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LIVELIHOODS IN COASTAL FISHING COMMUNITIES, AND THE MARINE FISH MARKETING SYSTEM OF BANGLADESH

Synthesis of Participatory Rural Appraisals in Six Villages, and Assessment of the Marketing System

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Report of Project "Fish Distribution from Coastal Communities – Market and Credit Access Issues"

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Table of Contents

Appendices

Abbreviations

ADB	Asian Development Bank
BCAS	Bangladesh Centre for Advanced Studies
BFRI	Bangladesh Fisheries Research Institute
BOBP	Bay of Bengal Programme
CBO	Community Based Organisation
CODEC	Community Development Centre, Chittagong, Bangladesh
COFCON	Coastal Fisherfolk Community Network, Bangladesh
DANIDA	Danish International Development Agency
DFID	UK Department for International Development
GoB	Government of Bangladesh
MoFL	Ministry of Fisheries and Livestock, GoB
DoF	Department of Fisheries, GoB
ICLARM	International Centre for Living Aquatic Resources Management
IGAs	Income Generating Activities
IMM	Integrated Marine Management Ltd.
MES	Meghna Estuary Study
MFI	Micro-Finance Institution
NGO	Non-Governmental Organisation
NRI	Natural Resources Institute, University of Greenwich, UK
PHFRP	DFID Post-Harvest Fisheries Research Programme
PRA	Participatory Rural Appraisal
RMA	Rapid Market Assessment
SUFER	Support for University Fisheries Education and Research, DFID funded project based in Dhaka, Bangladesh
UoC	University of Chittagong, Bangladesh
SL	Sustainable Livelihoods
VO	Village Organisation

Glossary

Arat	Generally an office, a store, or a warehouse in a market place from which an *aratdar* conducts his business.
Aratdar	Main actor in the fish distribution system; either acts as wholesaler or commission agent, or covers both functions at the same time; carries out public auctions, and is the main provider of credit in the marketing chain.
Bahaddar	Owner of fishing boat.
Bazaar	Market
Bepari	Middleman in the marketing chain who transports the fish to other Districts; use of term depends on the location; sometimes also used synonymously with retailer.
Chalani	Same as *bepari*
Crore	Ten million.
Dadan	Loan as part of interlocked credit-marketing transactions, whereby, traditionally, the loanee has to sell to/ through the loan provider at a discounted price.

Dadandar	Provider of *dadan* loan; traditionally acts as moneylender cum trader.
Faria	Local itinerant fish trader.
Lakh	One hundred thousand.
Hat	(Small) market place where market exchanges are carried out either once, twice, or thrice a week, however not every day.
Jaal	Fishing net (note there is a large number of different types of nets, as described in the text)
Mahajan	Traditional moneylender.
Mahji	Captain of boat.
Mokam	Markets; important fish markets in district capitals are often referred to as Head *Mokam*.
Nickarie	Local retailer
Paiker	Middleman in the fish marketing chain; often covers the assembly function in the chain, acting as *dadandar* at the same time; depending on the location sometimes also referred to as wholesaler or retailer.

Exchange Rates (July 2002)

1 Pound Sterling (£) = 89.69 Taka (Tk)
1 US Dollar ($) = 57.32 Taka (Tk)

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It is sincerely hoped that the findings of the study will help to improve the livelihoods in the coastal fishing villages, which have long been neglected by development activities. It is also hoped that the many small-scale fish traders in urban areas will see positive changes in their working conditions as a result of this project.

The contributions made by our colleagues who have not been named in this report are gratefully acknowledged. Particular thanks are due to Mr Kamal Sengupta, Ms Sharon Rodrigues and Ms Julia Chowdhury for participating in the field activities, and Mr Tasadduk Hossain Dulu for his artistry in designing the village maps which were produced as part of PRA sessions in the respective villages. In addition, we would like to acknowledge the contributions of CODEC branch / region / project staff of Latifpur, Kuakata, Patuakhali and Bagerhat for arranging our fieldwork activities.

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SUMMARY

This report is an output of the DFID funded research project **"Fish Distribution from Coastal Communities – Credit and Market Access Issues"**. The field research was carried out between July 2001 and April 2002. In addition to the inception workshop in Chittagong in March 2001 consultation workshops were held in July 2002 in Dhaka and Chittagong, where project findings were presented to stakeholders from the fishing communities, the trading sector, the Government of Bangladesh, NGOs, and members of the donor community.

This report mainly presents the findings of fieldwork by CODEC and NRI using Participatory Rural Appraisal and Rapid Market Assessment techniques. A combination of Sustainable Livelihoods Approach and marketing economics was used for analytical purposes. Separate questionnaire surveys were conducted by the University of Chittagong Marketing and Sociology Departments, the results of which are presented in the report of the consultation workshops conducted by the project in Chittagong and Dhaka in July 2002.

Access to fishery resources in the sea and the river is the traditional livelihoods asset of households in a coastal fishing community in Bangladesh. This is complemented by gear such as boats and nets. Other assets include land and means of agricultural production, transport, health, education and financial resources in the form of savings, cash, or credit.

Different wealth categories exist within the fishing villages. According to the villagers' own judgement, the proportion of the poor (i.e. moderate poor to very poor) within the fishing communities is of the order of 50 – 70% in the communities where the research took place. It has been observed that the number of households belonging to the hardcore poor is relatively less in villages which have direct access to the open sea. This may be related to the development of nearby tourist spots (i.e. Cox's Bazaar and Kuakata Beach, respectively), and more alternative income opportunities as a result of this. In addition, the availability of shrimp seeds and other less valued species in the adjacent Bay of Bengal provide poor people with comparatively better livelihood opportunities than in other places. At the same time, it needs to be borne in mind that there is often little difference in the living standards between the so-called middle classes in the villages and the poor.

Landless households, widows or divorced women, households with either no children or large numbers of children (i.e. especially girls, who will require dowry to get married), and families without regular income represent the most vulnerable households.

Factors that cause poverty in the communities include, declining fish catches, lack of security (mainly in the fishing grounds due to piracy), natural disasters such as cyclones or floods, lack of capital, lack of employment opportunities, and lack of health and education /skills.

Both fishermen and traders state declining fish supplies and piracy in the sea and on the rivers as their main problems. Some stakeholders such as *aratdars* predict that

only deep-sea fishing will survive in the long-run. Also, more concentration is likely to occur within fishing communities (i.e. fewer people will own bigger boats).

Where catches will decline beyond a certain level, this may well lead to uncompetitive situations to the extent that traders and moneylenders will pull out of affected locations. This will most likely result in a less efficient marketing system in that trading competition will decrease.

In addition to the demand for seafood products in overseas markets, there are exports of certain marine fish species (e.g. *hilsha*, jewfish) to India, Hong Kong and other countries. This appears to put upward pressure on domestic prices.

The decline in supplies of domestic marine fish is at least partly compensated for by increased production of freshwater fish (i.e. mostly from aquaculture), and imports of fresh and dried fish from Myanmar and India.

Although there is scope for improvement, marketing is less of a constraint according to the stakeholders consulted. Areas which can potentially be targeted for marketing related improvements include, more emphasis on marketing training at community level, improvements of market infrastructure (i.e. often only small improvements are required), better post-harvest handling practices (including reduction of chemical use in dried fish processing), and better exploitation of export opportunities.

Overall, the marine fish marketing system is quite efficient in that physical and qualitative losses are small. The marketing margins appear reasonable given the highly perishable nature of the product. In particular, this applies to the case of fresh marine fish marketing. The dried fish distribution system is also efficient, however fishermen supplying the processing industry receive low prices for their fish when there is a glut in the main season especially in the more remote areas.

If fishermen are “exploited” due to loan arrangements with traders, this reflects inefficiencies of the credit system (the opportunity cost of capital is very high in Bangladesh; i.e. 5 – 15% interest per month). Nevertheless, there are variations in the informal credit system and changes are taking place. The credit conditions are more favourable in certain locations compared to others. In particular, lower informal interest rates have been observed where NGOs are active with micro-finance programmes.

The production and marketing of dried fish will see changes. Although dried fish processing and trading will still provide employment for large numbers of people in the foreseeable future, in the long-term it is expected that less fish will be processed, even in remote areas, as a result of:

- declining fish catches,
- increased demand for fresh fish (due to increases in population and purchasing power)
- better transport links,
- ice supply, and other means of preservation.

At the same time, some fish will continue to be consumed mainly in dried form (e.g. ribbon fish). Also, there is a demand for good quality dried fish for export, which according to traders is currently not met.

Some of the traders will be squeezed out; e.g. there will be more concentration at wholesaler level. The contradiction between market efficiency and equity will remain at the retailer level. On the one hand, many retailers and vendors including women (i.e. 10 – 20% of retail traders are estimated to be female) depend on fish marketing for their livelihoods, on the other hand this considerably adds to the marketing margin. Ultimately, it will be the consumers who will have to bear this cost.

Due to declining fish supplies, parts of coastal fishing communities will be forced out of the fishery to seek other employment. As a consequence, alternative income generating activities (IGAs) need to be urgently identified and created.

The following section provides a summary of the livelihoods constraints identified by the fishing communities and stakeholders in the marketing chain, and related policy recommendations.

Key Findings and Recommendations for Policy Implementation

The following sections provide a synthesis of the main issues arising from the study and related policy recommendations. The latter are primarily aimed at decision makers in the Government, the donor community, and the NGO and private sectors. The sections cover the more general issues related to the livelihoods of the coastal communities before dealing with specific marketing and credit related issues.

Declining catches of marine fish

Substantial increases of marine fish catches have taken place between 1975 and the early 1990s. Since then a gradual decline of catches has been observed by the fisherfolk of coastal communities and traders specialised in marine fish. However, it needs to be pointed out that the decline is not linear and that some years are better than others (e.g. 2001 was considered better than the previous years). Nevertheless, the threat of declining fish stocks is highly present in coastal communities. This environmental shock is likely to have major consequences upon the livelihoods of those concerned.

The main reasons stated for the decline in catches include:

- Overfishing, due to big commercial trawlers, increased number of boats, use of more efficient / destructive gear, etc.
- Pollution due to agricultural chemicals, fertilisers, industrial wastage, oil discharge from boats, ship-breaking yards etc.
- According to fishermen, changes in the natural environment (e.g. changes in the seabed, siltation).

Suggestions for Policy Implementation:

- A more effective control of industrial trawling needs to be established;
- The issue of un-authorised fishing by foreign trawlers needs to be addressed at inter-governmental levels;
- In order to accommodate the needs of those leaving the sector as a result of management measures, the creation of alternative Income Generating Activities (IGAs) is required;
- Stricter pollution controls need to be imposed;
- Improved involvement of poor coastal communities in decision making regarding fisheries management is required;
- A scientific assessment of fish stocks and changes in the natural habitat is needed.

Unsatisfactory law and order situation

The current law and order situation is characterised by an increasing incidence of violence in coastal fishing communities and markets. In particular, an increase in violence was reported between 2001 and 2002.

This is reflected in the following:

- Increasing levels of piracy in the sea and on the rivers resulting in loss of gear and fish on board ; injuries and even deaths of fishing crew are becoming increasingly common;
- Extortion of money or fish from traders takes place in major markets.

Suggestions for Policy Implementation:

- The piracy in open waters needs to be arrested through deployment of Coastguard and other law- enforcing agencies;
- Community organisation and policing needs to be strengthened, with Government and NGO support; similarly, trader associations need to be strengthened (i.e. it was reported that harassment was less common when trader associations were stronger);
- Advocacy activities by press, NGOs, and local communities need to be encouraged.

Lack of Credit Access

Lack of financial resources and related issues have figured highly amongst the livelihoods constraints expressed by communities. This is in spite of NGO micro-finance interventions in the majority of villages, and, in some cases, a lowering of informal interest rates as a result of this.

The key issues of micro-finance can be summarised as follows:

- The hardcore poor (estimated at 20% of coastal population) do not have access to formal or informal credit;
- The currently existing micro-finance schemes are often not appropriate for coastal communities;

- The opportunity cost of capital is very high in the informal sector (e.g. 5 – 15% interest per month); this is also reflected in *dadan* transactions;
- Even larger-scale operators in the commodity chain (e.g. *aratdars*) do not have easy access to bank credits, as a result of requirements imposed by banks.

Suggestions for Policy Implementation:

- A coherent policy needs to be formulated for micro-finance institutions (e.g. lending framework);
- The creation of a special bank / financial institution that can address the needs of the coastal communities is recommended;
- A review and redesign of micro-credit products for coastal communities is needed; more emphasis, in this regard, needs to be placed on savings;
- It is suggested that lending by NGOs takes place against productive purposes on flexible terms reflecting local conditions (e.g. risk, seasonality, amount of loan required, income streams, etc).

Governance related Issues

Many of the issues raised by fishing communities and other stakeholders are of an institutional nature originating in weak governance.

The current situation is as follows:

- There is weak local governance due to lack of clear policies and inadequate autonomy of local government;
- The government extension services related to key sectors such as fisheries, agriculture, and health and education, are inadequate;
- Government policies are characterised by:
    - Inadequate addressing of poverty;
    - Poor implementation;
    - Coastal areas have weak representation at Central level.

Suggestions for Policy Implementation:

- The formulation of policies and implementation thereof needs to be improved;
- A review and strengthening of the extension system is required. For example, better accountability of services to the communities needs to be introduced, and community based organisations (CBOs) should become increasingly involved in the delivery of extension services;
- The Government should be more participatory, representative, and poverty focussed, as far as coastal areas are concerned;

Environmental degradation in coastal areas

The majority of areas studied suffer from severe environmental degradation. This is in addition to declining fish stock.

The situation can be summarised as follows:

- The coastal belt is very vulnerable to natural disasters such as cyclones and floods;
- Erosion, in particular in riverine areas, aggravates this situation, leading to deteriorating socio-economic phenomena such as migration etc.
- Forest resources are declining, including in the Sundarbans;

Suggestions for Policy Implementation:

- Continuing efforts in disaster management, including awareness raising, are required;
- A community based land reclamation project is recommended;
- Effective river management (e.g. tracing, fortification of river bank) needs to be put in place;
- Reforestation, including mangrove forests, needs to be encouraged;
- A fair distribution of *khas / char* land to the poor needs to be implemented; priority should be given to people whose land and homesteads on the river banks has been eroded.

Lack of alternative Income Generating Activities (IGAs)

Although there is also some inward migration in coastal areas by poor people from other parts of the country who are in search of "common pool resources", there is a substantial amount of outward migration by coastal dwellers into the big cities. This is largely related to lack of employment opportunities and services in the coastal belt.

The current situation can be summarised as follows:

- Due to declining fisheries resources people require alternative Income Generating Activities (IGAs); in order to reduce the migration to the big cities.

Suggestions for Policy Implementation:

- Study for identification of alternative IGAs, and action-research projects by Government and NGOs are required;
- Improvement of infrastructure such as roads, ferry crossings, and electricity supply, needs to remain a Government priority;
- The skill base of the coastal population needs to be enhanced through related projects. As far as the youths are concerned, a balance between academic and vocational subjects is important;
- Linkages with markets need to be established; NGOs can play a facilitatory role in this respect;
- A more pro-business environment needs to be created, in particular at District level. Appropriate business development services need to be put in place.

Lack of Community Organisation

Despite NGO run community development projects, there is still a lack of community organisation in coastal villages. In particular, the poor lack access to organisations that may exist.

The current situation can be described as follows:

- Fishing communities are better organised in relation to issues such as health or micro-finance, however lack exposure to community marketing skills;
- There is a lack of information in fishing communities on markets (e.g. prices, market opportunities, quality requirements), and other aspects of daily life (e.g. education, health). In particular, this also includes information related to alternative IGAs.

Suggestions for Policy Implementation:

- More efforts are required with regard to the strengthening of community organisation, and better inclusion of the poor;
- Pilot testing of marketing by community organisations (CBO) should be encouraged, however this ought to be backed with adequate financial and institutional support. In addition to fisheries related enterprises, these activities should also be geared towards sectors with a potential for alternative IGAs.
- The dissemination of information on markets and other aspects of daily life in fishing communities should be improved through Coastal FM Radio Stations cum Information Centres, and other media (e.g. residential training, videos, newsletters).

At the same time it is important to take into account the lessons learnt with similar initiatives in other parts of South Asia. For example, Gordon (1997) highlights some requirements of successful fish marketing by a fishermen's group in Tamil Nadu. The key points include:
Strength of purpose and cohesion within the group, including strong leadership; sound business management; thorough training activities; learning the marketing process before large investments are made; good communication facilities; and contact with other organisations working with fishing communities.

Lack of Infrastructure

Despite improvements of the infrastructure related to transport, electricity, etc. during the 1990s, substantial efforts will still be required during the decades to come.

The main survey findings related to marketing of marine fish can be summarised as follows:

- Markets often lack basic infrastructure such as ceiling, flooring, water supplies, drainage, latrines, etc.
- Remote areas of the country still face accessibility problems;
- In some cities it is difficult to access major wholesale markets due to inadequate and congested roads;
- Landing centres at community level are unhygienic but efficient.

Suggestions for Policy Implementation:

- Up-grading of market infrastructure is required, including drainage, water supply, roofing, latrines, market access, etc.

- Besides Government initiatives, infrastructure up-grading may take place through the private sector,
- Construction of low-cost cold storage facilities is recommended. This may require incentives for private investors in the form of reduced interest rates from Government banks.
- Continued efforts are required to improve the transport system, i.e. feeder and community access roads, ferry crossings, etc;
- Landing centres should be up-graded through local government and community initiatives.

Inadequate post-harvest handling, including the supply of ice

Although fish moves relatively fast through the marketing chain, and only small physical or qualitative losses could be observed, there is still substantial scope for improvement

The key issues related to fish quality can be summarised as follows:

- Handling of fish on landing centres and in markets is often unhygienic;
- There is oversupply of ice in some areas and under-supply in other parts of the country;
- Insufficient amounts of ice are often used between catching and landing of fish;

Suggestions for Policy Implementation:

- General awareness raising and provision of appropriate information / technologies is required;
- Improved local level planning of location of ice factories to avoid over-supply in some areas and under-supply in others;
- Continued efforts are required regarding rural electrification and regular supply of power;
- General awareness raising is required to improve the use of ice;
- Owners of mechanised fishing boats need to be encouraged to transport larger amounts of ice to fishing grounds (this will only happen if they see benefits in using more ice most likely as a result of raising awareness as above);
- Identification and promotion of alternative uses of ice.

Unexploited Potential for Dry Fish Exports

Despite declining availability of dried fish on the local market, it was highlighted that there is an unexploited potential for dry fish exports to overseas markets. Better exploitation of this potential through value-added activities could provide income for coastal communities.

Summary of the situation:

- There are already exports of dried fish to a limited extent to markets in the Middle East, Far East, UK and US;

- Traders complain about a lack of exportable supply of dried fish, which is mainly due to poor quality.

Suggestions for Policy Implementation:

- Dissemination of information is required related to marketing opportunities and improved technologies;
- Strengthening of links between exporters and processors through NGOs, Chambers of Commerce, and Export Promotion Bureau.

Use of Pesticides in Dry Fish Processing

The issue of pesticide use in the dry fish commodity chain can be summarised as follows:

- Although it is generally not acknowledged by traders and processors alike, there is evidence that pesticides are being used in dry fish processing, e.g. *Nogos, Basudine, Gamoxin,* DDT .

Suggestions for Policy Implementation:

- Awareness raising is required at consumer, processor, and trader levels; care is required to avoid loss of livelihoods of poor people;
- Identification and provision of safe alternative means of controlling insect infestations (e.g. use of natural insecticides and predators; better handling and processing practices). There are potential links here to other research currently funded by the DFID Post-Harvest Fisheries Research Programme in India.

INTRODUCTION

Background to the Project

The project "Fish Distribution from Coastal Communities – Market and Credit Access Issues" started in February 2001 with funding from the UK Department for International Development (DFID). The main collaborators include the Natural Resources Institute (NRI, University of Greenwich), the NGO Community Development Centre (CODEC), and the University of Chittagong (UoC) Marketing and Sociology Departments. Activities carried out by NRI and CODEC were funded by the DFID Post-Harvest Fisheries Research Programme, and the activities undertaken by UoC were funded by the DFID Support for University Fisheries Education and Research project.

The objectives of the study included the following:

- Analysis of household livelihoods in coastal communities
- Analysis of the marine fish marketing system,
- Analysis of access to credit for poor fishermen and traders, and
- Analysis of the institutional, social, cultural and political context in coastal fishing villages.

A combination of a livelihoods approach and traditional marketing economics based on sub-sector analysis were used in investigating these topics. CODEC and NRI focused on data collection based on Participatory Rural Appraisal and Rapid Market Assessment, whereas the University of Chittagong undertook quantitative surveys based on questionnaires. The findings of the latter have been presented in three separate papers which have been included in the report of the consultation workshops mentioned below. (i.e. Institutional and Socio-political Context of Coastal Fishing Communities in Bangladesh by Chowdhury I.U. PhD; Fish Marketing System from Coastal Areas of Bangladesh by Nurul Kareem A.N.M; and Fishing Communities: Credit and Gender Issues by Solaiman Md. PhD). Due to their complementary nature, it is suggested to read these papers in conjunction with this present study.

The survey activities took place in July – September 2001, January – February 2002, and April 2002. A stakeholder workshop was organised in March 2001 at the beginning of the project, and two consultation workshops were held in July 2002 towards its end (i.e. on 22-23 July 2002 in Chittagong, and on 25 July 2002 in Dhaka).

This report primarily presents the findings of the Participatory Rural Appraisals and Rapid Market Assessments of the marine fish distribution system. The study includes an assessment of the relationship between marketing and credit. Given that fresh fish and dried fish follow separate distribution channels, it has been felt appropriate to analyse the two marketing systems separately. Although some information has also been collected on shrimp, the focus of this study is on marine fin-fish species. This is in view of other studies recently carried out on the shrimp sector in Bangladesh. Also, the research concentrated on the traditional and semi-traditional sub-sectors of the marine fishing industry in Bangladesh. Nevertheless, some aspects of the large-scale commercial sector have been highlighted.

Methodology

Topics Investigated

Although a complete sep*arat*ion was not always possible, the following three main research areas were covered:

Analysis of the livelihoods systems of fishing communities. This started with an investigation of the capital assets available to different wealth groups of the villages, and their vulnerability context. Other aspects included, institutional, social, cultural and political context, investigating, amongst other things, patronage relationships between traders and fishing communities, social relations between the various parties involved in the trading and credit network, and distribution of non-economic obligations and rights. In addition, emphasis was placed on poor fish producers' and traders' access to institutions affecting their livelihoods (e.g. Local Government, community based organisations, NGOs).

Analysis of the marketing system, including mapping of the sub-sector, calculation of costs and margins, assessment of the pricing mechanisms of the fish (both for the producers and consumers), risk factors such as seasonality, evaluation of technical issues (e.g. post-harvest loss, increased necessity for food safety and quality control systems), identification of bottlenecks and opportunities such as availability of marketing information. In this context, it was also assessed how population growth, changing consumption patterns, and a tendency towards marketing concentration will impact on small-scale fish producers and traders.

Analysis of the credit system, including an assessment of inter-linkages between fish distribution and credit supply, possible market inefficiencies due to exploitative practices, access to formal and informal sources of credit by poor participants in the commodity chain, relative costs of credit, assessment of possible exploitative practices, and to what extent coastal fishing communities have been able to benefit from micro-credit programmes in Bangladesh. The credit analysis and recommendations took account of the possible types of credit and the potential to link and deliver them as part of the marketing process. In addition, the work looked beyond the fisheries sector for broader micro-financing lessons and related institutional arrangements.

The Sustainable Livelihoods Approach (SLA).

A livelihoods framework combined with traditional market and economic research techniques was used to analyse the three components highlighted, focussing on capital assets (i.e. human, social, financial, physical and natural), vulnerability context, policies, institutions, and processes. (See Appendix 2 for an outline of the Sustainable Livelihoods Approach, SLA).

Elements of Sub-Sector Analysis were combined with the SLA approach in mapping and analysing the linkages between different operators in the commodity chain and information related to their livelihoods.

Geographical Area Covered

The bulk of the survey work for this project took place in intervals between July 2001 and April 2002. The main geographical areas covered during the course of data collection, include:
Six Fishing Communities in Chittagong (i.e. Latifpur village), Cox's Bazaar (Hatkholapara), Bagerhat (Debraj), Patuakhali (Kuakata-Panjupara, and Lebukhali), and Satkhira (i.e. Kulla) Districts, which were selected from the 1968 FAO census of coastal villages in Bangladesh using stratified random sampling. The following stratification criteria were used:

- Religious criteria (i.e. balance of Muslim and Hindu fishing communities);
- Location (i.e. balance between villages with direct access to the Bay of Bengal and those further inland next to rivers);
- NGO Interventions (i.e. at the outset it was envisaged to have three villages with NGO intervention, and three villages without intervention; although in the end it turned out that two of the villages supposedly without NGO presence also benefited from some form of intervention).

Assembling, wholesale and retail markets in the urban areas of Chittagong, Cox's Bazar, Dhaka, Patuakhali, Alipur / Mohipur, and Satkhira were visited. Government and Non-government Organisations, and selected members of the donor community with an interest in coastal areas were mainly consulted in Dhaka and Chittagong as part of visits and workshop attendance.

Activities Undertaken

The project started with a one-month desk research in Bangladesh and the UK to study secondary literature, and prepare the survey methodology. A workshop took place in Chittagong in March 2001, involving project collaborators and major stakeholders. This first workshop was organised at an early stage of the project in order to jointly prioritise research areas, design survey techniques and analytical tools, and identify channels of dissemination. Two consultation workshops involving the research team and other stakeholders from government (e.g. ministries, research institutes), civil society (e.g. associations), private sector, non-governmental organisations, and donor community, took place in July 2002 in Chittagong and Dhaka in order to present research findings, develop policy recommendations, and validate the methodology used.

The actual data collection mainly took place between July 2001 and April 2002, involving participatory, qualitative and quantitative survey techniques. In particular, the following survey techniques were used:

- Participatory Rural Appraisal (PRA), using techniques such as semi-structured interviewing, wealth ranking, mapping, and transect walks.
- Rapid Market Appraisal, using techniques such as semi-structured interviewing, and participatory mapping of commodity chains.

In addition, questionnaire surveys were conducted by the University of Chittagong on these topics, the results of which are presented in separate reports. This involved a

training course by specialists in quantitative surveys (i.e. Statisticians) which was organised at the CODEC training centre for the UoC team in July 2001.

OVERIEW OF THE MARINE FISHERIES SECTOR

Role of Fisheries in the Economy of Bangladesh

Bangladesh has a land area of 147,570 km^2 and a population of about 130 million, making it the most densely populated country in the world (i.e. other than city states such as Singapur). The Bangladesh coastline extends 710 kms along the northern edge of the Bay of Bengal, from the mouth of the Naaf river in the Southeast, to the mouth of the Raimongal river in the Southwest (COFCON and PRIP Trust, 2001). At the same time, the country is located in one of the world's major river delta systems, with the rivers meeting the Bay of Bengal in the South of the Country. A wide range of salinity levels are encountered in the rivers up to a considerable distance upstream from the shoreline of the Bay of Bengal (Habib, 1999).

Fisheries play an important role in the economy of Bangladesh in terms of nutrition, employment and income generation. The World Bank and the Bangladesh Centre for Advanced Studies (1998) state in their publication 'Bangladesh 2020', that 80 percent of the population's animal protein comes from fish. Despite the fact that the fishing industry accounts for only 8 percent of agricultural GDP[1], its employment potential is considered vast. It is estimated that the sector fully employs approximately 1.5 million people and provides part-time employment for an additional 11 million (The World Bank and the Bangladesh Centre for Advanced Studies, 1998)[2]. According to Habib (1999), the fisheries industry contributes employment to 12% of the total working population in various forms of livelihoods activities. In the mid 1990s fisheries contributed about 10 percent of Bangladesh's export earnings.

The Meghna Estuary Study (May 1998, first draft) estimates the population living in coastal marine fishing villages at the end of the 20th Century at 7.3 million. According to the same source, in these areas fishing is the main income earning activity for 350,000 households (i.e. 22%), and 96,000 boats are operated by 350,000 fishermen.[3]

"Traditionally, it was the low caste Hindus who engaged in the fishing profession: the Jaladas, the Malos, the Malla Burmans, all popularly known as the Jeles, the Naiyas or the Neyes" (Alam, 1996). The last few decades have increasingly seen the entry of Muslims into the sector. On the one hand these are members of poor Muslim communities in search of new income opportunities, on the other hand wealthy individuals have invested in the marine fisheries sector once it became a profitable business.

In addition to finfish species, shrimp fry catching represents an important economic activity in that over fifty percent of all households in the villages surveyed by the Meghna Estuary Study (MES) are engaged in this occupation. Nevertheless, as

[1] According to the World Bank / BCAS Study (1998) fisheries contributes 8% of the agricultural GDP. According to Habib (1999), the fish industry contributes 16.7% to the agricultural sector.

[2] These figures do not distinguish between marine and freshwater fisheries.

[3] These figures do not include newly established fishing villages and the fishing communities living further inland along the major rivers.

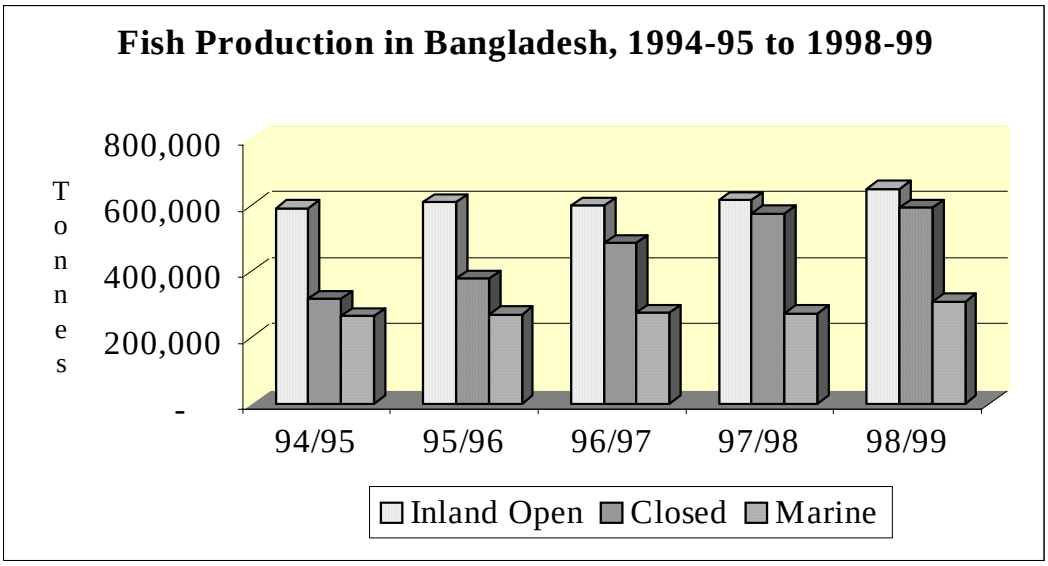
already indicated above, given the amount of recent studies on the shrimp industry of Bangladesh, the focus of this research is on finfish species.

475 finfish species have been recorded in the marine waters of Bangladesh (GoB, 1990, quoted in Habib 1999), compared to 260 species of freshwater fish (Rahman 1989, quoted in Habib 1999). A list of scientific, Bangla, and English names of fish is provided in Appendix 3.

The Supply Situation

According to figures of the Department of Fisheries, the total catch of marine fish has increased from 265,000 tonnes in 1994/95 to 310,000 tonnes in 1998/99 (17% increase). Compared to this, during the same period, the catch of fish in inland open water has increased from 591,000 tonnes to 649,000 tonnes (10% increase), whereas the production of fish from closed water bodies went up from 317,000 tonnes to 593,000 tonnes (87% increase). Figure 1 illustrates the increase of fish production according to the Department of Fisheries.

Figure 1



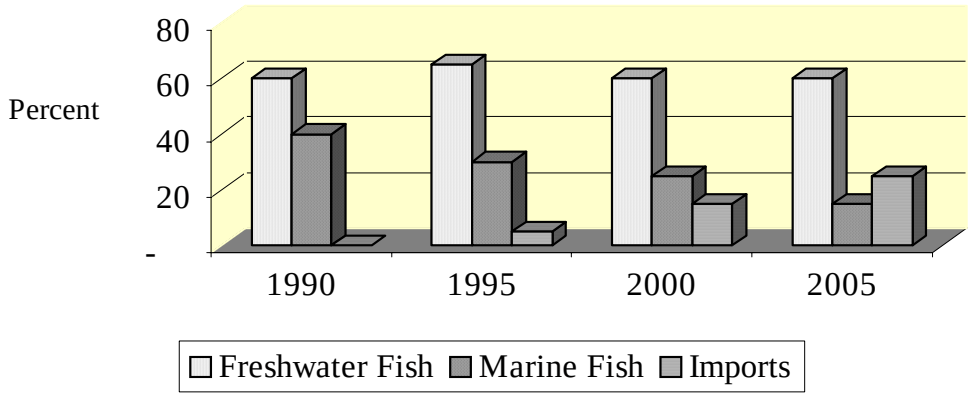
Source: Brief on Department of Fisheries (July 2000)

The above information contradicts to some extent the information obtained during the course of participatory and rapid survey exercises with fisherfolk and traders. For example, the majority of fishermen interviewed in coastal communities have stated that marine fish catches are declining since the early 1990s. Before that date (i.e. mid-1970s – 1990), catches substantially increased mainly due to the use of improved gear such as engine boats and better performing nets. At the same time, fishermen acknowledge that the decline of catches during the last decade is not linear, since there are years when the catch is better than in the previous year (e.g. the *hilsha* catch was better in 2001 than in 2000). Nevertheless, the vast majority of them agree that the overall supply trend for marine fish is negative.

Sometimes it is argued that it is only the catch per unit which is declining but not the overall catch. Following this argument, markets would be well supplied by marine

fish. On the other hand, the majority of traders specialised in marine fish equally complain about declining supplies (e.g. Chittagong, Dhaka, Cox's Bazaar, and Patuakhali). This overall picture can best be illustrated by using the estimates provided by Dhaka *aratdars*. According to them, the proportion of marine fish supply from Bangladesh is gradually being replaced by freshwater fish and imports.

Fig. 2: Fish Supply according to Dhaka Traders



Source: CODEC / NRI, Trade Survey, January 2002
NB. Figures are estimates

According to these traders, the supply of freshwater fish remains at about 60%, whereas the share of the marine fish is gradually being replaced by imports. They estimate that the imports represented about 15% in 2000 but expect them to rise to 25% by 2005. As for the supply of marine fish they predict a drop to 15% by 2005. The majority of both fresh and dried fish traders in other major markets have drawn a similar picture, underlining the decline of catches of major marine fish species such as *hilsha*, and growing fish imports mainly from India and Myanmar. It should be noted that although the figures provided in the graph represent proportions, according to the traders the marine fish supply is also declining in terms of quantity.

As for the proportion of marine fish caught by the artisanal sector, this is estimated to be of the order of 95% (i.e. 257,000 tonnes out of 272,000 tonnes in 1998, Source: Statistical Year Books, DoF/BFRSS 1997-98, quoted in Rahman et al). The remaining 5% are estimated to be caught by the industrial sector. However, in the light of the above statements by traders and fishermen in coastal communities it is doubtful that this ratio still prevails. According to sources in the industrial marine fisheries sector (i.e. 84 trawlers in 2001)[4], their catches are increasing. They claim that deep-sea shrimp is primarily caught for export and a proportion of white fish is sold on the domestic market (i.e. trash fish is not thrown overboard). Some trawlers target white fish and others shrimp.

Despite this somewhat contradicting picture, overall there are indications that the share of the marine fish caught by industrial trawlers is increasing whereas the catch

[4] This includes 84 industrial trawlers, i.e. 42 shrimp trawlers, 29 whitefish trawlers, and 13 so-called "High Court Boats" (i.e. trawlers from neighbouring countries which were impounded by the Navy and then auctioned). Source: Trade survey in 2001.

caught by the small-scale sector (i.e. small motorised and non-motorised engine boats) is decreasing. As a consequence, it can be assumed that the share of fish caught by industrial trawlers is well above 5% of the total marine catches.

Demand

As indicated above, fish is a main staple food in Bangladeshi households. According to DoF figures the per capita fish intake in Bangladesh is 11.9kg (DoF, 2000). This contrasts with the per capita fish intake needed per annum, which is at 18.0kg (DoF, ibid). These figures highlight a 34% shortfall corresponding to 790,000 tonnes between supply and demand of fish.[5]

This gap between supply and demand explains the relatively high prices of fish compared to the level of income of average wage earners. This, in turn, is reflected in the reactions of the public. For example, Rahman et al (2001) have collated a series of newspaper headlines highlighting the scarcity and high price of marine fish such as *hilsha*. Nowadays, higher value fish such as *hilsha* and pomfret, can only be afforded by wealthier consumer segments. Lower income groups depend on cheaper fish such as bombay duck, and increasingly fresh water fish such as tilapia and rui.

As for dried fish, according to traders this is primarily sold to the following consumer groups:

- Poor people;
- Rural people throughout the country;
- Population of North Bengal; and
- To a substantial extent, population of Chittagong and Chittagong Hill Tracts (CHT).

It appears that poor population groups continue to consume dried fish despite its increasing prices but in smaller quantities, which are still considered sufficient to give the food its flavour. It was also reported that more dried fish is consumed during the winter and monsoon.

In addition, there is a demand for fish by Bangladeshis living outside the country (e.g. UK, USA, Middle East). They demand good quality dried or fresh fish (e.g. dried ribbon fish, fresh *hilsha*). This is in addition to the major seafood exports, which consist primarily of shrimps (i.e. 28,514 tonnes in 1999-2000, worth Taka 16,122 million, DoF 2000).

Export of fish also takes place to other countries in Asia such as India. For example, The Bangladesh Observer (16 July 2002) reports that *hilsha* worth Taka 10 – 15 *crore* is exported every year from Chandpur, but that this amount may fall to Taka 5 *crore* in 2002, due to a shortage of supplies. The equivalent of exported *hilsha* worth Taka 10 – 15 *crore* is estimated to be of the order of 500 to 1,000 tonnes. In 1999/2000, the total export of fish products other than shrimp was 10,877 tonnes valued at Taka 1,994 million. (DoF, 2000).

[5] Assuming the demand corresponds to the amount of fish needed per capita per annum, according to DoF. This definition of demand does not take into account economic parameters such as price of the commodity, and purchasing power.

It is very likely that the export of fish influences the price of certain species on the domestic market. For example, good quality/large sized *hilsha* is high in demand for export to India, which in turn appears to contribute to its high price for Bangladeshi consumers.

Prices

During the course of the survey it was not possible to obtain price series from the official sources for the most common fresh and dried fish species in the country. As a result, the survey team has attempted to collect price data between July 2001 and July 2002 in a number of markets for the most common fish species.

It appears that in the long-term, prices of marine fish are increasing in real terms (i.e. net of inflation). Given that it was not possible to obtain price series during the course of the survey, this observation is mainly based on statements made by traders in a number of important fish markets in Bangladesh. As a consequence, as already indicated above, poorer consumer groups rely more on domestically produced and imported freshwater fish (e.g. Rui from Myanmar).

Table 1: Price of fresh fish in July 2001 in Chittagong, Fisheries Ghat

Species	**Price (Tk/kg)**
Hilsha, 1st quality	100
Hilsha, large, good size	175
Hilsha, average quality	80 - 85
Hilsha, 2nd quality	75
Shrimp	300 - 400
Pangas	60 - 80
Noakhali Pangas (big size)	100 - 125
Myanmar Pangas	50
Indian rui, fresh	75 - 80
Myanmar rui, not so fresh	50 - 60
Bombay duck	30
Shurma	60
Katamas, big size	55
Katamas, small size	30
Chuika	45

Source: Traders in Fisheries Ghat

Larger fish fetches a considerably higher price on a per weight basis. For example, large *hilsha* (1- 2 kg) would fetch a per kilogramme price double than that of small to medium sized fish of the same species (e.g. 300 – 600 grammes). As with any perishable commodity, prices fluctuate according to seasonal supply patterns. This includes price increases of dried fish between March and October.

Tables 1 – 4 provide examples of fish price data collected during the survey. For comparison, in the per unit value of exported shrimp was Taka 565 per kg and the value of other fish exported was Taka 183 per kg (DoF, 2000).

Table 2: Price of Fresh *Hilsha* in Bangladesh, Second half of July 2001

Market	Price of *hilsha* (Tk/kg)
Latifpur/Silempur, Landing centre (20 km north of Chittagong)	50 - 60
Fisheries Ghat, Chtg	80 – 85
Pahartali wholesale market, Chtg	70 – 72
Pahartali retail market, Chtg	100 – 110
Dhaka, wholesale	90 - 100
Dhaka, retail	120
Sylhet wholesale market	100
Mymensingh wholesale market	100

NB: The prices are for small to medium size *hilsha* (i.e. 300 – 600 grammes)
Source: Fish Traders in Chittagong

Table 3: Prices of Dried Loyitta (i.e. Bombay Duck) in January 2002

Markets	Price of Loyitta (Tk/kg)
Asad Gunj Wholesale Market, Chittagong	75 – 80
Kawran Bazar, Wholesale Market, Dhaka	85 – 90
Retail Markets in Dhaka	100 - 120

Source: Dried Fish Traders in Dhaka, January 2002

Table 4: Dried Fish Prices Paid to Kuakata Processors by Traders in Chittagong (Tk/kg)

Species	Nov. 2001	January 2002	April 2002 (expected)
Bombay duck	65 – 70	75 – 80	80 – 90, upto 100
Shark	65 – 70	72 – 90	55 – 60
Chapla pata	28 – 32	48 – 55	30 – 32
Suna bain	50 – 55	60 - 65	75 – 80

Source: Fish processors in Kuakata, January 2002

More information on fish prices collected by CODEC staff during the course of the survey (i.e. mid-2001 to mid-2002) is contained in Appendix 1.

Maps of the six villages to be included here (from transect walks)

LIVELIHOODS IN SIX COASTAL FISHING VILLAGES

This chapter presents the findings of Participatory Rural Appraisals in six coastal villages. A livelihoods approach was used focusing on household assets, vulnerability context, and livelihoods outcome. The latter concentrated on an analysis of wealth categories and poverty. More details on the livelihoods approach are presented in the methodology section. The maps presented above should be consulted when reading this chapter.

Setting of the Villages

Latifpur is a Hindu village which is located approximately 20 kms north of Chittagong city next to the Chittagong-Dhaka railway line. It is divided into 3 para's (i.e. hamlets), namely (Latifpur: 57 households (hh), Nayapara: 12hh, Salimpur: 30 hh). The village itself forms part of a larger Muslim dominated community.

Most people work in the fishing sector, and very few households work in non-fishing related occupations. There are about 11 male *paikers* (from sep*arat*e households) and 10 female *bepari*es (also from sep*arat*e households). Young people have now to take up wage employment outside the village, as fish has declined so much.

Very few people go to school, i.e. only four people have been to school and completed it. Most of the boys go to primary school, but very few complete it and higher education is very rare. There is also a new NGO run school, called Young Power for Social Action (YPSA). It was opened in 2001 and is targeting women and young children. There is a government health centre but drugs are unlikely to be available. For pregnant women there is a maternity ward. Family planning centres are there but extension officers do not come to this village. There is a general lack of sanitation facilities (i.e. not every household has a pit latrine). Drinking water is coming from a tube well, however the actual supply is insufficient. CODEC is the main NGO working in the village on issues such as education, institution building, and credit.

Hatkholapara is divided into 4 paras, namely South Mamothpara (400hh), North Mamothpara (350hh), Imapara (250hh) and Hatkholapara (200hh). Hatkholapara is located along the channel that runs into the Bay of Bengal. Although it is relatively close to Cox's Bazar it has no direct road connection. It can be reached through a ferry and then various transport services such as cycle rickshaws or motorised taxis.

The village is a mixed farming and fishing muslim community. Fishing is carried out for about 10 months per annum in the Bay of Bengal. The village has a landing site nearby but most of the fish is landed at the BFDC terminal in Cox's Bazar. Each para has 2 *samaj* and 2 *sardar* (i.e. traditional leaders) who are elected by the people. They are mainly responsible for the mediation of local conflicts.

Table 5: Setting of the Six PRA Villages

	Latifpur	Hatkhola-para	Kuakata Panjupara	Lebukhali	Debraj	Kulla
Administrative Setting: District Upazilla Union	Chittagong Sitakunda Selimpur	Cox's Bazaar Sadar Khurushkul	Paruakhali Kalapara Lata Chapli	Patuakhali Dumki Lebukhali	Bagerhat Morelgonj Panchakaran	Satkhira Ashashuni Kulla
Fishing households (#)	101	110	194	74	170	85
Religious Background	Hindu, next to larger Muslim community	Predominantly Muslim	Predominantly Muslim	Predominantly Muslim	Predominantly Muslim	Predominantly Hindu
Physical Setting	Open access to the Bay of Bengal	Indirect access through river to close-by Bay	Open access to the Bay of Bengal	Riverine Village, access to Bay of Bengal via river Paira	Riverine village, no direct access to Bay of Bengal	Riverine village, no direct access to Bay of Bengal
Type of fishing boats used	Small Motorised Boats, i.e. 10 – 20hp	Medium-sized motorised Boats, up to 70 hp	Mix of small non-motorised and motorised boats	Small dingi boats, non-motorised	Small dingi boats, non-motorised	Small dingi boats, non-motorised

Kuakata Panjupara is a village on the coast open to the Bay of Bengal. It is located just adjacent to the open sea beach. A village of Lata Chapli union under Kalapara upazilla of Patuakhali district, Kuakata is about 30 kilometres away from the upazilla headquarters and 78 kilometres away from the Patuakhali district town. By land route, it is 323 kilometres away from Dhaka city. Kuakata, which is also a growing tourist spot, is a relatively small village inhabited by 198 households with an approximate population of 1,200 people.

It is believed that 40 to 50 years ago this locality was inhabited by the *Rakhaine* people who emigrated from nearby Myanmar. It is said that since they were reluctant to pay tax to the Government they gradually left (tax was introduced in 1952).

Transect walks through Kuakata village bring to the notice of anyone the trees and herbs like date, palm, coconut, gourd, banana, pineapple, raintree and mahogany gardens, sugarcane, *akashmani, chambal, kalikadam, arum* etc. In addition, deep bush is there. *Akashmani* trees are used for furniture. Here the people rear livestock such as goats, buffaloes, etc. The lack of latrines is noticeable. Although there are a relatively high number of paddy fields the soil quality is poor (i.e. sandy). Normally they cultivate aus, aman and irri paddies here. There is one road within the village, which goes to nearby Nabinpur/Dokashipara from the approach of the sea beach through this village.

Lebukhali is located just by the side of the river *Paira* which flows into the Bay of Bengal and is also known for its torrential waves during the monsoon season. A village of Lebukhali union under Dumki upazilla of Patuakhali district, Lebukhali is a few kilometres away from the upazilla headquarters and 16 kilometres away from the Patuakhali district town on the Barisal-Patuakhali main road. By land route, it is 229 kilometres away from the Dhaka city. Earlier, this village used to belong to the Patuakhali Sadar upazilla before establishment of the Dumki upazilla. Lebukhali was known for its *balam* variety of local rice.

At the beginning of the 21st century, Lebukhali has a total population of about 500 households (i.e. about 3,500 to 4,000 people, and 1,700 – 1,800 voters). Before the liberation of the country, the village was inhabited by many Hindus fishermen. They were around 100 Hindu fishing families. After the liberation in 1971, about 98 households migrated due to occurrences of communal disturbances at that period. Some left during the War of Liberation in 1971. Now there are only two Hindu households left who are involved with loom and rope business. They changed their profession for fear that they may not be able to make a living in competition with the Muslim fishermen.

Debraj, which is a riverine village 12 hours from the Bay of Bengal (i.e. by using a 45hp engine boat), has a total population of about 400-450 households and 1,200 voters. 100 of the households are predominantly fishing households, 50 are involved with trading, about 20 with fish processing (i.e. mostly sun-drying of fish in places like *Katkar Char* and *Helat Char* along the coast of the Bay of Bengal). Some of the households migrated to big cities such as Dhaka, Chittagong, and Khulna in search of alternative livelihoods.

There were some Hindu households living in the village during the colonial period, most of whom migrated to India during the Pakistani regime as a result of intrusion by new entrants into their fishing zone. Since the 1960 the Muslims started fishing in the sea and rivers due to landlessness, lack of alternative job opportunities, and the availability of 'common pool resources'. In 2000 there are only two Hindu households left in the village who are into activities such as rope making.

Kulla is an old Hindu village of Kulla union that belongs to Ashashuni upazilla of Satkhira district. At present there are 85 households (HHs) in this fishing hamlet. Before independence (1967-68) there were 150 fishing households, and before 1947 there were 248 fishing households. During 1948 and after 1965 many households

migrated to West Bengal, Orissa, and Madhya Pradesh. Reasons for migration during the Pakistan period included scarcity of fishing grounds and piracy.

The villagers are traditional Hindu fishers and have been involved with fishing for seven generations. Whereas they used to be known as *Rajbongshi*, nowadays they are all known as *jele* (fisher), using different surnames after their names. In 1971, the *rajakars* (local collaborators of Pakistani army) looted their belongings and tortured them. At times, there was starvation. In 1988 (13 Agrahayan, Tuesday) there was a severe cyclonic storm leading to loss of lives, homes, different assets and fishing gears.

Asset Base

The asset base comprises the capital assets that help people survive and thrive. The main capital assets include human, social, natural, physical and financial capital, which are discussed sep*arat*ely below. Assets are important in terms of quantity and quality, extent of their control, rights and security of access. This needs to be seen in the context of access to assets by both women and men. Although it is impossible to define a 'minimum' level of assets needed for survival, as the categories are highly subjective and location specific, it is obvious that the better people's overall asset status is, the better they will be able to respond to changes and face hardship.

Human capital

Human capital represents resources such as skills, knowledge, ability to work and good health. Access to a combination of these elements is a prerequisite to be able to make use of any of the other four capital assets. For example, before a fisherman can get a good catch, he needs to know the location of the fishing grounds, how to judge weather conditions, how to operate a boat and how to maintain and produce the necessary fishing equipment such as fishing nets, boats and engines.

In the context of the communities visited during the course of the PRAs, the fisherfolk of Latifpur (Chittagong District) and Kulla (Satkhira District) are well endowed with fishing skills. To a large extent, this is due to their social background, in that they belong to the traditional Hindu fishers caste (i.e. *Jalada*). On the one hand this indigenous knowledge of capture fishing has led to a considerable amount of technical skills to earn a livelihood, on the other hand, due to social and cultural barriers, it also restricts them in their professional choices. For example, in particular the middle-aged and older fishermen in Latifpur village find it difficult to opt for alternative livelihoods despite the proximity of Chittagong, which is Bangladesh's second most important industrial centre. The younger generation in Hindu villages is more open to change, however their main constraints include lack of new skills and capital. It was also stated that sometimes, due to their background, Hindu villagers are discriminated against when applying for alternative jobs.

Compared to the Hindu fishermen, the Muslim fishing communities encountered in Cox's Bazaar, Patuakhali, and Bagerhat Districts, have only relatively recently entered this type of business. Reasons include loss of their traditional livelihoods such as agriculture (i.e. due to loss of land, etc) or weaving (i.e. due to profound changes in this industry). Nevertheless, despite the late entry into this business,

Muslim fisherfolk have acquired a reasonable amount of knowledge to work as fishermen and fish processors. At the same time, since they are not only specialised in fishing, they are also in a position to opt for alternative employments such as cultivation, petty trading, rickshaw / van pulling, and shop keeping.

Most of the members of the coastal communities in all the six villages lack the minimum primary education for enhancement of their livelihood skills. There are some Government primary schools now-a-days in different villages but in most of the cases those are far away from the villages surveyed. For example, in Lebukhali it was reported that the children had to walk a long distance to the school. This poses a problem during the monsoon season, when the children have to take boat transport which is expensive and sometimes hazardous.

At the same time, interventions for Children Education and Adult Literacy by the NGOs have been found to take place in the study villages of Chittagong, Patuakhali and Satkhira districts; although in a limited scale to the members of their (NGOs) supported village organisations. There are no NGO interventions in the survey villages located in Bagerhat and Cox Bazaar Districts. Asked about the government sponsored adult literacy programme, named "Total Literacy Movement" (TLM) among the poor people of all the six coastal villages, the participants in the PRA sessions in all the locations expressed their sceptical views about it, since they see virtually no positive support on education, and other government services such as health, agriculture, livestock, fishery, embankment building/reconstruction etc from the upazilla administrations.

The poor health and inadequate nutrition of the children, women and old-aged members of coastal communities also inhibits their development. The overcrowding, poor sanitary condition (lack of adequate water-sealed latrines) and inadequate access to safe drinking water make their human assets, and consequently the livelihoods, more vulnerable.

The labour power of the coastal communities is considered to be their most important asset. However, most of the women members of the coastal communities remain unemployed from any income generation activities. Only a few women of the Chittagong village (Latifpur) are involved in fish vending and a few women of Kuakata Panjupara of Patuakhali are involved in shrimp-seeds collection. A few women of Kuakata and Hatkholapara (Cox's Bazaar) were also found to be employed in dry fish processing activities and net making / mending as part time wage labourers. On the other hand, the child labour in the agricultural fields and shrimp-seed collection activities may be considered as a negative aspect of their livelihood strategies, since the children in such activities are deprived of proper education and nutrition. While acknowledging this proposition in the PRA sessions, the poor participants commented that they are forced to utilise their children as assets due to their abject poverty.

Table 6: Household Asset Base

	Latifpur	Hatkhola-para	Kuakata Panjupara	Lebukhali	Debraj	Kulla
Human Capital	Good fishing skills, since villagers belong to Hindu fishers caste; low level of education; There is an NGO school for adults and children;	Medium fishing skills due to relatively late entry into this business; Villagers are also familiar with agriculture;	Medium Fishing skills; Good fish processing skills by group of young villagers; There is NGO school for adults and children	Low to medium fishing skills due to late entry into fishing business; Limited exposure to sea fishing; Weaving used to be common; NGO school for children and adults.	Low to medium fishing skills due to late entry into fishing business; Limited exposure to sea fishing; There is no NGO school.	Good fishing skills, since villagers belong to fishers caste; Limited exposure to sea fishing; There is NGO school for adults and children
Social Capital	NGO supported village organisation Also, there is CODEC supported fisherfolk organisation	There is boat owners association, crew members don't have access	NGO supported village organisation Also, there is CODEC supported fisherfolk organisation	NGO supported village organisation	No NGO supported village organisation One CBO in the form of Maitshyjibi Samaby Samity	NGO supported village organisation
Natural Capital	Access to the open sea, Very little landowner-ship (only 10%)	Access to the Bay of Bengal, Some villagers own land	Access to the Bay of Bengal, Some villagers own land, others live on khas land	Access to River Paira, Some villagers own land, erosion is a big problem.	Access to River Poilahara, Some villagers own land, however, erosion is a big problem	Access to River Betna, very little land ownership, Shrimp *ghers* use land
Physical Capital	Small engine boats and nets, Major Chtg – Dhaka road is close by	Medium sized engine boats (40 – 70 hp), also collector boats; Different types of nets (e.g. MSBN	Small motorised and non-motorised boats; Medium road access	Dingi boats, non-motorised; nets for river fishing; Patuakhali – Barisal road is close-by	Dingi boats, non-motorised; nets for river fishing; bad road access	Dingi boats, non-motorised; Nets for river fishing; Bad road access
Financial Capital	Only CODEC is present in this village, providing micro-finance and '*dadan*-free loans' for fishermen	No micro-finance NGOs in this village	NGOs such as CODEC and Grameen Bank operate in this area	Several NGOs operate here, i.e. Grameen Bank BRAC ASA Polli Sheba	No micro-finance NGOs in this village	No micro-finance NGOs in this village

Social capital

People are dependent on social resources in pursing their livelihood strategies. Social resources are determined by relationships and networks, which exist within nuclear and extended families, and in and among communities and groups. These social relations influence the way in which people can access and make use of their assets. Social relations are often based on trust, reciprocity and exchange, and contribute to a sense of well being and belonging. Such informal social relations form the basis of informal safety nets, which people use to pursue their livelihood strategies in times of problems and emergencies.

No indigenous social organisations of the fisherfolk were encountered in the six villages, other than the ornamental *shamaj* entities. However, the NGO interventions in the four villages of Chittagong, Patuakhali and Satkhira led to the formation of village organisations comprising the members supported by the NGOs. However, among the four villages, genuine fisherfolk organisations only exist in Latifpur (Chittagong) and Kuakata Panjupara (Patuakhali) where CODEC (Community Development Centre) has its interventions for the fisherfolk communities. These organisations, supported by the NGOs, pave the way towards social, economic and political empowerment of the coastal communities.

As for the *shamaj* organisations, for example in Hatkholapara there is a boat owner association, the membership of which is reserved for boat owners only. Crew members cannot join the association. About 20% of the households have their own boats but not all of them are a member of this association, the mandate of which is to solve conflicts and fix loans for crew members. This raises the issue that only the better-off in the fishing community are organised whereas the poorer members are not.

On several occasions, it has been reported that in the past village associations have suffered from embezzlement of funds by association leaders. This points to the importance of reestablishment of trust and transparency when introducing new types of village organisations.

Natural Capital

Natural capital is the quality and quantity of natural resources that are available to people and above all, the access and control people have over these natural resources. Examples include aquatic resources, water, land, forests, air quality and biodiversity. These resources often form the basis of most rural economies.

People living in coastal fishing communities, not only depend on fish but on a combination of natural resources for pursuing their livelihoods. For example, fish is caught for both household consumption and sale, generating a cash income. Waterways are also used for transport of persons and produce. Fresh water is used for human consumption and for preserving fish (e.g. production of ice). Forests provide both building materials for housing and boats but also fuel wood for cooking and smoking fish. Access to land can be important, especially if fishing is a seasonal

activity, because agricultural activities can supplement the household food requirements.

The major source of natural asset or capital to the coastal poor of Latifpur (Chittagong), Hatkholapara (Cox's Bazaar) and Kuakata Panjupara (Patuakhali) villages is the **Bay of Bengal** and it (natural asset) is the river **Paira** to the Lebukhali (Patuakhali) fishers, river **Poilahara** to the Debraj (Bagerhat) fishers and river **Betna** to the Kulla (Satkhira) fishers.

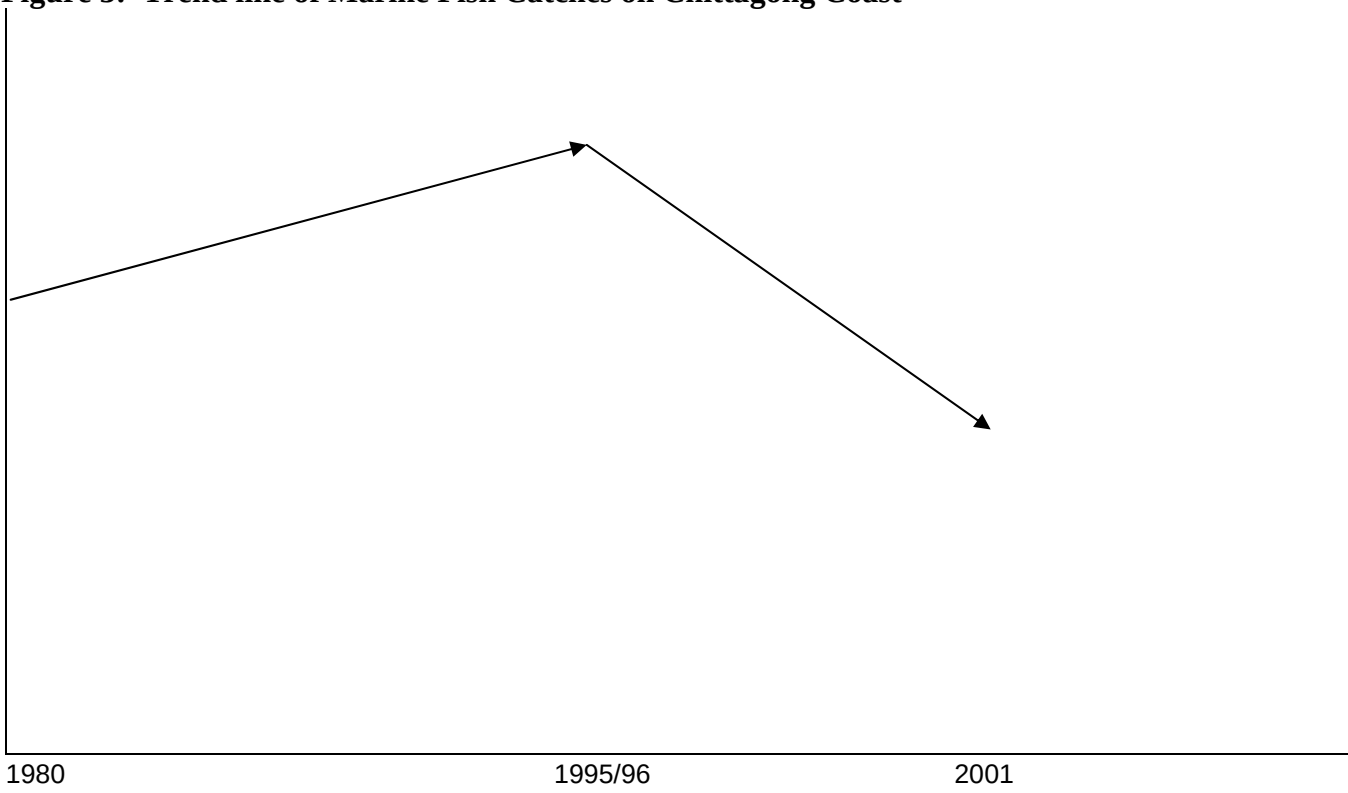
Some villagers own land for crop production, the size of which can vary considerably within and between the villages. In particular, landownership is very limited in the Hindu fishing communities. In the other villages there is a substantial variation between the better-off (i.e. more than 10 acres) and those with little or no land**. Sea and river bank erosion** is a serious problem encountered in the majority of villages. It has led to the destruction of numerous livelihoods in the villages, in that either the homesteads have disappeared or agricultural land was swept away.

To a very limited scale, the *khas* lands (government owned) and embankments provide a living space for the poor people of all those villages. Some other canals and ditches in the vicinity of the villages are also the sources of livelihoods for the poor people. The ecosystem and biological diversity of these open-access resources provide substantial opportunity for livelihood security for the poor people of these coastal villages. However, these open-access resources attract a large number of poor people as a '***sink***', leading to overexploitation of these resources. This in turn seriously endangers the long-term livelihood security of the coastal poor.

It has been revealed from the PRA sessions in the fishing villages and also from the rapid market appraisals that there is an ongoing process of marine resources depletion, which is represented by 'reduced catch per unit effort' and an overall reduction of marine fish supplies in the market. The trend line drawn by Latifpur fishermen (Figure 1) best illustrates how fish catches have risen between the 1970s and the early 1990s. In particular, this was due to the use of more efficient gear such as engine boats and gill nets. In some cases (e.g. Latifpur), the use of these techniques and the associated knowledge was introduced by newcomers to the area who had to leave their original home villages due to loss of livelihoods.

In all the six fishing villages it was reported that the marine fish catches have started to decline since the early 1990s. At the same time it was also indicated that this decline is not linear and that there are years which are better than the previous ones (e.g. in most villages the 2001 *hilsha* season was considered to be better than the one of 2000).

Figure 3: Trend line of Marine Fish Catches on Chittagong Coast



Causes of fish stock decline indicated:

Fry & Juvenile catch, Accretion of land under the sea, Waste disposal from fertilizer factory, Garbage from the city (Polythene), Disposal from ship breaking industry, Increased number of boats, Throwing of trash-fish into the sea by the big commercial trawlers, Use of current net Use of insecticides & chemicals in agriculture, Environmental damage from gas exploration, Explosion in the sea by army.

Source: PRA Exercise with fishermen in Latifpur village in July 2001;

The declining fish catches are not only felt in smaller quantities caught but also in reduced quality in that fish is becoming smaller. For example it was reported that the average weight of *hilsha* caught five to ten years ago was much higher compared to nowadays (i.e. more than double according to fishermen and traders).

In summary, the participants in the PRA sessions assigned the following reasons for resource depletion in the sea and river, which leads to "reduced catch per unit effort" and overall decline of supply in the long term:

- Increasing numbers of people are engaged in fishing with different types of nets. Number of nets per fisher also increased to a substantial extent.
- Big commercial trawlers indiscriminately fish in the sea and throw large amounts of unwanted fish (they consider these as trash fish) in the sea. As the trash fish are already dead, this process destroys the fish habitat. At the same time, one chief executive of a leading commercial fish exporting company of the country recently reported in a meeting in Chittagong that during the last few years their commercial trawlers have not been throwing "trash fish" into the sea because, nowadays, all the species of fish are commercially worthy for them.

- Sometimes the big commercial trawlers fish in the artisanal fishers' fishing zone (less than 40 metres depth), which they are not allowed to do in accordance with the 'rules' they should follow or the permission they got for using fishing grounds.
- The Thai and Indian trawlers are involved with theft fishing in the zone of Bangladesh.
- Oil-discharge in the sea by the scrap-vessels of the ship-breaking industry destroys fish habitat. The floating oil on a large area of seawater inhibits sunlight to get into the water that is required for the fertilisation of eggs. However, this proposition could not be ascertained or investigated in more detail.
- Discharge from factories like chemicals, fertilizer, tannery etc. destroys fish habitat.
- Discharge of chemical fertilizers and pesticides into the sea and rivers from the agricultural fields along with monsoon water.
- The fishers of Chittagong village complained that the recently built Shangu Gas Field (exploring gas from the sea) near to the village affects adversely their fishing by destroying fish habitat. However, they could not properly explain how.
- To cope with the situation of gradual non-availability of fish in the near shore, fishing has been mechanised. Most of the fishing crafts are motorised. So, fish habitat moves further away.
- Overexploitation of resources like catch of juvenile fishes (juveniles of *Hilsha* are locally termed as *jatka*, catch of which is banned) with rampant use of monofilament net (locally known as *current jaal* – weaving, sale and use of which are already banned) and estuarine set-bag net (ESBN, which are going to be banned and are now being discouraged by the Department of Fisheries) also depletes the stock.
- The unskilled process and act of shrimp-seed collection from the sea destroys a huge amount of different fish species, which is a potential source of fish depletion.

Table 7 provides an overview of how fishermen along the Chittagong Coast view the decline of fisheries resources by species.

Table 7: Marine Fish Species which are Becoming Rare or Are Disappearing

Species getting very thin catches	Species which have almost disappeared
Shrimps (chikka), Sharks, Stingray (shaplapata), jew-fish (popa), Crabs etc.	Bhoal, Lukkya, big Koral, Faishya (like anchovy), Chapila, Risshya, Sundari-bele, Tiger Shrimps (red), Pungash, Ribbon (Chhuri), jew (white) Chandana *Hilsha*, Sundari (knata), Gnhora, Kata, Chewa, Cherpati (salt fish), Maittya, Ram Chokkhya, Guldya, Bnata, Khoral, Kawoon, Datina, Datina Bhoal, Pomfret (Rupchanda), Bengya, Bhoal (very big), Korati, Lobster (big)

Source: PRA in Latifpur, April 2002

Physical Assets

Physical capital is the basic infrastructure such as transport, shelter, sanitation, water, energy and communications, and the production equipment and means which enables people to pursue their livelihoods. It includes public goods such as health care, cyclone shelters, and infrastructure such as roads, for which people often do not have to pay directly or contribute partly (e.g. payment of school or hospital fees). Having good access to infrastructure can be especially important for traders as it increases their potential marketing area. Access to health services, safe water supply and sanitation will have a positive contribution to people's health, thereby increasing people's human capital and ability to work.

Also, private owned physical assets such as fishing gear, boats, engines, fishing nets, fish processing equipment (ice boxes, smoking ovens, drying racks/slabs) and modes of transport are crucial to support livelihood strategies.

As outlined in Table 8, there is a wide range of mechanised and non-mechanised boats available in the villages. This ranges from small dingi boats without engine, which are used on rivers by two or three crew, up to wooden trawlers, which are powered by 40 – 70hp engines and run by up to 20 crew members. The investment cost of these types of equipment varies considerably.

Table 8: Investment Costs of Fishing Boats

Type of Boats	Investment Costs
Small *dingi* (i.e. country) boat	Tk2,500 – 5,000
Small motorised boat with 15 – 20hp engine (including boat, engine, and nets)	Tk60,000 – 80,000
Wooden trawler (50 – 70hp) to fish in the deep-sea:	
Boat, incl. engine	Tk6,00,000 – 7,00,000
Nets	Tk4,00,000
Working capital	Tk1,00,000 – 2,00,000

A variety of nets and other gear are used to capture marine fish. This includes:

- Gillnet, mostly used for larger *hilsha*,
- MSBN (Marine Set Bag Net)
- ESBN (Estuarine Set Bag Net), mostly used for species such as bombay duck in the lean season
- Beach-seine net *(i.e. ber jaal*), for catching of tapshi, faishya, poma, etc.
- Current net (i.e. monofilament net) used for jatka catching (juvenile *hilsha*)
- Push / pull net, used for shrimp fry collection
- Longline and hooks (i.e. *moiya, borshi*) used for catching species such *as poma, rita, ramchosa, ayer boal, pangash*, etc

Although the marketing surveys have identified that transport between major urban centres tends to be relatively fast and inexpensive, it was stated that **road communication** is inadequate in the majority of coastal villages. Most of the roads

are non-bricked and non-metalled. The few semi-metalled roads in Chittagong, Cox's Bazaar and Patuakhali villages are in bad shape and need repair.

The muddy roads of the villages are virtually inaccessible for the rickshaws, vans and motorised vehicles. This limits transportation of the catches, crops and other goods of the shops to the required market places.

The villages which are located in the vicinity to major roads such as Latifpur (e.g. close to Chittagong – Dhaka Road), or Lebukhali (e.g. close to Patuakhali – Barisal Road) are in a better position in that they have easier access to the main markets. Nevertheless, the connection between the villages and the main roads would benefit from improvement. For example, it was reported that the children cannot go by foot to the school during the monsoon months, as a result of which they rely on expensive and unreliable boat services. In particular, girls have been reported to be affected by the lack of inadequate access to schools.

Although improvements have taken place as far as the availability of river ferries and bridges is concerned, there can still be undue delays when using road transport. In particular, on certain major connections (e.g. Patuakhali to Barisal), several large rivers need to be crossed. Needless to say, that during the main monsoon season river crossings tend to be more dangerous and time consuming.

Ice factories only exist in the urban centres, where there is electricity supply (e.g. Chittagong, Cox Bazaar, Patuakhali, Barguna, Mohipur). Fishermen who have access to ice acknowledge improvements over the last ten years (e.g. Latifpur, Kuakata), although they might complain about soaring ice prices during the peak fishing season. Ice manufacturers complain about unreliable electricity supplies. At the same time, there are places which are nowadays oversupplied with ice plants (e.g. Mohipur / Alipur in Patuakhali District).[6] Less fish tends to be processed in areas where the availability of ice has increased.

In general the minimum **health facilities** required for the coastal poor in the six study villages are very poor. There are no government hospitals or health centres near the villages of the six locations. In Latifpur, an NGO provides elementary health services, to some extent, through its field hospital in the vicinity of the village. There is virtual absence of required immunisation support for the mothers and children in the study villages from the side of the government. The NGOs active in the area periodically undertake such activities, whenever they can arrange.

Tube wells or fresh water bodies for safe drinking water are also inadequate in the coastal villages. Central or local government initiatives are lacking in this respect. The NGOs working in the communities have installed some tube wells in the vicinity of their members' residences. There is also a reported problem of arsenic for the tube wells in some fishing villages, especially in Satkhira.

[6] This aspect will be dealt with in more detail in connection with marketing and other post-harvest operations.

The **housing facilities** of the poor coastal communities in the study villages are very poor due to meagre income and overcrowding. The frequent cyclones and floods often destroy their houses along with other livelihood assets.

The lack of adequate **cyclone shelters** in the vicinity of the coastal villages also seriously affects the lives and livelihoods of the communities. For example, the participants in the PRA sessions in Kuakata Panjupara, Patuakhali complained that the only cyclone shelter in the village is now being used as the rest house of the LGED (Local Government Engineering Department) officials.

Financial assets

Financial capital refers to the financial resources which are available to people (e.g. cash, savings, credit, remittances) and which provide them with different livelihood options. It also includes illiquid resources that can be quickly converted into cash and more liquid means. In some societies, there is a preference for saving in kind as that is perceived as having a higher value or being less risky than cash. Examples are jewellery (gold) and cattle, which is often disposed of in case of emergencies such as illness, marriage or death.

Financial capital is a very versatile type of asset in that it can be used to acquire other types of capital such as, natural capital (e.g. land), physical capital (e.g. fishing equipment), or human capital (e.g. education or vocational training). In addition, financial capital can also improve one's social capital as a high socio-economic status often correlates with having power and being respected/feared by others

The main sources of financial capital for the poor people of the six villages are the informal credit market and the quasi-formal credit market. The chief actors of the informal credit markets are the *dadandars* and the moneylenders, while the NGOs are considered as the actors of quasi-formal credit market. Their access to the formal credit market (i.e. scheduled banks) is virtually inexistent due to their lack of bankable assets.

The source of finance for fishing in the coastal villages, especially in Chittagong, is principally the ***dadan*** and usury market. In the usury market, the moneylenders generally lend money at an interest rate of 120-240% per annum. On the other hand, ***dadan*** is a sort of monopsony transaction built upon an uneven lending contract (often verbal), even before production, in favour of the lender/purchaser of produce to sell the produce to him/her at a price much below (i.e. usually about 20% - 40%) the normal market price, or against a certain percentage of commission (e.g. 5% to 10% of sales revenue, or Tk. 5 – 10 per Kg of fish). Most of the fishermen resort to the *dadandars* for finance, as a consequence they have to hand-over all their catches to the *dadandars* (i.e. particularly in Chittagong). Sometimes, they (i.e. Chittagong fishers) do not even get the revenue or know the price of their fish on the day of catch and sale. The *dadandars* fix the prices after sale of the fishes in the wholesale market far away from the village.

However, in Cox's Bazaar, Patuakhali, Bagerhat and Satkhira villages the *dadandars* are mainly commission agents. The fishers have to sell their catches to the buyers (*paikers*) through the shops/warehouses (*arat*) of *dadandars*, and the *dadan*ders reap

5%-10% commission on the revenue from the fishers. The rate of usury interest is also less (i.e. generally about 120% per annum) in these five other locations compared to that of Chittagong.

In contrary to the informal sector, the NGOs (e.g. BRAC, Proshika, CODEC, ASA, Grameen Bank etc.) provide loans only to their organised poor members and offer the subsequent loan only after repayment of the former one, whereas the *dadandars* advance money even before non-realisation of the previous amount. Some of the participants in the PRA sessions commented that the amount of finance being provided by the NGOs is insufficient and this amount does not commensurate to the poor people's actual need.

However, in the Chittagong village (i.e. Latifpur) CODEC has introduced a new product of finance called ***Dadan*-free Loan** (i.e. usury debt redemption loan) to free the fishers of CODEC supported Village Organisations (VO) from the clutches of *dadan* and usury market. CODEC also introduced this Dadan-free Loan product in other fishing villages along the coastline of Chittagong. To this end, after proper assessment and verification, they (CODEC) repaid the *dadan* and/or usury loan to the respective *dadandars* and/or moneylenders directly in presence of the borrowers and also advanced the required amount of working capital to the respective fishers of the CODEC-supported VO. In this way, CODEC has provided *Dadan*-free Loan up to Tk.75,000 to a single fisherman. By mid 2002, CODEC had provided such type of long-term loans (payable within 3 years) to 110 fishing households, belonging to several surrounding fishing villages, on a pilot basis. The introduction of this new loan product led to a significant reduction in *dadan* dependence. However, a few fishers could not repay the loans in time due to piracy of their catches and fishing gears in the sea.

Although the *dadandars* and the moneylenders are the chief sources of finance for the poor stakeholders, it is often argued that the conditions involved (e.g. high interest, or interlocked transactions leading to low prices) marginalizes the fishers to a large extent, and almost all of the fishing households are enchained with *dadan* and/or usury transactions. Besides, the incidences of *dadan* are also prevalent among the shrimp-seed collectors and peasants, whereas borrowing from the moneylenders exists among the shopkeepers.

It has been observed that the informal credit rates are lower in areas where there is a strong presence of NGOs (e.g. Lebukhali). There, the informal credit rates tend to be of the order of 10% per month, whereas they can be as high as 15 – 20% per month in villages with a lower NGO presence.

The relationships between communities may also influence the interest rates. For example, it has been observed that moneylenders belonging to the majority group are likely to charge members of a minority community higher interest rates.

The issue of financial capital will be dealt with in more detail below in the sections on credit access and marketing.

The Vulnerability Context of the Poor

Following an analysis of people's strengths and access to assets, it is important to understand the vulnerability context in which these assets exist. This revolves around the question of what are the external factors that influence the levels of assets and how these assets can be used? These external factors are often related to causes of poverty, which makes poor people, in particular, vulnerable. For many poor rural people, changes in natural capital can particularly affect their vulnerability, as they are heavily dependent on natural resources. Three major types of external factors can be recognised: **trends, shocks and seasonality**.

In many villages a major long-term negative **trend** has been observed in relation to the quantity and quality of natural resources available. For example, over the past decades, fish resources have declined and particular species have become extinct or are prone to extinction. The loss in biodiversity may have negative drawbacks on the remaining resources as the marine ecosystem has been disturbed. The underlying causes for the increased pressure on natural resources are rather complex, but two important ones are a rapid population growth and urbanisation.

Other, institutional related, trends include liberalisation of trade, introduction or lifting of trade bans, and change in consumer preferences. For example, the demand for fresh fish has increased significantly, stimulating the use of preservation technologies such as the introduction of ice. This may have a negative impact on the livelihoods of small-scale fish processors who rely on traditional low cost preservation technologies such as sun drying, salting and smoking of fish.

Shocks are unpredictable events affecting livelihoods such as war, natural disasters such as floods, droughts, cyclones, earth quakes, land slides, disease epidemics and sudden economic changes e.g. currency devaluation. In the fishery context, cyclones and floods have a devastating effect on people's lives and properties. Many lives are lost (loss in human capital), and physical infrastructure and assets are wiped out, such as loss of fishing gear, roads, bridges and transport linkages being washed away, thereby again limiting access to health and education services and employment opportunities in other sectors. According to Haque and Blowfield (1997), "coastal fishing communities are more susceptible to weather conditions than many farming communities. Not only is the size of the catch affected by the weather, rain and storms prevent artisanal fisherfolk from setting out to sea."

Seasonality includes recurrent changes throughout the year that influence people's access to assets and livelihood outcomes. Seasonal change in weather is such an example. The major fishing season may occur during the rainy season, thereby limiting the cash income to a relatively short period per year, imposing a strain on the household cash flow and household food security during the lean season. Transport of fresh fish might be more unreliable in the rainy season as roads may become flooded. Other aspects of seasonality include fluctuations in prices, marketing opportunities, health (e.g. higher risk of malaria during the rainy season) and availability of alternative employment opportunities.

In sum, if people are unable to deal with these trends, shocks and/or seasonal changes, they will become increasingly vulnerable. It is important to keep in mind that the

vulnerability context can differ among the different social groups as the levels of vulnerability is related to their individual combination of assets available and accessibility to them. The vulnerability context can best be explored through an examination of perceived risk factors, key problems, changes, potential solutions and the coping strategies that people have developed. Policy interventions may be required to prevent people from becoming more vulnerable and therefore unable to cope with shocks, trends and seasonal changes.

Survey Results

As is demonstrated in Table 9, the survey results regarding the vulnerability context of poor households in fishing communities of coastal Bangladesh are remarkably similar.

Shocks. All the six villages under study are prone to frequent **cyclones and floods**. Especially, Latifpur (Chittagong), Hatkholapara (Cox's Bazaar) and Kuakata Panjupara (Patuakhali) are quite open to the sea. Besides the storms and floods in almost every year, the devastating cyclones (accompanied by tidal surge) of 1964, 1970 and 1991 caused severe damage to the lives and livelihoods of the villagers of the six locations along with most of the coastal areas of Bangladesh. In 1997 the Chittagong, Cox's Bazaar and Patuakhali villages were again hit by a severe cyclone accompanied by floodwaters, which made many of the villagers homeless with consequent loss of their assets. In addition to that, along with a large part of Bangladesh, the villages of Patuakhali, Satkhira and Bagerhat were also severely affected by the prolonged flood of 1998. The coastal people of Chittagong were also affected in 1988, because their catches of fish, vegetables, crops etc. could not be delivered to Dhaka and many other districts because of blockade of roads and communications for a long period due to the flood. The Satkhira village again came under flood attack in the year 2000. Moreover, the unusual high tides in the Bay often damage the houses and other resources of the poor of Chittagong, Cox's Bazaar and Patuakhali, who live near the seashore or embankments.

Besides the cyclones and floods, like many other people of Bangladesh, the livelihoods of the coastal poor are being affected by the frequent ***hartals*** (closure of normal activities and transportation due to call of general strike) and other political unrest like road blockade etc. During these days, the perishable products like fish and vegetables get damaged and the poor people have to sell those at a very cheap price, sometimes even failing to get any revenue of their products due to decomposition of those. The rickshaw pullers, shopkeepers and petty traders also face loss during these days for obvious reasons.

Besides the above, another kind of shock is **piracy** in the sea and on the rivers that seriously affects the livelihoods of the poor fishers. Compared to the past, it has been stated by numerous fishermen and traders that piracy has seen a rapid increase in recent years. In particular, piracy is very rampant in the Chittagong, Cox's Bazaar and Patuakhali coasts, and almost daily the fishers along this coastline are facing the act of piracy of their fishing gears and catches in the sea. Later on, Chittagong fishers again buy their snatched fishing gears from the pirates near the big fish-landing station in the Chittagong city. Piracy also takes place occasionally in the Betna and Poilahara rivers along the Satkhira and Bagerhat villages respectively.

Table 9: Shocks, Trends, and Seasonality in Coastal Fishing Communities

	Latifpur	Hatkhola-para	Kuakata Panjupara	Lebukhali	Debraj	Kulla
Shocks	Cyclones and floods, 1964, 1970, 1988, 1991, 1997 Piracy in the sea Hartals	Cyclones and floods 1964, 1970, 1988, 1991, 1997 Piracy in the sea Hartals	Cyclones and floods 1964, 1970, 1988, 1991, 1997 Piracy in the sea Hartals	Cyclones and floods 1964, 1970, 1988, 1991, 1998 Piracy on the river Hartals	Cyclones and floods 1964, 1970, 1988, 1991, 1998 Piracy on the river Hartals	Cyclones and floods 1964, 1970, 1988, 1991, 1998, 2000 Piracy on the river Hartals
Trends	Declining fish stocks Land erosion by the sea	Declining fish stocks Land erosion by the sea	Declining fish stocks Land erosion by the sea	Declining fish stocks Land erosion by the river	Declining fish stocks Land erosion by the river	Declining fish stocks Land erosion by the river Declining forest resources
Seasonality (fishing)	Main *hilsha* fishing season: July to November; other fish (SBN) mainly from Oct. to March; shrimp fry collection Dec to June.	Main *hilsha* fishing season: July to Nov; Other fish from Dec. to April. Shrimp fry collection mainly from April to August.	Main *hilsha* fishing season: April to September; Other fish including fish drying from Oct. to April.	Main *hilsha* season from May to Oct.; jatka (small *hilsha*) mainly from Aug. to Oct. Shrimp from Oct. to March; other fish Feb. to July	Main season for bagda and chali shrimp from June to Sept. and main season for harina shrimp from Sept. to Dec.	Main ESBN season (chali etc): mainly June to Nov.; Charpata net (tengra, golda) mainly from Oct to Jan; Bachari net mainly from Oct. – Jan.;

The participants complained about the piracy in all the PRA sessions in the six locations. In Chittagong and Cox's Bazaar, the discussions took a substantial amount of time on this issue. In recent years, the local and daily newspapers also published several reports of piracy in the Bay of Bengal. In addition, theft of livestock and poultry is also prevalent in the villages.

Another kind of shock is **accident** in the sea/river and road. In almost every year there are reports of accidents in the sea/river due to which the poor either loose their lives or limbs. It was also reported that fisherfolk operating on the rivers surrounded by forests in the Sunderbans are frequently attacked by tigers.

Trends. There is a high degree of resource depletion, erosion and environmental degradation in all the six study villages. This trend of increasing vulnerability has been coupled with some other trends like sea level rise, increasing population, resource conflicts, technology change and incidences of diseases in those coastal areas.

In all the six study villages, and the coastal area of Bangladesh as a whole, depletion of marine and riverine resources like fish poses a serious threat to people's long-term livelihoods. For example, *Hilsha* fishing is a major seasonal source of income in the four villages of Chittagong, Cox's Bazaar & Patuakhali, and Bangladesh as a whole. However, since the mid 1990s the catch of *Hilsha* is declining at an increasing rate.

In the initial 2 months (June – July) of the *Hilsha* season, there is virtually a very meagre amount of catches. In most of the daily fishing trips during these months, the poor fishers fail to get any substantial catch. They complained that, during these days, they are wasting a lot of their fuel and other costs along with their labour time. This situation badly affects the livelihoods of almost all the coastal poor for obvious reasons. Even the city dwellers in Bangladesh are also affected since the price of *Hilsha* went-up 2 to 4 times high in the market. Only the relatively big mechanised trawlers can harvest relatively large amounts of *Hilsha* in the deep sea far away from the coastal villages, which the artisanal fishers cannot do due to limitation of their fishing crafts and gears.

One participant in one of the PRA sessions in Kuakata Panjupara (Patuakhali) commented that in the not too distant future the *Hilsha* would take its place in the museum. However, it needs to be emphasised that the decline of fishing resources is not linear. For example, in 2001 the situation was somewhat better in that *hilsha* catches went up compared to the previous years, according to the majority of fishermen interviewed.

The old fishers of Chittagong told in the PRA discussions that even during their early days they could fish enough almost throughout the year, with a very brief gap, and they used to get several species of fishes. However, nowadays, their fishing has been reduced to a virtual 'monoculture' of *Hilsha*.

Fishermen recognise that declining fish supplies have led to an increase of selling **prices** also at their level. As for the net impact of "lower supplies and higher prices" for them, the answers were mixed, in that some fishermen stated that the price increase has somehow compensated for smaller catches, whereas others indicated that the decline in supply was so sharp that a price compensation was not possible.

As for the reasons provided by the fisherfolk for declining fish stocks, these have been outlined above in the section on Natural Capital Assets.

Erosion in the coastal villages, especially along the bank of the rivers, and also along the Chittagong coast of the Bay, is a serious threat to the lives and livelihoods of the poor stakeholders. The fishing hamlets of Lebukhali (Patuakhali), Debraj (Bagerhat) and Kulla (Satkhira) are under the active process of riverbank erosion. These villages are eroding away on a daily basis which is causing serious vulnerability to the livelihoods of the poor. On the other hand sea level rise is also a context of vulnerability for the poor people of Chittagong, Cox's Bazaar & Patuakhali, and the coast of the Bay of Bengal as a whole.

Environmental degradation like land accretion due to siltation under the sea/river is also considered as another trend of vulnerability of the poor coastal communities. In

the coast of Chittagong, Cox's Bazaar and Kuakata and also in the rivers of the remaining villages, the poor are facing the threat of the same problem. It was claimed that due to land accretion under water, the fish habitat moves further away from the existing fishing zone causing a trend of additional vulnerability for the poor stakeholders. This process also affects other sections of the poor due to hindrances to navigation.

The prevalence of **disease** among the poor people and their livestock is also a trend of vulnerability to their lives and livelihoods. Due to poor health and sanitary conditions, outbreaks of diseases like diarrhoea, dysentery, cholera, hepatitis, fever etc. are quite common among the poor people of the six villages. The incidences of diseases are high among the fisherfolk of Latifpur (Chittagong) and Lebukhali due to their overcrowding and contiguous living cum ill sanitation.

Seasonality

The livelihoods of the poor stakeholders of coastal Bangladesh are at a very high exposure to seasonal fluctuations. The fishers as well as the peasants, rickshaw pullers, petty traders etc. of the coastal villages are quite vulnerable to seasonal fluctuations, as the the coastal life is characterised by a high degree of seasonality and uncertainty. In Latifpur, and along the Chittagong coast, the major season of fishing is mid-July to mid-November (i.e. only 4 months) and the catch is relatively thin at the beginning and towards the end of this period. Along the Patuakhali coast, the peak season starts during late March and continues up to early September (i.e. a six-month season).

In this season the fishers catch mainly *hilsha* in the Bay and in its estuaries mainly using gill nets and engine or country boats (in Kuakata Panjupara). In every month of this peak season, there is again a peak week (called *Jo* by the fishers) of catch followed by a lean week of catch (called *dala*). That is, peak fishing only takes place during half of the major season.

In Chittagong, fishermen catch mainly *Bombay duck* and a few other species of estuarine fishes during the following 5 months (mid-November to mid-April) with estuarine set-bag net (ESBN) and small engine-boats in the Shandwip Channel (i.e. an offshoot of the Bay of Bengal). The ESBN-season is considered as part of the lean season. There is also a "peak week followed by a lean week" syndrome in this lean season. As a consequence, their catch is further marginalized by 50% even in this lean season. They virtually cannot fish anything in the sea during the remaining 3 months (i.e. mid-April to mid-July) partly due to non-availability of fish at that time as a result of high salinity in the coastal waters (in this period fish move towards the deep sea) and partly for taking prep*arat*ion (net mending or weaving, boat repairing, finance mobilisation) for the ensuing major season (for *hilsha*). Moreover, the catch per unit effort is declining day by day and since the mid 1990s they are getting a scanty amount of fish, and consequently a reduced income, even in the peak season. On the other hand, with a peak season of 8 months the fishers of Patuakhali can fish in the Bay more or less throughout the year with the same syndrome of peak and lean week.

In addition to the fishing season, seasonality also forms part of many other aspects of villagers' livelihoods, including demand for wage labour, access to credit, and occurrence of diseases. The seasonal calendar in Table 10 demonstrates the seasonality in the life of the inhabitants of a coastal village in Bangladesh (e.g. Hatkholapara in Cox's Bazaar District). For example, it demonstrates how wage labourers face financial crises between May to August, which is before the start of the main fishing season. Seasonal calendars in other villages indicate a concentration of disease during February to April (e.g. Latifpur, Lebukhali), or food insecurity between February and April, and in June / July (e.g. Kuakata).

The full seasonal calendars for all the villages are available in the Appendix.

Table 10 : Seasonality in the Fishing Community of Hatkholapara

Months	Baishakh Apr-May	Jaistha May-Jun	Ashar Jun-July	Srabon July-Aug	Bhadra Aug-Sept.	Ashin Sept-Oct.	Kartik Oct.-Nov	Agrahaian Nov-Dec	Poush Dec-Jan	Magh Jan-Feb	Falgun Feb-March	Chaitra March-April
Gill Net Fishing *Hilsha*	· · ·	· ·			· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · ·	· · · · · ·	· · · · ·	· · · ·	· · · ·
SBN Fishing chiri, phaisha, popa, bombay duck, kamila, pompret, cat fish, shrimps, other small species	· · · · · ·	· · · ·	· · · ·	· · · ·	· · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · ·	· · · · · · · · · ·	· · · · · · · · · ·	· · · · · · · ·
Long Line Fishing Red popa, Mud, Kala, Popa,Keri popa, Sundari,Nakra,Aus	· · · · ·	· · · ·	· ·	· · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · ·	· · · · · · · ·	· · · · · ·	· · · · · ·
Current Net Fishing Jhatka,Phaisha, Pata Bombay duck,Tailla, Alua,Batasha	· · · · · · · ·	· · · · · · · ·	· · · ·	· · · · ·	· · ·	· ·	· ·	· · · · · · · · · · · ·	· · · · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·
Phailla Net Fishing Rupchanda, Kalachanda, Big *hilsha*, Tailla									· · · · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · ·	
Mashari Net Fishing (Shrimp fry)	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · ·	· · · · · · · ·	· · · ·	· · · ·				
Paddy Cultivation	· · · · · · · · · · · ·	· · · · · ·	· · · ·	· · · · · · · · · · · ·			· · · ·	· · · · · · · · · · · ·		· · · · · · · · · · · ·		
Net Making (women)	· · · ·	· · · · · ·	· · · · · ·	· · · · · · · · · · · ·	· · · · · ·	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·	· · · ·
Wage labour (Fishing)	· · · · · · · · · · · ·	· · · ·	· · · ·	· · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·
Wage labour (paddy fields)	· · · · · · · · · · · ·			· · · · · · · · · · · ·	· · · ·	· · · ·	· ·	· · · · · ·	· · · ·	· · · · · · · · · · · ·	· · ·	
Income (boat owner and crew)	· · · · · ·	· · · ·	· · · ·	· · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · ·	· · · · · ·	· · · · · ·
Marriage	· · · · · · · · · · · ·	· · · · · · · · · · · ·				· · · ·		· · · ·	· · · ·			· · · · · · · · · · · ·
Need for cash &credit	· · · · · · · ·		· · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · ·		· · · · · · · ·					
Financial crisis (wage labourers)	· · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·	· · · · · · · · · · · ·						· · · · · ·		

Livelihoods Outcomes: Wealth and Poverty in Fishing Communities

Results of Wealth Rankings

Wealth ranking exercises have been carried out in all of the six fishing communities as part of the PRAs. Depending on the villages, three to five wealth categories have been identified.

Ownership of assets such as land, fishing boats and nets, house (and its condition), financial resources, and animals have been identified by the villagers as key criteria for wealth. In addition, access to education and health services, as well as social influence, and types of job or business were mentioned.

Table 11: Summary of Wealth Ranking Exercises

	Latifpur	Hatkhola-para	Kuakata Panjupara	Lebukhali	Debraj	Kulla
Wealth categories according to villagers, and number of households (HH) per category	Big (*bara)* / Rich: 12 Middle *(Majhari):* 40 Small *(choto)* / poor: 49 Total HH: 101	Rich: 3 Moderatly rich: 17 Middle class: 19 Moderate poor: 62 Poor: 9 Total HH: 110	Rich *(Dhani*): 8 Middle class (Majari): 50 Moderate poor (*Motamuti Sachaal*): 92 Poor: 44 Total HH: 194	Rich *(Sachaal*): 23 Middle class (Samannya garib): 7 Middle poor *(Modhya garib):* 11 Poor: 11 Very Poor: 22 Total HH: 74	Rich *(Mohajan*): 6 Middle class (Madhyam gerostha): 13 Well off *(Sachaal):* 41 Poor: 49 Very poor: 61 Total HH: 170	Rich *(Sachaal):* 13 Middle class *(Majari):* 17 Poor 55 Total HH: 85
Proportion of Moderate Poor to Very Poor	49%	65%	70%	59%	65%	65%

A **rich household** would own several acres of land (e.g. up to about 20 acres in the case of Koakata, 12 acres in Hatkholapara, 3 acres in Lebukhali, 6 acres in Debraj, 3 acres in Kulla)[7]. The exception is Latifpur on the Chittagong Coast where even richer households

[7] One *bigha* equals 10 *kata* or 33 decimals, 100 decimals equals one acre.

would not own more than 0.1 acres). On the other hand richer households in Latifpur would own at least two fishing boats and more than 10 nets.

Equally, in Hatkholapara the well-off villagers own at least three boats, a brick-built house in Cox's Bazaar, a colour television set, have good education for their children and can afford medical treatment in Bangladesh or abroad. For comparison, the well-off in a riverine village like Debraj would own at least four heads of cattle for cultivation, would own a large shrimp pond (i.e. 25 bigha), and would be able to send their children to college or University. In places like Kulla and Lebukhali, the rich households also own a boat or may own a shrimp *gher*, and be able to educate their children up to secondary school.

It is noticeable that the richest households have a diversity of income sources such as agriculture, fishing, and other businesses like trading or money-lending.

The **middle-income households** also tend to have a diversified livelihood, however on a smaller scale. They would also own some agricultural land[8], albeit smaller in size, own a boat and a few nets, would have a small amount of capital, and would be able to send their children to primary school or up to class eight. In addition, they may be able to afford medical treatment in the district capital.

The poor and very poor own very little or no land except for their homestead. Their agricultural production does not last very long to feed the family. Also, in many cases the very (i.e. hardcore) poor live on Government *khas* land, which is often threatened by erosion. Their main sources of income are fishing using inexpensive gear (e.g. shrimp fry collection), or labour on boats or in the field. They may also engage in businesses, which are frowned upon by the other villagers (e.g. fish hawking by poor women) or in more extreme cases they have to resort to begging. They are often not well dressed, live in small houses or huts, and are generally struggling to meet household expenses (e.g. food, medical treatment, etc). In particular, the hardcore poor face periods when they have little to eat. Although in theory their children have access to Government primary schools, in reality many youngsters have to work in the fishing sector or as labourers to contribute to the family income.

According to the villagers' own judgement, the **proportion of the poor (i.e. Moderate Poor to Very Poor) within the fishing communities**, is of the order of 50 – 70% in the communities visited. It has been observed that the number of households belonging to the hardcore poor is relatively less in the villages of Hatkholapara and Kuakata Panjupara. This may be related to the fact that tourist spots are developing in their vicinity (i.e. Cox's Bazaar and Kuakata Beach, respectively), thereby creating alternative income sources in these locations. In addition, the availability of shrimp seeds and other less valued species in the Bay of Bengal provide the poor with comparatively better livelihood opportunities than in other places. At the same time, it ought to be mentioned that there is often little difference in the living standards between the so-called middle classes in the villages and the poor.

[8] Once again, Latifpur represents an exception in that the middle-income group does not own land.

Tables 12 and 13 indicate the detailed results of the wealth ranking exercises carried out with the inhabitants of the two villages of Lebukhali and Kuakata.

Table 12: Results of Wealth Ranking Exercise in Lebukhali

Rich (Sachaal)	Middle class(Samannya garib)	Middle poor (Modhya garib)
# They have land up to 266 Decimals # Have capital # They have net and boat # Can go to Barishal and can pay up to Taka 200 as fee # Can invest money with Interest # Work as *dadandar*, *aratdar* & Paikar # they can live the Whole year from their own production and can store for fhe future # Children can go to school up to SSC # Can wear good cloths No of Households: 23	# They have land up to 40 Kora # Some of them work as day labour # Have small capital # They have net and boat and catch fish six months # Most of them work on others boat # they can live only nine months from their own Production # Children can go to school up to class eight # Can go to Dumki for treatment No of Households: 7	# They have land up to 30 Kata # Some of them work as day labourer # Don't have capital # Some of them have net and boat # Most of them work on others boat # they can live only six months from their own Production # Can go to school up to class five # Can go to Lebukhali health complex No of Households: 11

Poor	Very Poor
# Own very little land for cultivation and have own House # They have land up to 20 Kora # Few of them have net and Boat # Most of them work on Others boat # they can live only three months from their own Production # Can go to school up to class five # Can go to Lebukhali Health complex No of Households: 11	# No land, they stay at khash land # Work as labour in others boat and land #Children can go to primary school without tuition fees # Can go to Lebukhali health centre (Govt.) but cannot purchase medicine # Sometimes have to starve # Face problems for cloth purchase No of Households: 22

Table 13: Results of Wealth Ranking Exercise in Kuakata Panjupara

Rich (Dhani)	Middle class(Majari)
# They own at least 1862 decimal land # At least 500-600 mond Paddy produced # Secured Livelihood # Savings at bank at least taka Tk7-8 *lakh* # Electricity and TV at home # House at Alipur Bazar # Social influence # Children can go to college and university # Can go to Dhaka, Chittagong And even overseas for treatment # Can help mosque madrasa etc # Have *arat* and invest Money as *dadan* # Wear expensive dresses # Have expensive furniture No of Households:8	# They own at least 532 decimal land # At least 200 mond paddy produced # Secured Livelihood # Savings at bank at least taka 50-60 thousand # Most of them have color TV at Home # Own House at Kuakata Bazar # Social influence # Children can go to Kolapara College # Can go to Dhaka for treatment # Can give small amount to mosque / madrasa etc .# Some of them are service holder # Some of them have grocery Shop No of Households: 50

Moderate poor (Motamuti Sachaal)	Poor
# At least 5 Kora- 4 Bigha land # Can live 2-3 months by own rice # Most of them have Dingi boat and 2 nets # Children can go to school up to class five # Can go to Mohipur to Upazila health complex for treatment # Food is secured the whole year by their earnings # Some of them have Pan Shop .# Dress is not very good # 90% are fishermen No of Household: 92	# Live on (Gvt) kash land and don't have own land # Work as labourers on fields and Boats # 10% people of this category have net and dingi by *dadan* # Some times they have to fast (i.e. nothing to eat) # Some women catch Pona # Can not go to doctor for treatment # Children can go to Moktob # Men wear lungi costing Tk80 # Women wear Shari costing Tk 100 # Don't own more than 2 saris and one shirt and 2 lungi for women. No of Household: 44

Levels of Household Income

As could be expected from the wealth ranking exercises, there is a wide variation in income levels within the communities. The poorer segments of the village population often rely on employment as wage labourers in fishing boats or agricultural production.

It was found that the wage rates are quite location specific. For example, in Kulla, which is a more remote village in Satkhira District, daily wage rates tend to be of the order of Tk40/day (without food) for female agricultural labourers, and Tk50/day (without food) for male labourers. However, it ought to be mentioned that villagers reported that work is not available to same extent every day.

In places like Lebukhali and Kuakata, which are better connected to the main road system, the wage rates are higher. For example, in Lebukhali, agricultural wage labourers are paid Tk100/day plus 3 meals a day during the peak season, and Tk60/day plus three meals a day during the lean season.

The wage labour market of Kuakata is considered to be more competitive by the villagers, due to the availability of alternative income occupations as a result if NGO interventions. In addition, the village is becoming a tourist attraction and has a thriving fish processing site. In August 2002, the wage rate in Kuakata were about Tk60-70 per day with food, or Tk50 per day plus three meals plus pan (betel-leaf) and bidi (a local variety of cigarette). Compared to this it was reported that a shrimp fry collector on the nearby beach could earn about Tk50 – 100 per day.

The poor are often also paid in kind. For example, an elderly lady in Kulla village would get 20kg of paddy per month for doing household work such as husking and winnowing paddy, and working as a maid;

On the other hand, owners of fishing boats can earn substantial net incomes during a fishing season. This can range from about Tk50,000 to over Tk100,000 for the owner a smaller sized engine boat. Fishermen owning small country boats have much lower income. For example, it was reported that two fishermen (using one boat) could earn approximately Tk4,000 – 5000 per month after deduction of all costs by fishing on the river.

Owners of dried fish processing enterprises reported a net income of Tk100,000 to Tk200,000 per six-month drying season. The labourers in the fish drying industry earn an estimated Tk15,000 – Tk20,000 per season (i.e. about Tk3,000 per month).

Traditionally, the income of labourers on fishing boats is determined through a sharing agreement. In general, after sale of the catch the boat owner gets about 50% and the rest is shared among the crew members in accordance to their skills.

In addition to finfish species, shrimp fry catching represents an important economic activity in coastal communities, in that over fifty percent of all households in the villages surveyed by the Meghna Estuary Study (MES, 1998) are engaged in this occupation and earn an estimated 25 – 30% of their annual income (i.e. about Tk7,000, figures refer to second half of the 1990s).

The Livelihoods of the Poor, from a Women's Perspective

According to poor women who participated in Participatory Poverty Assessment exercises, the **visible signs of poverty** include the following:

- The houses of the poor are very small and in a poor condition (i.e. walls and roof), which is likely to result in bad health. Many of the poor fisherfolk live in simple semi-permanent bamboo and grass houses occupying no land beyond that on which the house is built (Rogers and Blowfield, 1993);
- Due to the expenses involved, the poor only own very few clothes and what they wear is often old or torn;
- They can only manage one meal a day, based on a limited diet (e.g. *dal*, fish and rice water);
- They lack financial resources, including savings and only limited access to informal credit. In addition, there are claims that the NGOs credits are less available for the "hardcore" poor;
- Do to their low social status, they get harassed by influential people. This is also a negative factor when they are involved in litigations;
- Although they may be forced to make a living from different income generating activities, they do not have access to the more lucrative sources of income such as trade or other self employed businesses;
- The poor only own very few properties. They do not own land;
- The poor lack education or cannot manage to send their children to school;
- To earn a livelihood, poor women normally make mats, rear cattle for livestock owners, sew or weave nets, husk paddy, work as maids, or beg.

According to the women, the following are the **causes of poverty**:

- As a result of the *dadan* chain, they cannot free themselves and they are constantly indebted. The *dadandars* try to keep the fishermen indebted. If a fisherman has a good catch, they will just take part of the catch without payment;
- Because they have outstanding loans, they cannot save any money;
- Robbers steal their nets and catches and sometimes even kill crew members;
- In the case of Hindus, they have no access to services, as they belong to a low caste. Even if they are educated, they don't have access as they are not being taken seriously
- Natural disasters such as cyclones and floods, causing destruction of livelihoods assets;
- Accidents or deaths of husbands or sons when they are fishing;
- Serious illness, and old age, preventing people from work;

- Many children. In the case of many boys the land will be split. In the case of girls, the family has to pay substantial amounts of money for dowry;
- The poor lack skills and education to enter any other occupations;
- The men do not allow the women to go outside and work because of social insecurity (violence and rape by Muslim men indicated in Hindu villages). The men only want their wives to invest in their own business (fishing);
- Declining fish catches resulting in low income (reasons for declining fish stocks are provided in the section natural assets);
- In the case of the Chittagong coast, gas and oil companies who come and tell the fisherfolk to clear the shore, as a result of which the villagers cannot go fishing;

Box 1: Case study of a poor woman-led household in Kulla

Namita Roy, whose husband left her 10 years ago, had to look after five daughters and one son. She was in a very difficult situation then. She started working in other people's homes, husking paddy, preparing fuel from cowdung, and weeding in the fields. In return, she used rice husks and rice particles to maintain her family. Sometimes the landladies provided her with a few vegetables. Most of the times she had to hunt for the spare fish catches when the boats landed at the landing centre. With that she could maintain her family.

Her working day began at 7am to 1pm and from 3pm to 5pm. She couldn't manage to educate her first three daughters. Only when the situation turned a bit better she started educating her fourth (up to class v) and fifth daughter(class vi) and the son (v). She managed to arrange the marriage of her first three daughters. She gave her fourth daughter to her sister to raise. And the fifth one is now with her to work as daily labour. Her son is 15 years old.

She managed to buy a *behindi* net and a small boat by taking out loans from several sources (i.e. from Grameen Bank Tk8,000, her relatives Tk 4,200) and selling four goats and one cow). Now the condition of her heath has turned worse. She suffers from stomach and waist pain. She can serve one half of a day. For the first half of the day she can get Tk25 , and for the second half-Tk15. Her son gets paid Tk30-40 daily.

She can remember now the times when she had to survive having arum leaves as food. At the beginning, when she was in a very difficult situation, the well-off villagers hesitated to talk to her since she was so helpless. Now she has reached at least a ground to "drag" her family. She never lost heart no matter what happened and who neglected her. She used to rush if there was an opportunity to work. Nowadays, every once in a while she feels tired to take on so many tasks. She can't work any more as she used to in earlier days

Suggestions on **ways to move out of poverty**:

- Creation of new job opportunities. However, women do not necessarily want to leave their own business. In some cases they want alternative job opportunities for a few of their family members
- Access to money to invest in small businesses such as dairy farming, aquaculture, poultry, small industry through employment creation.
- Government support to have free education services for up to Secondary School level. Also skill training is required. However, it was also mentioned that skills alone are not sufficient if there is no capital to start a business;
- Some individuals manage to find their way out of poverty. For example, one woman in Latifpur managed to improve her income and moved out of poverty. She works very hard, i.e. she sells fish in the market until 10pm in the evening. She also sends her children as agricultural labourers to other people's farms (e.g. for weeding). Overall, she managed to build up some savings.

Constraints to move out of poverty, which were mentioned by women[9]:

- Inferiority complex of the community (indicated in Hindu communities);
- Women are always engaged in domestic chores;
- Lack of skills;
- Lack of financial assets;
- Lack of unity in the community;
- Lack of social security for them as a minority group.

As far as the mobility of women is concerned, it ought to be mentioned that due to the prevalence of male chauvinism and religious cum social conservatism, in particular the Muslim women are not allowed to work outside their homestead premises. Moreover, mostly in the villages, the Muslim women are not allowed to appear before adult male persons other than their husbands, sons, brothers, etc. They have to wear veils (borka) covering them from head to feet. As a consequence, obviously, the women face severe difficulties to move around in search of work / IGAs.

To some extent, nowadays, there appears to be a sort of exception for the hardcore poor women, who are forced to move around for their bare living, given that there are very few alternatives left for them to live on.

Who are **the most vulnerable**?

- Old people without children. Due to the absence of social security services, they become very vulnerable once they are too old to work;
- Widows/divorced women, who have to stay again at their father's residence after marriage. Social taboos restrict their movements and access to income sources.
- People who have either no children, or too many, in particular daughters (i.e. due to dowry requirements);
- Those who are ill, and, as a result of their condition, cannot work;

[9] To some extent, this is a repetition of the causes of poverty. In that respect it should be viewed as a summary of the main points.

- Families without an earning household member;
- Those who have to work at old age;
- Those who do not own a house to live in.

Livelihood Constraints Expressed by Villagers

Table 14 provides a summary the main livelihoods constraints encountered by the villagers in the six study locations. The constraints have been collated per village from different exercises with different groups of stakeholders and individuals. As a result, they are not necessarily in a prioritised order. Nevertheless, the issues of lack of financial resources (i.e. easy access to credit on favourable terms), declining fish supplies and piracy were the three most commonly stated problems. Other, more marketing related, points include, the obligation to sell through *dadandars*, poor infrastructure at landing centres and in markets, lack of transport, inadequate supply of ice, lack of market information, and lack of alternative income generation activities.

Unsurprisingly, marketing appears to be more of a problem in villages located in remote areas lacking good road access (e.g. Kulla, Debraj). This reflects on issues such as availability of price information and marketing facilities. Lebukhali, which is also a riverine village, however situated about two kms from the main Patuakhali – Barisal road, does not appear to face the same problems. Here, the fishermen can sell directly at the road side market. The villages with easy access to urban centres by road or boat (e.g. Latifpur, Hatkholapara, and Kuakata Panjupara) face the least problems with marketing in that growing urban demand ensures there is a constant demand for fish.

As far as access to credit is concerned, it appears that if fishermen are “exploited” due to loan arrangements with traders, this reflects inefficiencies of the credit system rather than in the marketing system. A more detailed analysis of credit and the role of *dadan* is provided in the section below on credit access for fisherfolk and traders.

Table 14: Livelihoods Constraints Expressed by Fishing Communities

Latifpur	Hatkhola-para	Kuakata Panjupara	Lebukhali	Debraj	Kulla
• Decline in fish supply • Piracy on the sea • Trawlers damage / destroy nets • Boats are in poor condition • Have to sell fish to *dadandars* • People cannot go to the market due to lack of own stalls • Women can only sell in near vicinity or near road side • Lack of capital, and lack of access to easy credit • Lack of connection between main road and landing centre • Lack of ice plants or cold storage facilities close to landing site	• Lack of capital • Absence of training opportunities • Poor children cannot go to school or attend training • Expenditure habits of fishers during main fishing season (little money is saved) • High interest rate of informal loans (10-20%) • Lack of toilets or pit latrines • Too little land available for housing, hence overcrowding • Lack of jobs for women • High dowry expenses: Tk25,000 – 50,000 to be paid to the man's family	• Lack of capital • Sea-bank erosion • Piracy in the sea • No lighthouse for signalling system • No nearby hospital or health centre • Government services are nor available without bribe Local traders' comments: • Lack of capital • Inadequate infrastructure • Scarcity and high price of ice, this impacts on quality of fish • *Hilsha* catch has reduced to a extend • Increased cost of storage (for ice) during hartal, transport strike, political turmoil	• Capital paucity • River bank erosion due to river Paira • Local health services are not good • Cyclones and floods • Lack of electricity • No local market for fishing gear • Local fish market is small • Insufficient number of tube-wells in the hamlet • Schools are ok but transport can be a problem during monsoon season • Poor housing; this is a major problem during the monsoon season	• Piracy • Forest guards' tyranny • Bad road communication • Electricity load shedding leads to high cost of ice • Declining fish catches • Difficulties for families with single earners • Lack of youth employment • Expenses are high and income is low	• Lack of capital • Low fish catches • Lack of market information • Fishermen don't get the actual price • Lack of roads and transport • Low price for minority fishermen • Lack of ice • Distance to bank • Local fish market inadequate • "Santrash" (Terror) • Snatching/ piracy in the river • ESBN nets damaged by waves or tree branches • Accidents during net setting • Cyclones and floods • New entrants (mustans) are trying to encroach upon villagers' fishing grounds