities could be provided. These schemes need to be linked with general development measures like, training and skill development activities. A model that could be followed is the Rural Maintenance Programme implemented by CARE that targets destitute women. VGF Cards, training and some skill building may be provided to fisher Women

By providing this assistance, women are given the opportunity to work towards alternative livelihood options. Social forestry may also be promoted through this programme. NGOs could assist fisher women to obtain such assistance through awareness campaigns. These programs should be carried out for at least two years. Such programs could create new opportunities for women to obtain skills and to engage in-group formation.

Support should be given to use Khas land with low interest to poor fishermen. The first step in doing this is to identify all of the Khas land that is available. In many areas, improved access to common resources will be required to enable fishermen to stop fishing to other forms of livelihood such as animal rearing, home gardening, or shrimp nurseries.

5.3.5 University and institutional level

Studies of universities and other institution have to incorporate livelihood development of fishermen who lack access to land credit. Applied research on the integration of alternative agricultural practices, such as salinity-tolerant crops, ducks and pearl cultivation in shrimp cultivation areas from which poor rural communities will be benefited.

CHAPTER SIX



CASE STUDY

Case Study: 01

Name: Mohadeb Mali. , Age: 48
Religion: Hindu
Family members: Six – wife, 4 children
(2 Sons and 2 daughters) and himself
Occupation: Fish farmer and day labor



Education: Mohadeb Mali and his wife are illiterate. He can only sign his name. His children are going to school. His eldest son completed class seven but has not been admitted to class eight. His eldest daughter is studying class six at high school and his youngest daughter studying class three at Ajagarh Primary School in their village.

Assets: Four cattle, 12 ducks, 15 hens, one tinshed house, no kitchen and no tube-well.

Land property: 45 decimals, two small ponds (share with his brother), Fishes are cultured in these ponds. He cultivates his lands and leases additional land to cultivate rice.

Health: He and his family members are in good health. His children have received some vaccination through the EPI program. He has a tin-sheded sanitary latrine.

Meals: The family rarely consumes breakfast. Lunch consist of rice, vegetable and some time small fish. Dinner also consists of the same.

Crisis/critical month: Mid February – mid April and July – August due to workless.

Shock/ stress: Loss of cross in any natural disaster like storm and cyclone. He loans from his relatives or many lenders. He never consults with any NGO's for loans. He thinks that taking loans from Bank and NGO's is very difficult and weekly recovery system of NGO's is very hard.

Comments: He can hardly support his family for 6-8 months with the crops and his earnings and rest of the months have to work as a day labor to maintain his family.

Case Study: 02**Barasat****Md. Yusuf Laskar:**

Yusuf Laskar is a young fisherman of 35 years old stated his present life style and past life history as-

He was born in the house of Abul Kalam Laskar, of village Barasat under Terakhada Upzilla in Khulna district. His father was a farmer. They had no land for cultivation. He is the second child of his parents among eight children including four brothers and three sisters. His three brothers and two sisters have got married. Both of his sisters are abiding with their respective husband. Their family is a joint family where his father is all in all. He could not continue his studies for economical problems. When he was 12 year- old, his father advised him to do something for earning money because his father was unable to bear all expenses. He along with his elder brothers started fishing in the river and *beel* (cogmire). This makes solvency to run their family smoothly. He along with his two other elder brothers continued it up to 13 years. Last 4 years ago, they decided to buy some land property for gher farming and took loan from NGO (BRAC). This investment helped them earn a lot of benefits and in the mean time they had paid all the dues of NGO (BRAC) with interest. Now they are trying to buy a large size fishing net and tractor (that is used for ploughing).

He got married 9 years ago and he has 3 children (2 boys and 1 girl). His eldest son is going to school. He (eldest son) is now in class three at Barasat Primary School in his village. His eldest daughter is studying class one at the same school and his youngest son not studying because is now only two years old.

Now his father is free from all kinds of work and leading a very simple life. His father is a happy man. Now, he looks after all the family problems by advising counsel. Through fishing activities, they earn satisfactory income, now they are economically viable, and their family is running very well.

Case study: 03



Name: Leelabati Devi, Age: 45

Religion: Hindu

Family members: Five; 4 children (2 Sons and 2daughters) and herself. Her husband died of blood cancer last two years ago.

Occupation: Work in Fish farm and day labor

Education: Leelabati Devi is illiterate. But she can only sign her name. Her children are going to school. His eldest son completed class four and could not continuing study due to financial problem. Her eldest daughter is studying class six at high school and her youngest daughter studying class three at Shiali Primary School in their village.

Assets: Four cattle, 7 ducks, 30 hens, one tinsheed house, no kitchen and no tube-well.

Land property: 18 decimals, one small pond. Fishes are cultured in this pond. She cultivates her lands with her sons and leases additional land to cultivate rice.

Health: She and her family members are in good health. Her children have received some vaccination through the EPI program. She has a tinsheded sanitary latrine.

Meals: The family rarely consumes breakfast. Lunch consist of rice, vegetable and some time small fish. Dinner also consists of that.

Crisis/critical month: Mid February – mid April and July – August due to workless.

Shock/ stress: Loss of cross in any natural disaster like storm and cyclone. She loans from his relatives or many lenders. She never consults with any NGO's for loans. She thinks that taking loans from Bank and NGO's is very difficult and weekly recovery system of NGO's is very hard for farmers.

Comments: She can hardly support her family for 6-8 months with the crops and her earnings and other time have to work as a day labor to maintain her family.

Case study: 04

Md. Ibrahim Halder

Terakhada Sadar



Md. Ibrahim Halder (Master) son of Late Md. Idris Halder. He is a well known fish farmer in the Thana and stated his life history

Md. Ibrahim Halder was born in the house of late Md. Idris Halder in 1949. His birth place was Terakhada Thana under Khulna district. His father was a farmer. He is the fourth among six children of his parents including two brothers and three sisters

They had a slice of land for cultivation. His father had died when he was 10 or 12 years old. After death of his father, his mother was unable to maintain their family expenses. Due to this problem, in 1961, he along with his family members shifted to maternal uncle house in Mollahat Thana from their native village of Terakhada. He had passed his childhood with a lot of crisis. In spite of poverty, he carried out education up to higher secondary level with the help of his mother and maternal uncle. Three years later after passing H.S.C examination he got a job in a primary school as a teacher. Then they came back their father's house. He started fish farming as a helping hand of fish farmer and continuing this up to today.

In 1977, when he was 28 years old, his mother had died by diarrhoea. Before the death of his mother, they had a joint family. In 1978, he got married at 28 years. Now he has a single family. He has 4 children including 2 daughters and 2 sons and all of them are going to school. At the early age, he had nothing in Terakhada but at present he is a owner of 66 decimal agricultural lands, 5 cows, 2 ponds, 10 poultry, 57 trees, one T,V and etc. All of his fishery business is in partnership manner and he has invested half of total investment.

He never goes the field for agricultural activities. Due to lacking of other qualifications, he was forced to do something in the fishery business and achieved grater profit from fish farming. At present, economic condition of his family is sound and running well. For better earning, he is rampantly increasing his investment in fishing activities.

Now his monthly average income is about 8,000 taka which is lower than the last year income and monthly average expenditure of his family is about 6,000 taka that are higher than last year. The reason behind the lower income is due to natural climatic problems and non availability of fish. Now, he is the chairman of "*Fisheries co-operative society*" in the locality. He has no loan from any organization or from any NGOs. He thinks government can easily solve various problems of fishermen and can also help to increase their working activities. Although the fishery business is too much profitable, he is not interested in involving his sons in this activities because it is very risky work. Besides that, many school and colleges is available in this area and all economic support is available for them, so they should continue their education. He is hardly determined that he will never encourage them in fishing activities and he thinks they will be a doctor or engineer.



Case Study: 05

Name: Chaitannya Mallik

Religion: Hindu

Family members: Eight; wife, 6 children (4 Sons and 2 daughters) and himself

Occupation: Fishing and day labor

Education: Chaitannya Mallik and his wife are illiterate. He can only sign his name but his wife can not. His children are going to school. His eldest son completed class five and could not carry on study due to poverty but another two sons are going to school. His eldest daughter is studying in class six at high school and his youngest daughter is studying in class three at Shekhpure Primary School in their village.

Assets: Four cattle, 20 ducks, 15 hens, one tinshed house, one kitchen and a shallow tube-well, 32 trees, 2 rickshaw .

Land property: 57 decimals, two small ponds (share with his neighbors), fishes are cultured in these ponds. He cultivates his lands and leases additional land to cultivate rice.

Health: He and his family members suffer sometimes from various diseases. His children have received some vaccination through the EPI program. He has a closed pit latrine.

Meals: The family rarely consumes breakfast. Lunch consist of rice, vegetable, dal and some time small fish. Dinner also consists of those items.

Crisis/critical month: Mid February – mid April and July – August due to workless.

Shock/ stress: Loss of cross in any natural disaster like storm and cyclone. He loans from his relatives or many lenders. He also loans from NGO's and Banks. He thinks that taking loans from Banks and NGO's is very helpful but weekly recovery system of NGO's is not very easy for farmers.

Comments: He can hardly support his family for 6-8 months with the crops and his earnings and remaining of the time have to work as a day labor or pull rickshaw to maintain his family.

CHAPTER SEVEN



PROBLEMS AND RECOMMENDATIONS

7.0 Problems and Recommendations:

Problems identified in the study areas:

The following problems have been identified by asking the relevant questions to the fishermen -

- ❖ Lack of technical knowledge about fish farming
- ❖ Lack of awareness about their resources
- ❖ Lack of initiatives among fishermen
- ❖ Lack of leadership and unity, particularly in challenging situation
- ❖ Loose social cohesion
- ❖ Lack of boat and gears
- ❖ No organized credit system
- ❖ The fishing community has no control over the market. Therefore, farmers most often loose money when they sell their products.
- ❖ Inadequate knowledge of seed quality, fertilizer and pesticides application
- ❖ Transportation problems
- ❖ Increasing fishing effort but decreasing fish stocks
- ❖ Reduced bio-diversity
- ❖ Reduced opportunity for mitigation measures and potential for stock enhancement
- ❖ Inadequate training facilities for fishermen and fish farmer
- ❖ Insufficient medical facilities

The flowing recommendations could be considered in order to overcome the existing problems.

1. As Terakhada upazilla has a plenty scope of aquaculture, Government and Non government agencies, research organizations, local administration, law enforcing agencies have not yet taken any appropriate steps for the development of fisheries resource. Such organizations have to enhance their program in the arca to mitigate the fisheries demand.

2. It is very essential to introduce a management of all kinds of fishing activities headed by Divisional commission with the co-operation of all concerned authorities such as the Fisheries Department, Water Development Board and Research Organizations etc. to go through the regulations to make necessary changes and improvement.
3. Rice cum fish, duck cum fish culture are suitable in the study area. Local people should be encouraged in this culture practice.
4. This study indicated that fry scarcity is an acute problem for fish culture. So, hatchery should be established for mitigating the scarcity of fry.
5. Increasing the awareness about modern technology of fish farming through education and awareness program led by NGO's.
6. Credit schemes from commercial and rural banks in co-operation with the extension service of the Fisheries Department might be an alternative solution to reduce the high rate of interest.
7. DoF, NGO's and other developing agency's those are involved in fisheries sector should be provided appropriate training to fish farmers and monitored regularly the farmer's farm.
8. Fish farmer did not know the proper dose/amount of lime, fertilizers, feeds, pesticides and medicines application in their culture field. Fisheries experts and respective Government personnel should be delivered technical lecture to them.
9. Fish is highly perishable product that is needed subsequent preservation for marketing. Thus, quick marketing facilities should be established in the study area.
10. In rainy season, huge amount of fish was lost due to lack of appropriate techniques in preservation and marketing. In particular, the number of ice plants in the study area was limited. Thus, it is suggested that more ice plants should be established immediately in the study area.

11. Dissemination of appropriate techniques for fish preservation and processing should be provided to the poor fishermen through different organization (NGO's and GO's). This will earn greater profit and will improve the livelihood of fishermen community.
12. Consequential impact of banning of natural fry collection is going to be a dominant issue. So, further research in broader context is essential.
13. The farming community has no control over the market. Therefore, farmers most often lose money when they sell product. There should be a producer's co-operative within the locality.
14. Local organizations like village clubs, cultural groups, schools, colleges, local NGO's, local self government bodies etc. should be meaningfully involved in both the planning and implementation phases of any development projects in fisheries that affect the social, economic and livelihood pattern of fishermen.
15. Problems identification and approaches by the Government and or NGO's should be carried out in consultation with fishermen, local people and village heads. Decision for solution of problems should be developed by group discussion with all concern.
16. An integrated approach, that takes into account both the technical aspects of aquaculture development and the socio- economic needs of the farmers and fishing communities to be followed to ensure sustainable integrated rural development.
17. Local, regional, national and international NGO's should provide technical knowledge, credit support and alternative income sources available to the poor fisher folk.
18. Government and NGO's, research organizations, universities, local administration, law enforcing agencies should co-operate together to formulate an integrated policy to intelligently manage the poor fishermen communities of the studied area.
19. Women should be organized into small groups. They should be trained in technical matters and encouraged to make collective savings so as to enhance their ability to receive credit.

20. It is important that fishermen/fish farmers should be a strong association /platform to look after their common interests. This association should be register and should follow proper systems.
21. Khas land should be provided to the poor fishermen as co-operative system.
22. As there is no legal frame work specially designed for community welfare, integrated approaches are necessary with the involvement such multipurpose activities i.e., socioeconomic surveys, transfer of technology, women involvement in fisheries , community organizations, rural finance, infrastructure and services.

So the principle “ **Jal Zar Jola Tar**” may be established.

CHAPTER EIGHT



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CHAPTER NINE



APPENDICES

APPENDIX-1



TABLES

Tables

Table-1: Age group of fish farmer

Age group	Frequency	Percentage (%)
Below 25	77	28.00
26-40	135	49.00
41-55	35	12.72
56-70	23	8.36
Above 71	05	1.82
Total	275	100.00

(Source- Field Survey, 2002)

Table-2: Literacy status of respondent's fish farmer

Education	Frequency	Percentage (%)
Illiterate	10	3.64
Can sign	15	5.45
Class I-V	135	49.09
Class VI-X	70	25.45
S.S.C pass	30	10.91
Above S.S.C	15	5.45
Total	275	100.00

(Source- Field Survey, 2002)

Table-3: Number of cultural pond of Fish farmer

No of pond	Frequency	Percentage (%)
1 pond	155	56.36
2 pond	65	23.64
3 pond	25	9.09
above 3 pond	7	2.55
others	23	8.36
Total	275	100.0

(Source- Field Survey, 2002)

Table-4: Total pond area of Fish farmer

Pond area (dec.)	Frequency	Percentage (%)
5-10	25	9.09
11-20	135	49.09
21-30.	75	27.27
31-40	23	8.82
Above 40	17	6.18
Total	275	100.00

(Source- Field Survey, 2002)

Table-6: Sanitation practice of Fish Farmer

Condition	Number of Household	Percentage (%)
Katcha	143	52.00
Closed pit	70	25.45
Sanitary	42	15.27
Open field	08	2.91
Open whole	12	4.36
Total	275	100

(Source- Field Survey, 2002)

Table-7: Diseases of Fish farmer

Name of disease	Frequency	Percentage (%)
Fever	96	34.91
Gastric	55	20
Malnutrition	69	25.09
Diarrhea	30	10.91
Jaundice	15	5.45
Rheumatic	5	1.82
Dysentery	5	1.82
Total	275	100.00

(Source- Field Survey, 2002)

Table-8: Nature of treatment of the Fishermen

Name of treatment	Frequency	Percentage (%)
Quack/nurse	130	47.27
Homeopath	70	25.45
Trained doctor(RMP)	30	10.91
Qualified doctor(MBBS)	15	5.45
Herbal/unani	20	7.27
Others	10	3.64
Total	275	100.00

(Source- Field Survey, 2002)

Table-12: List of some dry species observed in the study area.

Local name	Scientific name
Taki/Lata	<i>Chana punctatus</i>
Kajuli	<i>Ailichthys punctata</i>
Batashi	<i>Pseudeutroptus atherinoides</i>
Chela	<i>Oxygaster phulo</i>
Icha/choto chingri	<i>Macrobrachium malcomsonii</i>
chanda	<i>Ambasis nama</i>
Gochi baim	<i>Mastacembelus puncalus</i>
Gajar	<i>Chana morulius</i>

(Source- Field Survey, 2002)

Table-13: Sources of borrowing money

Sources of borrowing money	Frequency	Percentage (%)
NGO's	124	45.09
Relatives	41	14.91
Moneylenders	36	13.09
Banks	19	6.91
Neighbors	41	14.91
Co-operatives	14	5.09
Total	275	100.00

(Source- Field Survey, 2002)

Table-14: Purposes of borrowing money

Purposes of borrowing money	Frequency	Percentage (%)
Agricultur	83	30.18
Litigation	60	21.82
fish farming	49	17.82
Poultry	28	10.18
Food	33	12.00
Medical	08	2.90
Marriage	14	5.09
Total	275	100.00

(Source- Field Survey, 2002)

APPENDIX-2
❖
POTHOGRAPHS



Photograph -1: The author with the fisherman family at Ajagara village

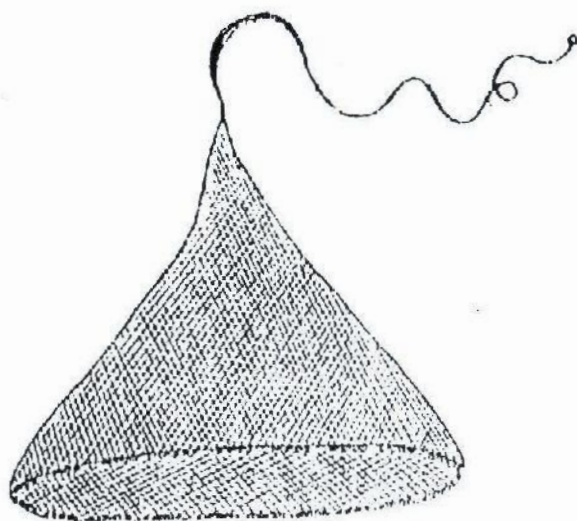


Photograph -2: The author with the fisherman family at Terakhada village

APPENDIX-3



SKETCHES



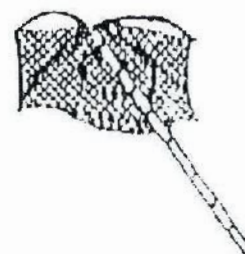
Khepla jal



Ber jal



Tana jal

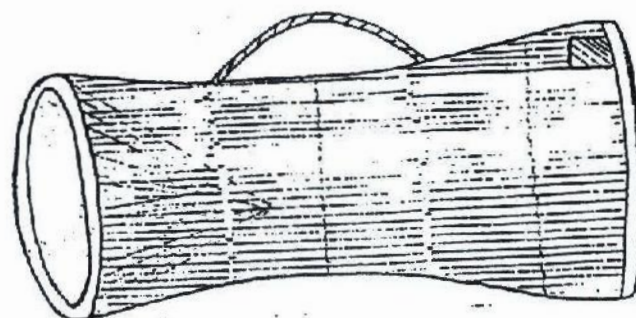


Dharma jal

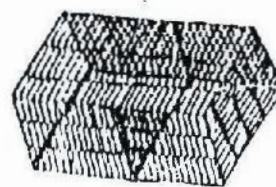


Fash jal

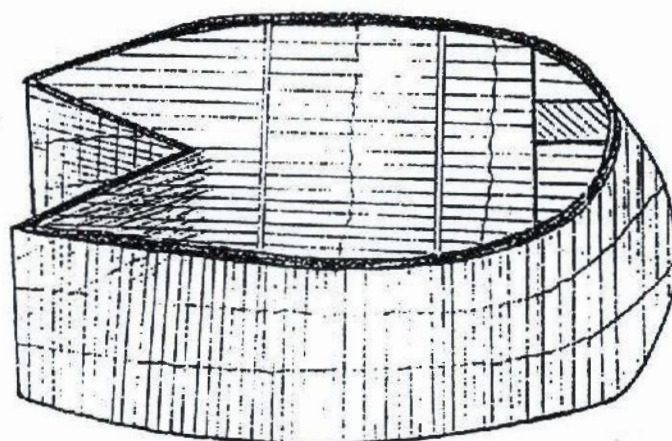
Sketch-1: Dominant gears used in fishing at Terakhada Upazilla.



Bair



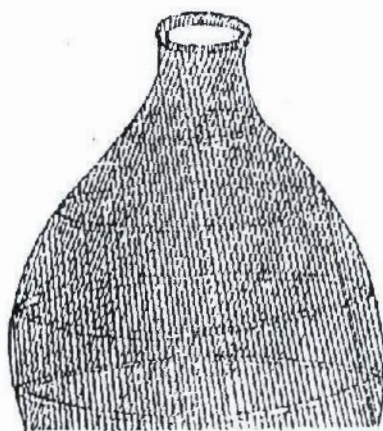
Charo



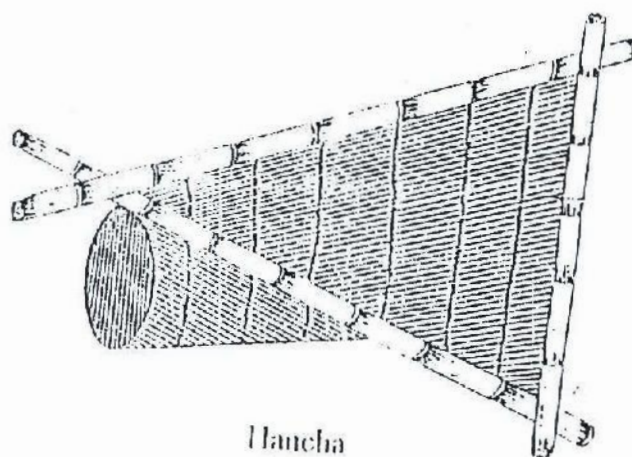
Chandi Bair



Bana

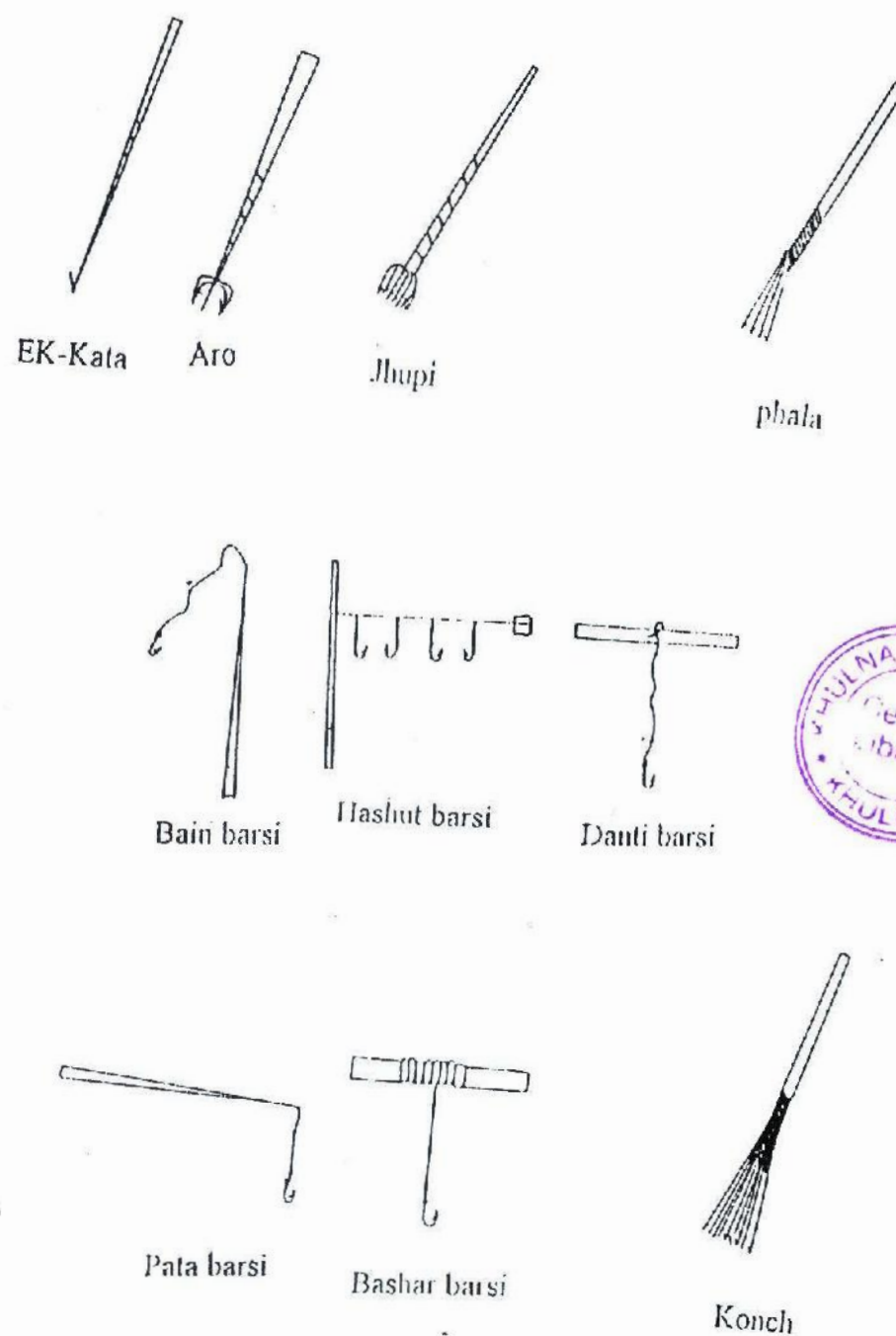


Polo

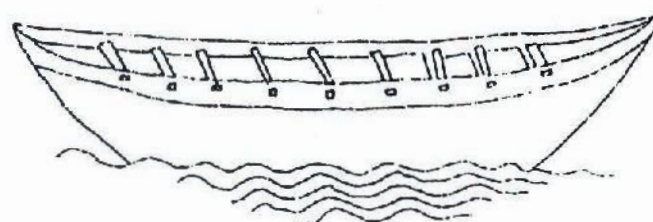


Hancha

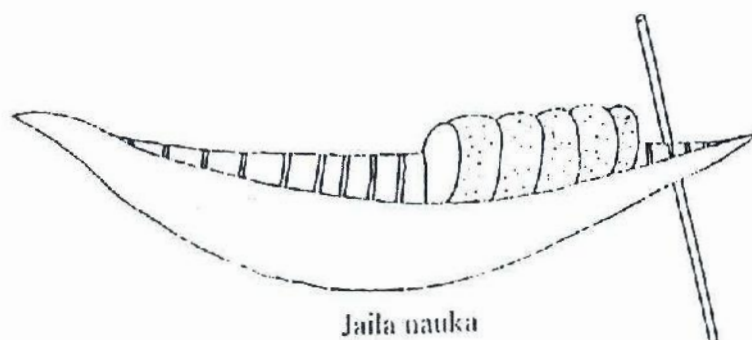
Sketch-2: Dominant traps used in fishing at Terakhada Upazilla.



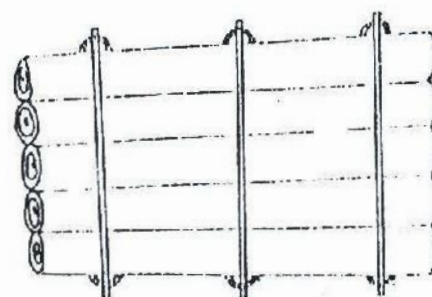
Sketch-3: Dominant wounding gears used in fishing at Terakhada Upazilla.



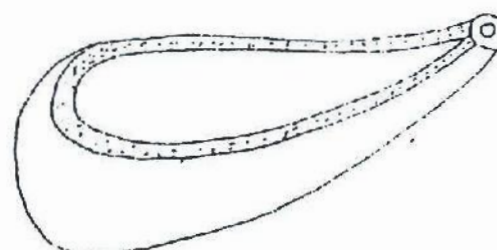
Kosha nauka



Jaila nauka



Vella (Banana tree)



Donga (Taigus)

Sketch-4: Boat used in fishing at Terakhada Upazilla.

APPENDIX-4



QUESTIONNAIRE FOR CASE STUDY

**Case Study on the Socio-economic conditions and Alternative Livelihood
strategies of Fisher community in Terakhada Upazilla under Khulna District**

Structural Questionnaire

A. General:

1. Date of interview:
2. Place/ village of interview: Field ☐ Resp /residence ☐ Other Place ☐
3. Time for interview began:
4. Time for interview ended:
5. Time taken:
6. Name of the fish farmer:
7. Fish farmer's age:
8. Fish farmer's father/ husband name:
9. Fish farmer's address
 - A. Village:
 - B. union:
 - C. Upazila:
 - D. District:
10. Fish farmer's sex (male-1, female-2)
11. Fish farmer's religion (islam-1, hindu-2, chritian-3, boudha-4, others-5)
12. Marital status (married-1, unmarried-2, divorced-3, oppressed-4, widopw-5, others-6)
13. Fish farmer's eduction (illiterate-1, can sign-2, primary-3, high school-4, S.S.C-5, above S.S.C-6)
14. Type of fish farmer (amature-1, commercial-2)
15. Family types : Single ☐ Joint ☐
16. House holds members : Male ☐ Female ☐
17. School going children : Boys ☐ Girls ☐ Total ☐

18. School dropouts : Boys Girls Total
19. Causes of school drop-out (economic problem-1, involvement income-2, no cause-3)
20. Condition of living house (katcha-1, semi pacca-2, pacca-3)
21. House holds assets : Cow Goat Hen Duck
21. Use of electricity (yes-1, no-2)
23. Main occupation (fish farmer-1, agricultuire-2, business-3, daily labour-4, student-5, skilled technician-6, others-7)
24. Own agricultural land (no land-1, < 50 decimal-2, > 50 decimal-3)
25. Yearly income (<10,000 -1, 10,000 - 30,000 -2, 30,000 - 50,000-3, >50,000-4)

B. Ponds /Water body and culture Related:

1. Number of culturable pond:
2. Inundated by flood (yes-1, no-2).
3. Pond ownership (own-1, lease-2, multiowner-3)
4. Type of pond (seasonal-1, perennial-2)
5. Pattern of fish culture (monoculture-1, carp polyculture-2, carp polyculture with Golda-3, integrated culture-4, fry nursing-5)
6. Cultured major fish species in pond

1	7
2	8
3	9
4	10
5	11
6	12



7. Pond preparation (yes-1, partial preparation-2, no-3)
8. Use of lime (use accurately-1, use partially-2, no use-3)
9. Use of fertilizer (use accurately-1, use partially-2, no use-3)
10. Use of pesticides (rotenone-1, thiodin-2, Hilton-3, others-4)

C. Fish Harvesting:

1. Do you fish in the sea? Yes ☐ No ☐
2. Pattern of fish harvesting: full ☐ partial ☐
3. Area of fishing activities (area name):
4. Pattern fishing activities: Ind. ☐ Partnership ☐ with family mem ☐ others ☐
5. How many people involve with you?
6. Number, Types and Size of gear used and its ownership

Types	Sizes	Number	Ownership
Khepla jal			
Fash jal			
Kathi jal			
Behundi jal			
Ber jal			
Char pata			
Polo			
Dugor			
Charu			
Thela jal			
Dharma jal			
Jhaki jal			

7. Types, Number, Size and Ownership of fishing craft.

Types	Sizes	Number	Ownership
Dingi			
Trawler			
Engine Boat			
Others			

9. Types and quantity of fish caught by different gear Kg/day

Types	Quantity	Types	Quantity
Taki		Chingri	
Shoal		Shing	
Puti		Magur	
Tengra		Rui	
Pabda		Katla	
Phasa		Mrigel	
Chanda		Boal	
Mola		Khalisa	
Chela		Koi	
Tepa		Other Carps	

10. Last year production / decimal: 11. Last year in income from fish: **D.Processing and Preservation Method:**

1. After harvesting do you use any preservatives?

Yes	Not	Types	Rate

2. What types of preservation have done by you?

Drying	
Icing	
Others	

3. Do you dry fish?

Yes	
Not	

4. Flow diagram of drying procedure.

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5. Drying is done

Seasonal	
Whole year	
Occasional	
Others	

6. Dried species

Types	Quantity	Types	Quantity
Taki		Chingri	
shoal		Paisha	
Chela		Chanda	
Puti		Baicha	
Tengra		Others	

7. Have you have done any processing at the beginning of drying?

Spilting	
Gutting	
Chemical treatment	
Others	

8. After how much day of harvesting, drying is being started?

Subsequently	
One days later	
Two days later	
Three days later	
Others	

9. Where drying is done?

Open field	
Inside the net	
Inside the box	
Outside box	
Hanging on the rope	
Others	

10. What are the preventive measures of natural problems (rain/fog)?

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11. How will you confirm that drying is completed?

--

12. Diseases of dried/ Shutki and its preventive measure

Preventive measures

E. Marketing:

1. Marketing and prices of fresh and dried fish.

Products	Types	Local market	Export market	Price Tk/Kg
Fresh fish	Direct			
	Indirect			
	Others			
Dried fish	Direct			
	Indirect			
	Others			

2. Marketing channel of fish

--

3. What profit margin fishermen have?

Poor	Moderate	Good	Very good	Out standing

4. Can they market the fish fresh condition and can get better profit, how?

F. Health and sanitation:

1. What is the main source of drinking water?

Tube well Well/ Indira Pond River

2. Where do you go for defection?

Katcha Close pit Open field Open hole Sanitary

3. Do you suffer from any diseases during last one year?

Fever Diarrhea Gastric Mal nutrition Jaundice

Desentry Rumatic Others No diseases

4. Then, what kind of treatment do you take?

Allopathic Homeopathic Kabiraji Others

G. Others

1. Have you taken any DADON from the traders?

2. How much money?

3. For how many months? Six months one yr. Two yr Three yr

4. How do you pay that money?

By physical labour	
With interest	
Others	

Questionnaire for Case Study

A. General:

1. Date of interview:

2. Place of interview:

Respondents residence	
Field	
Other place	

3. Time for interview:

4. Name of the applicant:

5. Address:

C/O	
Vill.	
Union	
Post.	
P.S.	
Dist.	

6. Respondent's age:

7. Respondent's religion:

Islam	
Hindu	
Buddhist	
Christian	

8. Marital status:

Married	
Unmarried	
Divorced	
Separated	
Widower	

9. Respondent's qualification:

Illiterate	
Can sign	
Class (i-iv)	
Class (v-viii)	
Class (ix-x)	
S.S.C	
Above S.S.C	

10. Family size:

Single	Joint	Extended

11. Family members:

Male	Female	Total

12. No. Of children:

Boys	Girls	Total

13. Year at you got marriage:

14. Age to you at marriage time:

15. Date of birth:

16. Place of birth:

17. Ownership of your house:

18. Amount agricultural land:

19. How would you spend your childhood?

20. Your assets/ resource list.

Type	Quality

21. Mode of action:

Pattern	
Individual	
Partnership	
With family member	
Others	

22. Except fishing, what is your other profession?

23. Your position between the brother and sister?

B. Family Background:

1. Father's/ husband name:

Father's name	
Husband name	

2. Condition father/ husband:

Present	
Late	

3. What do/ did your father do?

--

4. What do/ did your husband do?

--

5. What was your grandfather?

--

6. Ownership your house:

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7. What is your fishing pattern?

Individual	
Partnership	
With family member	
Others	

8. Time spent:

Fishing	
Selling	
Drying	
Others	

9. Capital investment:

Types	Amount

10. Income per month:

--

11. Total expenditure/month:

12. Savings per month:

13. Price of your product (Kg/ Tk)

Types	Prices (Kg/TK)

14. It is higher or less than last year. Why?

Higher	
Less	

15. What are your children?

16 Do you want to involve your children in this work? Why?

Yes	
Not	

A. Past and Present Financial activities of the Respondent

1. Your occupation:

2. Before this work what did you do?

3. Other alternative income source. Mention in a brief.