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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

Ulrich Kleih, Khursid Alam, Ranajit Dastidar, Utpal Dutta
Nicoliene Oudwater, and Ansen Ward

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MARKETING OF MARINE FISH

This chapter mainly presents the findings of the Participatory Rural Appraisals and Rapid Market Assessments of the marine fish distribution system. This 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.

Market Operators – Their Roles and Constraints (fresh fish)

Fishermen

This section only highlights some of the key characteristics of fishermen as part of the marketing chain. More details on fishing communities can be found in the previous section presenting the results of the Participatory Rural Appraisals on the livelihoods in coastal communities.

Several categories of fishermen and fish catching enterprises have been encountered during the course of the survey, namely:

- Fishermen who work in other people's boats,
- Owners of small motorised and non-motorised boats,
- Owners of wooden trawlers (i.e. Danish boats),
- Industrial trawler companies.

Fishermen who work in other people's boats tend to have an arrangement with the boat owner regarding the share of the catch. Usually, it is the owner of the boat (i.e. *Bahaddar*) who obtains the biggest portion of the catch (i.e. about 50 - 60%), whilst the crew obtains the remainder. Nevertheless, there are also cases where crew members belong to the wider family of the boat owner and are paid a salary (Tk50 – 100 per day) plus meals for their work (e.g. Latifpur / Silempur). In this case, the boat owner (*bahaddar*), who may not necessarily join the fishing crew in the sea, will sell the entire catch himself and keep the sales proceedings**.**

Part of the income of commercial trawler workers tends to be based on a fixed salary, and part of it is based on a bonus depending on the amount of fish caught. The bonus is calculated using an agreed formula.

Fishermen in smaller boats tend to sell their catch at sea to collector boats or they sell it at the landing centres. Traditionally, they rely on informal sources of credit for their fishing operations. This can involve the purchase of boats and other gear such as nets, plus working capital for fuel, food for the crew etc.

The *dadandar* (i.e. fish trader cum money-lender) is the traditional source of credit for fishermen as regards their fishing operations. The amount of *dadan* involved in these operations tends to reflect the resources of fishing communities and gear used. On the

other hand the credit conditions can vary from location to location. Traditionally, a *dadan* taker (i.e. borrower) would be obliged to surrender his fish to the *dadandar* (i.e. money-lender cum *paiker*) at a price which is considerably below the market price (i.e. 20 – 40%). The outstanding principal would often be used to tie the borrower to the *dadandar* over a longer period of time, which may result in further indebtedness. However, these credit arrangements tend to vary, and new forms are beginning to emerge. For example, there are so-called "new" *dadandar*s in the Latifpur – Kumira area (Chittagong District), which charge 20% of market transactions. They are not fish traders, but money-lenders who may have acquired their capital in other types of business (e.g. poultry production). Also, fishermen who own larger boats may be able to deal directly with *aratdars*, thereby by-passing *paikers*. This benefits both boat-owners and *aratdars* as one level of intermediary can be cut out. More details on the interlink between marketing and credit are contained in the section on credit access for fishermen and small fish traders.

Constraints typically expressed by small-scale fishermen:

- Piracy, i.e. theft of boats, nets, and engines;
- Depletion of fish stocks and catches (only 2001 monsoon was better in some places);
- Lack of capital, which forces people to take out *dadan*; as a result of the latter they only get a reduced price for their catch after deduction of a price differential by the *dadandar*;
- In some remote areas, lack of market information, and transport;
- In the Chittagong area, army practices (which prevents them from fishing), and ship breaking yards, which can cause destruction of nets.

Paikers

Paikers are a form of intermediary trader who can have several functions. On the one hand, they can play the role of assemblers at the landing centres (primary markets), on the other hand, they can be wholesalers who trade the commodity between secondary and higher secondary markets (i.e. wholesale markets) of the country.

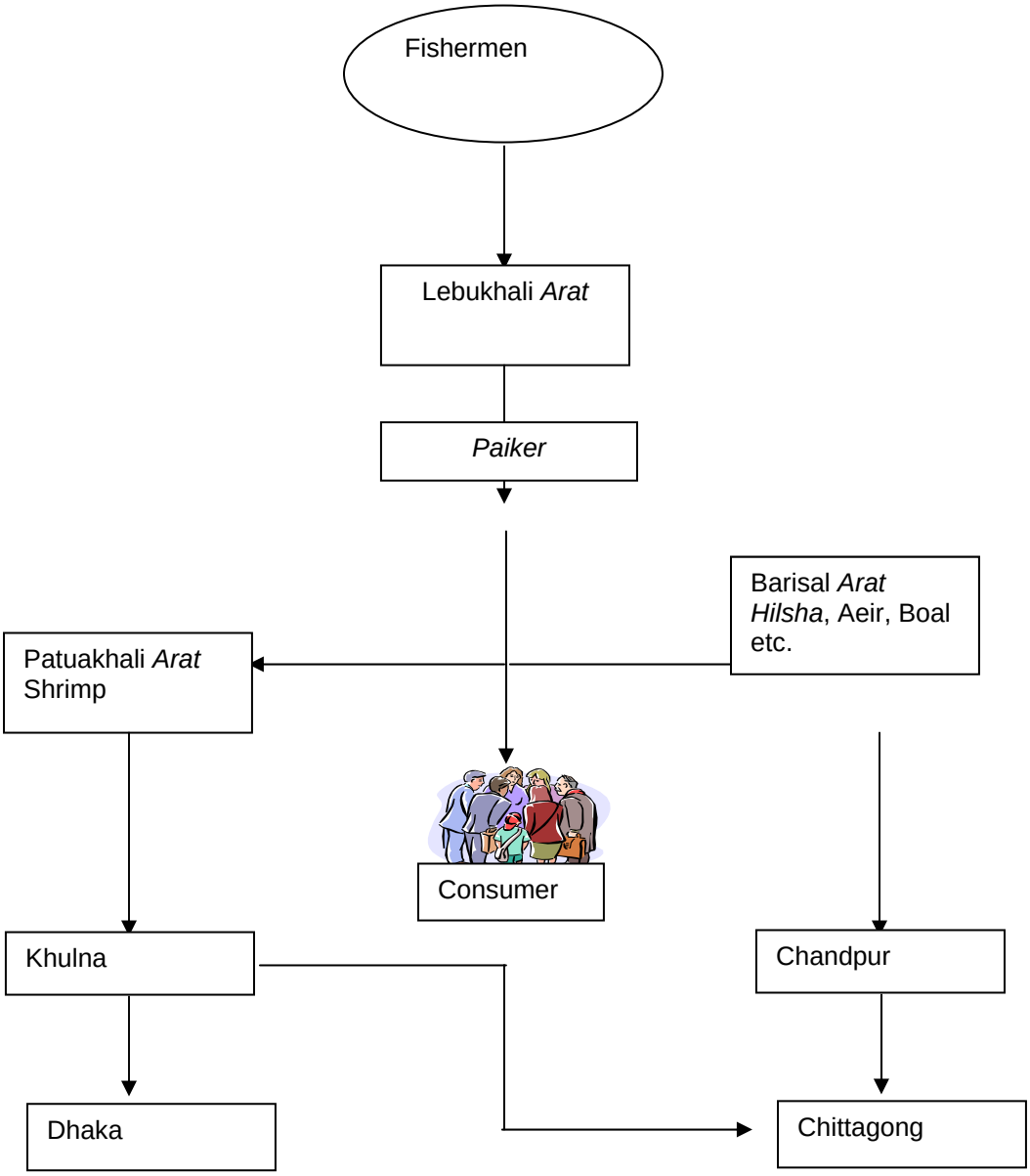
In general, *paikers* are tied to a limited number of *aratdars* who provide them with loans for their working capital. The total amount of working capital per *paiker* is in the range of Tk10,000 – Tk100,000 depending on the business acumen of the individual. If they have *dadan* from an *aratdar* then they have to sell/buy their fish through/from him, using him as a commission agent who usually gets 3-6% commission for his services and costs involved. Part of the commission (i.e. up to 3%) may represent an informal form of interest charged by the *aratdar*.

No attempts have been made here to provide a detailed account of regional variations of middlemen categories such as *dalal* (local broker at landing site), *faria* (mobile assembler) or *bepari*es (i.e. distributors at secondary wholesale markets). For more details, the following literature is recommended: Dastidar (2001), Hussain et al (1995), and Coulter and Disney (1987).

Typical constraints expressed by *paikers* include the following:

- Lack of capital, and lack of access to "easy" credit,
- Decline in fish supply,
- Piracy. This affects them if the fishermen who they provided with *dadan* lose their boat and gear, and it also affects them if they are boat owners themselves,
- Lack of security at landing centres, and insufficient legal protection,
- Lack of infrastructure (e.g. lack of connection between landing centre and road),
- In more remote locations, lack of ice plants and cold storage close to the landing site.

Figure 4: Commodity Chain of Fresh Fish, Lebukhali (Patukhali District)



Source: Mapping of Commodity Chain by Fish Traders in Lebukhali, August 2001

Aratdars

Given their central position in the wholesale markets, ***aratdars*** play a leading role in the fish marketing system of Bangladesh. They can play several brokerage functions at the same time. This includes commission agent whereby they obtain a percentage fee of the auctioning price (i.e. normally 3 – 6 %, in the case of fresh fish marketing), or wholesaler whereby they become the buyer and seller of the commodity. In some instances, part of the commission fee is also seen as an interest on *dadan* which they advanced to intermediary traders (i.e. *paikers*).

Table 15: Number of Fresh Fish *Aratdars* in Selected Cities

City	Number of *Aratdars*
Chittagong (out of which Fisheries Ghat)	120 (72)
Dhaka (out of which Kawran Bazar)	700 (about 170)
Patuakhali (out of which Mach Ghat)	30 (16)

Although the total number of *aratdars* may be used as an indicator of competition in the fisheries wholesale markets, it ought to be remembered that there are important differences as far as their endowment with working capital is concerned. One *lakh* Taka (i.e. Tk100,000) is the very minimum amount of working capital required to become a small *aratdar*. Big *aratdars* who are based in major wholesale markets are estimated to have a working capital of up to Tk10 *crore* (Tk 100 million), reflecting their substantial market power. For example, there are only about 6 out of 72 *aratdars* that dominate the Fisheries Ghat in Chittagong.

According to *aratdars*, major changes in the fish marketing system, include the following:

- Improved road transport;
- Better availability of ice;
- Better communication through the use of mobile phones;
- Lending skills of *aratdars* have improved (i.e. they now study the feasibility of a project if someone requests a loan).

In comparison, the following main problems were stated by *aratdars* in different locations:

- Pirates, who also attack bigger boats. According to them, this is getting worse due to "professional dacoits"; they are expecting the Coast Guard to establish security;
- Declining fish supplies, resulting in "lost business", especially between 1998 and 2000, (2001 was somewhat better);
- Lack of financial support through project loans at preferential interest rates;

- Lack of institutional support, such as better market infrastructure or advice;
- Road access to markets is often too narrow, markets lack shelter, etc.
- In some places, lack of ice factory and public cold storage.

High levels of competition, and collusion can co-exist at the same time in fisheries wholesale markets. Competition is likely to be highest when there is a shortage of supply. On the other hand, price fixing may take place when there is a glut of fish arriving in a market. Also, trader societies tend to be closely knit. Entry into business may be easy for newcomers in theory, but fraught with obstacles in reality. For example, "good relationships" are usually required to gain access to an *arat* that becomes empty. In other cases, *aratdars* have admitted that they would try to boycott the business of a newcomer by "poaching" his *paikers*.

At the same time, due to their endowment with assets (i.e. financial and otherwise), innovations in the marketing chain are most likely to be initiated by *aratdars*. This can be an initiative for up-grading a wholesale market (e.g. new cement flooring to improve sanitary conditions as could be observed in Chittagong Fisheries Ghat), or the exploration of new export markets.

Box 2: Case Study of Female *Aratdar* in Dhaka

As for the role of women at the wholesale level in the marketing chain, only one female *aratdar* was encountered during the course of the survey. Here personal circumstances (i.e. death of her husband who was a bus driver) forced her in the 1980s to seek employment. Gradually, she managed to enter the fish *aratdar* business using her husband's insurance pay-out as starting capital. She is based in Dhaka Kawran market, has about 60 – 70 suppliers, but wouldn't be able to tell the number of her buyers. She only deals in freshwater fish.

Retailers

Two main categories of fish retailers have been encountered during the course of the study, namely, market based retailers, and itinerant fish vendors. The number of fish retailers can be substantial in the major urban areas. For example, 5000 – 7000 fish retailers are estimated to be plying their trade in Dhaka at the beginning of the 21st century (Source: *Aratdars* in Dhaka). Compared to this, CODEC (1994) estimated the number of fish vendors in Chittagong at about 2000.

The variation in size of working capital amongst retailers who are based in urban fish markets can be considerable (i.e. Tk2,000 – 30,000). The daily turnover of a stationary retailer can be of the order of Tk1,000 – 15,000, yielding a net income of Tk200 – 3,000 per day. Their costs include expenses such as rent of market place, fees, ice, electricity, transport, labour, etc. Their complaints include:

- Lack of infrastructure, i.e. drainage, roofing, handling facilities;
- Poor accessibility of market, i.e. higher income consumers cannot access the market by car due to road congestion;

- Lack of working capital; e.g. they can obtain fish on credit if it is purchased from a local *aratdar*, but they have to pay cash if they want to procure fish from another market.

Itinerant retailers (i.e. vendors, hawkers) are likely to earn a daily income of the order of 50 – 200 Taka, which is based on a turnover of up to Tk1,000. Their costs include mostly transport, ice, and packaging.

According to CODEC (1994), constraints expressed by fish vendors, include the following:

- Lack of capital,
- Spoilage of fish / reduction of value,
- Lack of van,
- Hijacking/civic disorder/disturbance by police and hooligans,
- Exploitation by middlemen, incl. *aratdars*,
- Lack of permanent sales spot.

Table 16: Case Studies of Costs and Margins of Fresh Fish Retailing in Urban Centres

	Vendor in Dhaka, Female	Vendor in Chittagong, male	Vendor in Chittagong, male
Purchase price	Tk 800 mixed lot of fish	Tk875 17.5kg of tilapia @ Tk50/kg	Tk535 11.5kg of baila @ Tk46.5/kg
Marketing Costs	Rent: Tk30 Bags: Tk10 Ice: Tk10 Total: Tk50	Rickshaw: Tk60 Salt: Tk5 Ice:Tk10 Packaging: Tk1 Total:Tk76	Carrying:Tk40 Rent of stall: Tk30 Ice: Tk20 Total: 90
Sales	Tk950	Tk1085 17.5kg @ Tk62	Tk690 11.5kg @ Tk60
Income	Tk100	Tk134	Tk65
Marketing margin	19%	24%	29%

Source: CODEC / NRI, Trader Surveys

In particular, at retailer level, there is the "conflict" of marketing efficiency and equity. Due to their limited amounts of fish traded, which is the result of their small capital base, especially the small retailers and vendors require a higher proportion of their marketing margin as income. On the other hand, the small-scale retailer's relatively high share of the marketing margin will ultimately have to be borne by consumers who often also belong to lower income groups. At the same time it needs to be borne in mind that a large number of livelihoods depend on fish retailing.

Although women do not play a very prominent role in the marine fish distribution system, they are most likely to be encountered at the retailer level. Despite their relatively small numbers compared to their male colleagues (i.e. not more than 10% - 20% of the total number of retailers), fish retailing provides an important employment for women who are often in vulnerable situations. In particular, poor women can be found near fish markets where they trade in small quantities of fish or where they beg for small amounts of low-quality fish from other traders.

Also, women traders can be found in coastal Hindu communities (e.g. close to Chittagong) where they act as local vendors selling fish from door to door. In addition, they are involved in grading and sorting of fish.

Box 3: Case Study of Women Fish Vendors at Latifpur Landing Site

Often women become fish vendors due to poverty. They don't like the profession very much, because, according to traditional customs, *'you would not allow your woman to go out, walk around and sell fish'*.

A typical fish vendor would buy a 12kg basket of bombay duck for Tk500-600 and 250 pieces of mud crabs for Tk250. If the catches are high, they go further away to sell their fish (e.g. Pahartali market, which is in a suburb of Chittagong). In that case, they need to use ice and pay for transport costs.

They usually sell about 2-3 times a day, depending on the catches of the day and the number of times, the fisherman go out fishing. The women claim to make about Tk50-200 net profit per basket, but sometimes they loose. Profit margins are higher if they mix the bombay duck with shrimps (e.g. Tk100-150). They usually buy the fish directly from the fishers at the landing site, not from the *paikers*, and take it directly for sale to the village and/or local markets, either on cash or credit. The fishermen they buy from are often their sons or other relatives. Selling within the village from a basket is most profitable but carries the risk that it is sold on credit and they have to wait for their cash. Most of them have their regular customers in the village, who usually buy on credit and repay once a month the whole sum.

There are many vendors and the competition is quite though, especially now the supply of fish has gone down which makes the competition even tighter. As a result, their incomes are decreasing. Although the market price for fish is quite high, the profit is less due to high operation costs.

They can get a loan from a usurer against 20% interest a month. Most of the vendors have usurer loans of the order of Tk2,000-10,000 for working capital. For example, Ms Bimala borrowed Th1,500 against 20%, and lend it to a fishermen to ensure a good supply of fish. She then pays about Th30 less for a lot, compared to buying from a fisherman, who does not have a *dadan* with her. Most vendors have taken out loans to provide loans for fishermen, however those with husbands or sons fishing, do not have to do that. The women face strong competition from the *paikers* as they buy most of the fish

and only little is left for the *bepari*es (i.e. vendors) to buy. The women prefer to buy from the landing site because they know the fishermen (some are their relatives) and they don't have to buy on cash. They usually buy on credit and pay the fishermen after they have sold their lot. If they would go further away to other sites to buy fish, they would have to compete with other buyers and pay cash straightaway.

Constraints encountered by the vendors:

- The muslim *paikers* force them not to bid high. If they do, they get harassed. *Paikers* also take away the big and good quality fish.
- Sorting of fish sometimes takes quite some time and it takes longer for them to get to the market to start selling.
- They admit that they sometimes use colour/pigment to keep the fish good looking
- High interest on usurer loans and *dadan*s. They need access to cheap capital.
- Insecurity due to robbing, snatching and theft.

Bangladesh Fisheries Development Corporation (BFDC)

Amongst other things, the BFDC, which was established in 1964, includes the following functions: to establish units for preservation, processing, distribution, and marketing of fish and fish products (Hussain, 1995). This involved the building of landing centres and infrastructure related to fish processing and distribution in cities such as Barisal, Chittagong, Cox's Bazar, and Khulna. However, the acceptance of BFDC was mixed. For example, whereas the landing facilities in Khulna and Cox's Bazaar are used by fisherfolk and traders, the landing centre in Chittagong - Firinghee Bazaar Bridge Ghat was not well accepted by the traders. Reasons given included:

- The location was not convenient, i.e. there were problems with access for lorries,
- Traders were concerned about disruptions to their business (due to small terminal and insufficient number of *paikers*),
- Fish trading in Chittagong traditionally takes place at Fisheries Ghat,
- Traders had to pay extra fees / taxes out of their commission (i.e. 20% or 1 Taka of every 5 Takas commission).

Although there was some fish traded at the Chittagong BFDC terminal in 2001 this appeared to be less than 20% of the quantities traded at the Fisheries Ghat. Most of the trading and office space was not used. The traders encountered at the BFDC facilities appeared to be *aratdars* and *paikers* who lack financial strength compared to those operating in Fisheries Ghat. Some of the BFDC traders apparently were not successful in setting up a new business in Fisheries Ghat.

In view of this, it seems important to identify a more sustainable institutional setting for those BFDC facilities which are under-utilised. Relevant solutions should be worked out in collaboration with trader associations.

Ancillary Services

Although reliable statistics do not exist, it can be assumed that the marine fisheries distribution system provides direct and indirect employment for over one hundred thousand people.

In addition to the trader categories described above, this includes workers belonging to industries such as:

- Transport, including countless porters, rickshaw and lorry drivers, boat operators;
- Ice manufacturing and distribution, and cold storage;
- Packaging, including basket makers, etc;
- Money lending;
- Cleaning of markets.

Costs and margins

The main cost elements of traders have been indicated in the above sections. Table 17, which is the result of numerous trader interviews, provides an overview of *hilsha* traded between Chittagong and Dhaka in July 2001.

It indicates a fishermen's share in the consumer price which is 50%. The total marketing margin, which is also 50%, is sub-divided into:

Assembling:	17%
Wholesale marketing:	22%
Retail marketing:	21%

It ought to be mentioned that in this case the marketing margin is relatively high to the "long-distance" marketing between Chittagong and Dhaka involving several transport stages and trader categories. Fish consumed closer to the site of catching is likely to result in a higher fishermen's share. Compared to the above figures, Amed (1983, cited in Hussain 1995) has identified a fishermen's share of 60 – 63% and a middlemen's share of 37 – 40% for marine fish sold in Chittagong and Cox's Bazar.

Table 17: Marketing of *Hilsha* from a Landing Centre near Chittagong to Dhaka Markets, July 2001

Selling Prices and Marketing Costs	Tk/kg	%
Assembling		
Selling Price: Fisherman to *paiker* at landing centre	60.00	50%
Transport to assembly / wholesale market (by small boat or rickshaw)	1.50	
Ice	1.00	
Labour	2.50	
Packaging	0.25	
Commission (5% of sales; to *aratdar*)	4.00	
Net income for Chtg *paiker*	10.75	
Wholesale Marketing		
Selling Price: Chittagong *paiker* to Dhaka *aratdar*	80.00	67%
Transport from Chtg to Dhaka, by truck	1.50	
Ice	1.50	
Packaging and handling	1.30	
Miscellaneous	0.50	
Opportunity cost of capital (5% of wk capital)	4.24	
Net income for Dhaka *aratdar*	5.96	
Retailing		
Selling Price: Dhaka wholesaler to retailer	95.00	79%
Retail marketing costs	13.00	
Net income to Dhaka retailer	12.00	
Selling Price: Dhaka retailer to consumer	120.00	100%

Assumptions: - No *dadan* involved between fisherman and *paiker*; part of commission paid by *paiker* to *aratdar* represents interest on loan
- Transport is by truck;
- Prices are for small – to medium sized fish (300 – 600 grammes).

Figure to be inserted here

Summary of Fresh Fish Marketing Chains in Bangladesh
(Figure of workshop paper)

Dried Fish Marketing

Market operators – Their roles and constraints (dried fish)

As illustrated in Figure 4, the main supply areas of dried fish are Cox's Bazar District, and the coastal parts of Bagerhat, Noakhali, Khulna, Patuakhali, and Shatkhira Districts. In particular, fish drying takes place in remote parts which lack transport and supply of ice. Nevertheless, there are also locations which have an established reputation for supply of good quality dried fish and which continue processing despite improved road communication with other parts of the country (e.g. Kuakata). Usually, the fishermen sell the fresh fish to so-called processing parties, which then sell the dried fish to traders in Chittagong. The 24 *aratdars*, who are based in Asadgunj of Chittagong represent the financial backbone of the dried fish processing industry in Bangladesh. Imports appear to be on the increase due to declining local supply and increasing demand as a result of population growth.

Given that the dried fish marketing chain represents an entirely different system from the fresh marketing chain, it was deemed appropriate to deal with it sep*arat*ely. The following sections describe the activities of some of the key actors involved in dried fish processing.

Processors

October to March are the main months when fish processing takes place in Bangladesh. The main species which are used for drying are chhuri (Ribbon fish), loyitta (Bombay duck), fashia (anchovies), and chingri (shrimp). Other species, which are also dried and traded, but in smaller quantities include, poma, pomfret, chapla pata (sting ray), hunger (shark), datina bol, and suna bein.

Two categories of workforce can be distinguished within the processing industry; i.e. the owners of drying enterprises, who usually have a *dadan* from *Aratdars* in Chittagong, and the labourers. The latter also include female workers.

The seasonal income of an owner of a drying enterprise is of the order of Tk100,000 to 200,000. According to the processors (e.g. Kuakata), labourers get 50% of the profit after deduction of all costs. A labourer's seasonal income is of the order of Tk15,000 to 20,000. Women workers mostly belong to the hardcore poor and tend to be paid on a daily basis (i.e. Tk50 – 100/day).

Problems stated by processors include the following:

- Overall, fish supply is declining, and certain species are becoming quite rare;
- Lack of security, e.g. piracy of dried fish transported by boat, or fear of being robbed at night at the drying site close to the beach.
- Lack of capital.

Box 4: Case Study of Dried Fish Processors based in Kuakata

Background: Fish processing in this part of the country started about 40 years ago. Initially, there was a lot of fish in terms of quantity and species. Nowadays there are much fewer species available. Originally it was *aratdars* from Chittagong who came here and started fish processing in Kuakata. Drying racks were introduced around 1985; tourists apparently played a role in that they suggested to the processors that they could sell more if the quality was improved (e.g. no sand in the dried fish);

The fish drying site at Kuakata Beach is made up of 15 'owners' who possess so-called houses. In total there are about 100 people working at the drying site. All the workers are local, i.e. from the village or vicinity. Most of the 'owners' are also from here, although a few seem to be coming from other parts of the country (e.g. Cox's Bazaar). 30% of the workers get involved in fishing during the monsoon season when no drying takes place. In addition, a few owners (i.e. 5-7) also get involved with fishing during that part of the year. The main drying season lasts 5 – 6 months; i.e. early October to March.

A few of the workers are women, i.e. about 10-15. They mostly belong to the hardcore poor; e.g. widows or beggars. Their role consists mainly of sorting the fish, and hanging fish (i.e. chiefly bombay duck) on the drying racks.

Species which are dried more in this area are shark (hunger), and sting ray (chapla pata). Both are rarely consumed fresh. The latter are also exported and used for shoe-making. Other species dried in Koakota include: bombay duck, suna bein (i.e. Golden), datina bol.

Species which are less available nowadays for drying, include: churi (ribbon fish), pomfret, poma, fashia, etc.

According to the processors, there was a 50% **reduction of fish** over the last seven to eight years. Reasons for declining supplies, include: Industrial trawling, bagda fry collection, catching of juvenile fish with ESBN.

Also, **piracy** is common and affects fisheries. Killings have occurred. Due to piracy in the sea they now prefer transport the dried fish to Chittagong by truck. According to the fish processors, dried fish worth 15 *lakh* Taka was recently snatched from a boat near Kumira. They say piracy may happen three times a year.

Steps involved in fish processing:
Purchase of fish through auction on the beach or 'Owners' go with their small boats to trawlers to buy fish. All 15 'houses' have a cartel arrangement to keep the price within their limits; sometimes they also go individually in order to bargain; sometimes they all go together to a trawler (i.e. wooden motorised fishing boat), buy the fish and auction it amongst themselves; the highest bidder gets it and the margin is shared amongst themselves.

The next step consists of chopping the shark next to the sea; all the fish is washed if it is not clean already. Then it is brought to the drying places (racks, mats); shark fins and Bombay duck are salted;

For the first two days the fresh fish is kept outside; the following 4 – 5 days the half-dry fish is kept in-house during the night; the next 2 – 3 days complete drying takes place. As a result, the entire time between purchasing the fish and end of drying is about 8 days.

Most of the time fresh fish is used (ie. good quality); sometimes there is degraded fish used if a trawler stays out for 15 days. Lower quality fish is sold at a lower price;

Processing Costs: Processors buy per lot; on average, 2 – 4 mounds of fresh fish are processed per day per "house". The processing costs amount to Tk500 per mound (40kg) including costs of drying racks, labour and means of preservation. The processors strictly deny that chemicals are used. Only salt is used against insect infestations. According to them, chemicals are used by processors in other chars when the monsoon season starts.

Income: According to the owners of the "houses", they can earn Tk100,000 to Tk200,000 per processor per season. There is a sharing arrangement between owners and labourers; after all costs are deducted 50% of the net profit goes to the owners and the rest is shared amongst the workers. The latter can earn Tk15,000 – 20,000 per season; i.e. approximately Tk3,000 per person per month.

Credit: Almost all the drying houses in Koakota have *dadan* with Asad Gunj; i.e. on average Tk40,000 – 50,000. They have direct communications with *aratdars* (i.e. mostly by phone). Fish processors have to pay 2% commission to *aratdars* in Chittagong Asad Gunj. Money is transferred by bank; the processors cannot influence the price, they rely entirely on the *aratdars*; they didn't know the current price (i.e. the one of 'today') but have a good idea of what was paid a few days previously.

Characteristics of processors (owners of drying houses):
Most of them seem to be fairly young, i.e. between 25 – 30 years of age; they appear quite dynamic and switched on regarding business matters. Their working capital mostly corresponds to *dadan* they have received from Chittagong based *aratdars*. On average, they have about four years schooling; nobody has more than seven years school education. About 20% of them have no schooling at all. One processor who works with his brothers said the latter depend on him because they have no school education and he has been for four years to school which enables him to calculate.
When asked about minimum schooling required to run a business like theirs, they said primary education is the minimum requirement but seven years would be better;

Their requirements:
- Capital, i.e. more working capital so that they can increase their business;
- Better protection; they are far away from the village, as a result they are afraid of pirates (e.g. after dusk they don't buy fish for fear of piracy); They are forming an

organisation and want to get registered; they also asked if CODEC or other NGOs could provide them with arms for their protection;
- Technical assistance for fish processing is not required, according to them.

Traders

Chittagong Asadgunj wholesale market is the hub of the dried fish industry in Bangladesh. It consists of 24 *Aratdars* and about 200 wholesalers. It is estimated that 10,000 to 20,000 tonnes of dried fish move through Asadgunj wholesale market per annum. The *aratdars* are primarily commission agents (2% commission per transaction), whereas the second category buys the dried fish, stores it and sells it to the markets highlighted in Figure 4. There appears to be a traditional obligation whereby the wholesalers have to buy through *aratdars* (*dadan* providers).

Regarding capital endowment and market share, 5 – 6 *aratdars* and 10 – 15 wholesalers dominate Asadgunj dried fish market.

Constraints expressed by dried fish *aratdars* and wholesalers include the following:
- Declining fish production. According to them, there are no problems with marketing but with supply;
- *Hilsha* is not dried in sufficient quantities, due to demand for fresh fish;
- Returns on *dadan* are becoming lower as a result of declining turn-over;
- Lack of quality of dried fish. For example, exporters state that there is a lack of good quality dried fish. Also, some locations have a better reputation for good quality dried (e.g. Rangabali and Kuakata), whereas others seem to be lacking quality.

Costs and margins involved in processing and marketing of dried fish

Table 18 shows the costs and margin involved for processing Bombay Duck in Kuakata and selling it in Chittagong Asadgunj wholesale market. The processor's net income and marketing/processing margin appear to be reasonable. However, it ought to be mentioned that these calculations are based on average price figures. It was reported that the price for fresh Bombay Duck in Kuakata may be as low as Tk5 per kg during a glut (e.g. in October / November).

Table 18: Processing and Marketing of Dried Bombay Duck from Kuakata to Chittagong

Prices, Processing and Marketing Costs	Tk/kg	%
Selling price of fresh fish: fisherman to processor (on average, Tk5,000 per 400kg of fresh fish)	12.50	
Selling price of fresh fish, equivalent to dry fish (4 kg of fresh fish are required to obtain 1 kg of dried fish)	50.00	64%
Processing costs (Tk500 / 40kg of fresh fish) (according to processors this includes labour, fixed costs of drying racks, etc)	12.50	
Marketing Costs		
Transport to Chittagong per truck		
Truck fare	1.10	
Arrangement fee with transport company	0.10	
Labour (carrying)	0.25	
Loss (2.5%, mainly weight loss)	1.95	
Aratdar commission in Chittagong (2% of selling price)	1.56	
Total costs (purchase of raw material, processing losses, and marketing)	67.46	86%
Selling price in Chittagong: Processor to Wholesaler (on average, Tk75 – 80/kg of dried Bombay duck; processor is unlikely to travel to Chtg given the trust between him and the trader)	78.00	100%
Net income for Processor	10.54	14%

NB: - Percentage figures are in relation to buying price by wholesalers in Chittagong Asadgunj Market;
- The survey was conducted in January 2002.

Figure to be inserted here

Summary of Dried Fish Marketing Chains in Bangladesh
(Figure of workshop paper)

Processing, Handling and Distribution of Marine Fish

Marine fish are consumed fresh, dried or salted. High value species such as prawn and pomfret are also exported as are dried jewfish, shark fin and mud crab. There is a small frozen fish trade and a live fish trade (prawn fry). Small miscellaneous fish caught as trawler by-catch, if not discarded at sea, are landed in frozen form and either enter the fresh fish market or are dried to produce fish meal.

Fresh fish are usually sold whole, but some filleting and gutting takes place at the retail level. Unless the fish are specifically landed for drying or are landed from short fishing trips near retail markets, ice is normally used at some or all stages of distribution to aid preservation.

Use of Ice

Ice has been used in the fishery sector for over thirty years in Bangladesh. Block ice plants are established in Cox's Bazaar, Chittagong, Dhaka, Khulna, Barissal, Bagerhat, Patuakhali, Mohipur/Alipu, Dhaka and Noakhali and supply ice for use on-shore as well as at sea.

Ice is used on board trawlers and mechanised boats which fish for more than a day. Sixty to eighty cans (4.8 to 6.4 tonnes) of ice can be used on twelve-day trips to ice 100 to 150 maunds of hilsa (6 tonnes).

High value fish are iced and stored in insulated boxes at markets in landing centres. Some high value fish are also frozen and stored in domestic chest freezers.

Ice is applied during repacking at markets and during transportation by road and boat. Retailers in some markets ice fish before and during sale. Ice is sometimes used if fish have to be stored overnight for sale the following day.

Improvements in road communications have meant that ice is now more easily transported to remote rural areas.

Demand for ice increases during times of seasonal peak landings such as the hilsa season from May to September. Higher temperatures also mean more ice is required. Electricity supply problems at this time of year can lead to shortages in ice supply. Anecdotal evidence suggests that some traders may not be able to get sufficient ice during these periods and this affects fish quality. During periods when the quantity of fish landed is small ice plants either do not operate or operate on a part time basis.

Over the last ten years the number of plants in areas such as Patuakhali District has increased dramatically. In Alipur and Mohipur for example there are now 24 ice plants each capable of producing between 150 to 400 cans of ice within 48 hours. There were only 2 or 3 plants 10 years ago, with most new plants having been established in the last 3 years. At the time of the visit however only 4 plants were working due to low demand

for ice. A new electric power line installed in 1993 helped the establishment of these new plants.

Nevertheless, a representative of an ice plant association stated that “throughout Bangladesh ice plants are now a losing concern”. And that in some areas plants are closing due to a lack of fish and are being sold for scrap. Even so there were reports during the visit that investors were looking to build new plants in areas where there already appeared to be over-capacity.

Infrastructure and Markets

Facilities at landing sites and main wholesale markets vary in design and level of sophistication. Aside from shrimp processing plants, the most developed infrastructures are the Bangladesh Fisheries Development Corporation Market complexes which consist of a market area on the ground floor and trader offices on the first floor. Not all of these facilities are used to the fullest extent.

Key features of some private sector fresh fish wholesale markets are the rudimentary nature of facilities, limited or no roofing (are not all weather), limited space, with repacking and icing often done on streets and pavements surrounding the main market area, lack of water supplies and toilet facilities. The ground surface of enclosures is either bare or part rendered. Drainage is often particularly poor and during hours of business, water from various sources accumulates to create dirty pools. Design is such that mobility within the market is difficult at peak times and the risk of bacterial contamination of fish is high. In particular, this applies if fish are removed from baskets or sacks and placed on the ground for auction. These markets are often privately owned, or leased, by a number of individuals. Ownership and responsibility can change due to political processes or according to mutual agreements.

Retail markets vary in terms of size and level of infrastructure. Some retailers sell from very basic sites often by the side of roads. Whilst other markets, particularly in urban areas, are more established with roofs, drainage, rendered slabs and lighting. Some retail markets are often within more general food markets where fruit and vegetable and other meat can be purchased.

Dried fish wholesale markets consist of a series of go-down/stores within which sacks or piles of dried fish are held for periods of time. To the front of the stores are sitting areas where traders meet prospective purchasers and samples of fish are on display. Fish are sorted/graded and repacked either inside or nearby the market. There may be an animal feed mill nearby.

Some long established wholesale markets are in areas, which are difficult for modern road transport to reach (e.g. trucks) and are easily congested. In some rural areas visited road transport is still seen as a problem, particularly if roads are narrow and poorly maintained making access difficult for trucks. Large numbers of ferry crossings delay fish distribution.

Packaging and Storage

At sea fish are usually not packed into containers. After landing a variety of containers are used to transfer fish from one point to another during distribution. Woven baskets with or without polythene liners, polypropylene sacks and aluminium bowls are typical containers used. Fish are also transported in bulk on the back of lorries. Some fish are packed in plastic bags. Dried fish are normally distributed in sacks. Salted hilsa are packed and distributed in cans.

Transport

After landing fish are transported long distances by boat, bus, lorry or pickup truck. For short distances between landing and market or between wholesale and retail market headloading, pushcarts and rickshaws are normally used.

There have been improvements associated with boat and road transport in some areas, which have made it easier and quicker to move fish around the country. Mechanised boats are now widely used and there has been an increase in the number of private transport companies. In some areas roads have been surfaced, repaired and widened. On some routes the numbers of ferries have been reduced due to bridge building and there has been an increase in the number of small vehicles such as pickups, which are ideal for carrying smaller consignments of fish.

Despite these improvements there are still roads which slow down the transport of fish such as stretches of the Chittagong to Dhaka road. Roads to wholesale markets in major urban areas are often very narrow and block with traffic easily constraining the movement of fish, buyers and ice in and out of markets.

Food Safety and Fresh Fish

During the March 2001 project workshop the use of formalin (solution of formaldehyde in water) on fresh fish was raised. It was alleged that this chemical is being used to extend the shelf life of fresh fish imported into Bangladesh. Research by the project did not produce any evidence that formalin is being used.

Some retailers of low value pelagics such as scads and mackerel were observed to sprinkle a mixture of salt and soda on to fish during repacking to make the fish firm. This practice is also said to be used on hilsa. The soda is said to be washing powder. Retailers say that if they did not use salt/soda then the fish would be soft and fetch a lower price. Soda was also said to be used on hilsa from Myanmar to make it whiter. Retailers of pangas apply red dye to the fish's lips and fins to enhance its appearance. The dye is said to be that used to colour rice or cows blood is used. Most fish seen during the visit on sale at major ferry landing areas had been treated with some sort of colouring agent. Solutions of red food colouring are sometimes applied to fresh fish to enhance appearance before the fish are retailed. Chemical analysis was beyond the scope of the research. More information is required on these practices before conclusions can be drawn.

Post Harvest Fish Losses – Fresh Fish Trade

Improvements in road communications and the use of ice, coupled with smaller catches and consignments of fish has meant that post-harvest fish losses related to quality deterioration of fresh fish has greatly reduced over the last ten years at all stages of distribution. A loss in quality does still occur but the incidence and magnitude of this loss has significantly decreased.

Where fishing times are short (several hours) and retail markets are within a short distance of the landing centre consumers are able to purchase good quality fish, even if ice has not been used. Alternatively, after capture fish may spend several days iced on board the fishing vessel before being landed and then transported by lorry or boat for 10 hours or more to major wholesale markets for onward selling. The time temperature factor, inadequate use or lack of ice on board mechanised boats, poor quality ice, unloading, packing and sorting in unhygienic conditions are factors which facilitate spoilage and quality degradation.

Some fish are sold according to quality grades as well as according to size. During summer high hilsa landings can coincide with a shortage of ice and lead to quality degradation. Low quality fish are sometimes landed by trawlers and mechanised craft which stay at sea for more than 7 days. Poor quality low value small pelagics such as kauwa are often sold in urban areas.

Specific handling and distribution practices which lead to a loss in quality of fresh fish include:

a) Inadequate icing on board vessels and over long fishing trips

b) Fish is loaded, unloaded and repacked several times during distribution. This facilitates damage and increases the risk of microbial contamination, leading to a reduction in shelf life.

c) Over packing on board vessel and during transport causing physical damage.

d) Unhygienic conditions on board trawlers and in markets increases the risk of microbial contamination and hence an increased rate of spoilage.

e) Although ice is now widely used on shore best practice is often not applied. The ice:fish ratio is often not ideal. Ratios of 1:3 to 1:5 were observed for long distance transport. More ice should be used to achieve adequate chilling and maintenance of low temperatures. A better ratio would be 1.5:1.

f) Ice is often made from river water and therefore may carry a high microbial load increasing the risk of contamination.

Consideration needs to be given to the cost implications of addressing these issues and stakeholders willingness to change practices. Furthermore, by improving the quality of fish may increase the cost of this fish to the consumer and this may have negative implications for the poorer consumers who rely more on fish of low quality and low price.

Dried Fish

A proportion of marine landings are sundried for either domestic human consumption or animal feed. Jewfish are salted and dried in various locations for export from Cox's Bazaar to Hong Kong and Singapore.

Fish for domestic consumption are sundried in Cox's Bazaar and on various islands (Dubla, Moheshkali, Sonadia) and remote coastal areas such as Kuakata between September and April – the non monsoon period.

Fish are sun dried on racks and frames or mats laid on the ground. Dried fish are stored in the drying yards for days or weeks before being transported in sacks by road or boat to Asadgonj dried fish market in Chittagong. Here the fish are sorted and stored in go-downs owned by the numerous *arat*adars and *paikers* who have a major influence over the trade. From the go-downs the dried fish are transported by lorry to wholesale markets throughout the country.

Hygiene at dried fish processing sites are poor with human faeces and fish carcasses strewn nearby. Apart from the public health issue, such conditions will promote and maintain a background population of blowflies, which infest fish during drying, especially in the warmer months when rain makes drying difficult. Areas of shrub vegetation nearby drying areas provide ideal shade for blowfly during periods of sun and heat.

The quantity of fish that enters the traditional drying sector has reduced because of reduced landings of fresh fish particularly in the Cox's Bazaar area, and because more fish is now being iced and sold fresh. Some species, which are traditionally dried, are also much rarer such as pabda (Ompok pabo), batasi, shole, gulsha, sharputi, kalighonia, big popa, and lakkhya.

Ten years ago it was rare to find dried fish from India on the market. However, a significant proportion of dried fish sold in Bangladesh now arrives from India (churi, nalia, dhancha, loittya, kachki). Some of this fish bypasses the traditional centre for dried fish marketing, Asadgonj market in Chittagong and instead is supplied direct to various districts.

According to traders in Kawran Bazaar, Dhaka, four years ago approximately 40% of dried fish was destined for the poultry feed sector. Now due to the availability of cheap

imported feed from Australia and New Zealand much less dried fish is used. Also, there has been a growth in the demand for dried fish for feed for fish culture (pangas).

In Kuakata, 10 years ago there were 7-8 dried fish processors now (i.e. 2002) there are 24. Although the volume of fish processed at the site has increased over time, this is divided between more processors who now each handle less fish than they would have if they had been operating 10 years ago. There has also been a change in the way fish is bought from fishermen by some processors. *Dadan* is now seen as risky as fishermen are less able to catch enough fish to cover the advance. So some processors now prefer to buy fish with cash.
Dried fish is now also transported by truck to Chittagong rather than by boat due to the increased incidence of theft at sea.

Use of Insecticides

Evidence of the use of insecticides by dried fish processors and traders to combat insect infestation of drying and dried fish came to the attention of the Bangladesh authorities and media in the mid 1980s. In the early 1990s specific research (Walker & Greeley 1991, Ward 1992, Cox 1992, Gain, undated) showed that insecticides are used in two ways:

Fish are dipped in solutions before drying to prevent blowfly infestation during the drying process;

Dried fish are treated with insecticide powders to prevent infestation by beetle larvae and adults (*Dermestes spp*) during storage.

Insecticide Use During Drying. Rain, dull weather and humid conditions hamper sun drying and fish remain moist and prone to attack by blow fly larvae. To prevent infestation during the drying process fish are dipped in insecticide solutions. According to Walker and Greeley (1991) the insecticide most commonly observed and reported as being used on fish was dichlorvos, marketed by Ciba-Geigy (Bangladesh) Ltd as “Nogos 100 ec”. This is an organophosphate compound, which is meant for the control of insect pests on rice and vegetable crops.

In spite of a heightened awareness amongst processors of the potential dangers of insecticides processors still use insecticides such as Nogos, especially during the two difficult drying months (Feb/March). Jewfish are also dipped in a solution containing an unknown chemical to protect fish from insect attack during drying.

Insecticide Use on Dried Fish. The majority of dried marine fish produced in Bangladesh passes through Asadgonj market in Chittagong where in the 1980s and early 90s traders were known to apply insecticide powders to dried fish to prevent infestation by beetles. Customers were said to pay 10 – 15 % less for beetle damaged fish. There is also a weight loss incurred (Walker & Greeley 1991). Powders that were commonly used by traders included DDT, Basudin 10g (diazinon) and Gramoxin. Other insecticides used on

dried fish go by the names Crush, Finis and Malathion dust. Analysis of samples of insecticides used showed that Benzene Hexachloride (BHC) and Carbyl as well as sub-standard formulations of DDT are also used (Cox 1992). Insecticide use was also known to occur at other markets and storage areas.

The research in 2001 and 2002 has shown that Basudin, DDT and Gamoxin are still used by some traders in Cox's Bazaar, Chittagong and Dhaka. These are either spread on the fish or around the gunny bag containing fish. During the rainy season it takes about 20 days for a sack of fish to become infested at Asadgonj Market and approximately 250 g (40 Tk worth) of any insecticide powder is used to treat one sack of fish.

Food Safety Implications. None of the insecticides said to be in use are approved by the World Health Organization for use on fish or fish products. Most are for pest control on agricultural crops. The only two approved insecticides for use on dried fish are pirimiphosmethyl and pyrethrum synergized with piperonyl butoxide.

There is no information on the potential harmful effects these chemicals may have on dried fish consumers or on the users of these chemicals. Insecticides enter the human body as a result of ingestion, inhalation and absorption through the skin. Some are known carcinogens. Dichlorvos can cause chest problems, vomiting, and paralysis. High levels of DDT in pregnant women has been linked to premature births and low-birthweight infants. Both contribute to infant mortality (ENV 2001). DDT ingestion can cause damage to the nervous system and seizures (ATSDR 1995).

Consumers of dried fish are eating products which may contain the residue of one or more potentially harmful substances. Dried fish is consumed by a range of stakeholders in Bangladesh, but it is often seen as an important source of animal protein for the poor, particularly in north Bengal and other rural areas. A key asset of the poor is their health which in turn determines their ability to undertake income generating activities such as labouring. Health problems will jeopordise what may be their main and only source of income as well as having cost implications. Labourers who use these chemicals expose themselves to risks from inhalation and absorption of the chemicals through their skin.

CREDIT ACCESS FOR FISHERFOLK AND TRADERS

This section describes the findings related to credit and micro-finance in the coastal communities and the fish marketing chain. The emphasis of the section is on the fishing and trading context, although it is acknowledged that fisherfolk require financial resources and loans also for other purposes. More details of financial assets held by fisherfolk are contained in the livelihoods analysis above.

Survey Findings

Aratdars are at the centre of the financial system of the fish marketing chain, in that they finance both backward and forward linkages. Establishing firm supplier and buyer relationships is one of their main motivations for providing often substantial amounts of loan. By accepting a loan, the *dadan* taker is obliged to sell through or buy from the *aratdar*, who benefits in the form of a commission (i.e. about 5% in the case of fresh fish, and 2% in the case of dried fish). At the same time, the *aratdars* take a certain amount of risk in that credit takers can make financial losses, or "disappear" altogether.

The *dadandar* (i.e. trader cum moneylender) represents a form of intermediary in the credit chain in that they tend to be the ones who are dealing directly with the fisherfolk. They obtain informal credit (i.e. *dadan*) from the *aratdar* which they invest in fishing communities in order to ensure supply. Generally, they will advance the credit to the fishers before the main fishing season, which the latter will use as working capital in getting ready for their business (e.g. boat repair, hiring of crew, purchase of nets, fuel, and other supplies). As a consequence, the fisherman can only sell his catch through the *dadandar*, who usually reduces the market price by 20 – 40%. This price differential corresponds to a sort of high, informal interest.

Table 8 summarises the positive and negative sides of the *dadan* system as encountered in 2001/2002. Nevertheless, there are substantial variations in the informal credit system, and changes are occurring such as:

- The strong presence of NGOs appears to have led to lower interest rates in certain parts of the country (e.g. Patuakhali District), by creating competition with traditional money lenders. The result is lower commission charges and interest rates, i.e. 5 – 10% per month, as compared to 10 – 20% in areas with little or no NGO intervention. Competition between NGOs is also likely to have played a role in this context.

- Emergence of so-called "new" *dadandars*, who are in fact only moneylenders (e.g. Latifpur – Kumira, Chittagong District). They are not involved in trading activities as such but monitor sales transactions by fishermen who obtained a loan from them. The "new" *dadandars* are likely to have accumulated their capital in other businesses. They claim a fixed percentage of the sales transactions (e.g. 20%). Women are also active as "new" *dadandars*. When asked about their preferences, the fishermen stated that they preferred the "new" *dadandars* since with this arrangement they could obtain the actual market prices and knew what interest rate they had to pay.

- Fishermen appear to benefit if they are able to deal directly with *aratdars* rather than through *paikers* cum money lenders (i.e. *dadandars*). In this case they only have to pay a certain commission to the *aratdar* like anybody else. However, this implies a minimum scale of catches. Small-scale fishermen who have to go to the sea on a daily basis are unlikely to be able to get involved in sometimes time-consuming sales transactions (i.e. if located further away from the landing site). On the other hand it was possible to observe boat owners, who do not join their crew during fish catching, selling the catch belonging to them directly to the *aratdars* (e.g. Latifpur village). This indicates that certain stages of the marketing chain can be by-passed by fishermen if they are in the right location (i.e. close to a market centre) and have the right connections with wholesale traders. Related pilot project initiatives, which would be expected to lead to a smaller marketing margin, should be encouraged to be carried out by NGOs and other development bodies.

Table 19 provides examples of *dadan* in relation to location and gear used. Box 3 shows the case of a fisherman in Chittagong District who used *dadan* to start his business.

Table 19: *Dadan* Arrangements in Fresh Fish Marketing Chain According to Location

Location and Type of Fishing	Type of Gear Used	Amount of Loan	Repayment Arrangement
Lebukhali, Patuakhali District Riverine Fishing	Dingi boats, 2 – 4 crew	Tk 1,000 – 5,000 for two to four people	10% Commission per sale, which has to go through *aratdars*
Kuakata – Panjupara, Patuakhali District Coastal Fishing	Non-motorised boat, 12 nets, 6 crew	Tk 10,000 – 20,000, for crew of six	5% Commission to small *aratdars* based at Kuakata Ghat
Latifpur, Silempur, Kumira Chittagong District Coastal Fishing	Mechanised boats, 5 – 6 crew, 12 –20hp	Tk30,000 – 70,000	Fish has to be sold to *dadandar* (i.e. *paiker* cum money lender) who pays a price which is 20 – 40% below market rate; In addition, there are "new" *dadandars* who charge fixed rate of 20% per sales transaction.
Hatkholapara Cox's Bazar District Coastal Fishing	Mechanised boats, up to 20 crew, 40 – 70hp, Gillnet, MSB net, or Longline	Tk10,000 – 30,000 for smaller boats, and up to Tk100,000 for wooden trawlers (i.e. "Danish Boats")	Fishermen have to sell to *dadandar* (i.e. *paiker* cum moneylender), who pays 10 – 20% below market price.

Box 5: Case study of Fisherman in Selimpur who received *Dadan*

Background information: Mr D. is 42 years old, has 4 children, i.e. 3 sons and 1 daughter. He has been fishing for 20 years. Before that he did not need to earn money and could depend on his father's salary. He has a 13 yard boat with engine and 12 gillnets but no MSBN nets. He is only into *hilsha* fishing. During the lean season he is involved in fish trading. Eight years ago he sep*arat*ed from his brother and decided to buy his own equipment.

His original investment was:
Tk30,000 for boat
Tk14,000 for seven nets
Tk10,500 for engine
Tk6,000 for working capital (i.e. for crew, fuel, etc)

His capital consisted of:
Tk15,000 equity
Tk25,000 *dadan*
Tk10,000 from moneylender @ 5% per month
Tk10,500 additional loan from *dadandar*

At the end of the season he paid back Tk10,000 to the *dadandar*. In the second year, he took new loan of T15,000 and repaid Tk10,000. During the last three years there was not enough fish, as a result there was a crisis and he couldn't repay. His open balance had now become Tk45,000.

Last year he took an additional loan of Tk30,000, which he repaid at the end of the season. This year (i.e. 2001), he obtained new *dadan* worth Tk20,000 for an engine (Tk15,000) and operational costs (Tk5,000). The *dadandar* is always the same one. He has to hand over his catch to the *dadandar*, who pays him approximately two thirds of the actual market price.

Mr B Das has now 1 boat (13 yards long), 12 nets (gill nets only), 1 engine. His boat is faulty at the moment; his engine needs repairing; however, he plans to start fishing in two days time and he has two labourers on the boat.

Last year ((*hilsha* season 2000) his total revenue was Tk75,000, i.e. three-month income. Out of this he repaid Tk30,000 (i.e. principal). At the same time, the Tk75,000 represents only two thirds of the value of the fish he caught, since one third was kept by the *dadandar* as interest (i.e. Tk37,500). As a result, the interest for the outstanding loan, which was also Tk75,000 at the time, represents 50% over three months. As such, the monthly interest rate was about 17%.

Source: CODEC / NRI Trade Survey, July 2001

Table 20: Positive and Negative Sides of *Dadan* in Fish Marketing

Pros	Cons
• The fish catching and marketing system would not be as efficient as it is without the substantial amounts of credit injected by *aratdars*. Certain developments would probably not have taken place, or only at a much slower pace, without their financial involvement. • Given that "firm" business relationships are established, transaction costs such as searching for trustworthy business partners and contract enforcement appear to be comp*arat*ively low. The resulting interlocked transactions enhance the speed at which a commodity moves through its marketing channels. • Long established *dadan* relationships between traders tend to be built on trust, which again reduces transaction costs. • *Aratdars* have funded an industry which was largely neglected by formal banks and NGOs. This has provided large numbers of people in coastal areas with access to credit, which they would not have had otherwise. This has created employment and improved food security at micro and macro levels. Indirectly, the poor are likely to have also benefited due to the spin-off effects created.	• There is scope for exploitation due to the mostly informal nature of the credit arrangements. In particular, fisherfolk depending on intermediary traders cum moneylenders (i.e. *dadandars*) are often exposed to dubious business practices, the rules of which can vary from location to location. • Minority groups appear to find it more difficult to stand their ground when dealing with business partners of the majority. This may include Buddhist dried fish traders who have provided advances to suppliers, or Hindu fishermen having to pay a higher interest rate on their *dadan* (i.e. through substantial reduction of selling price below market rate). • The informal credit system has the tendency to create dependency relationships resulting in increased indebtedness over time. • Due to the informal nature of the system, lenders may sometimes use violent measures to pursue their interest.

Table 20 demonstrates the different aspects of *dadan* lending in the fish marketing chain. It is obvious that there are both positive and negative sides to this business, which need to be borne in mind when planning new interventions geared at improving fisherfolk's access to credit. A credit programme that does nut fully take into account the roles of the *aratdars* may run into difficulties due to the market power the latter are able to wield.

Micro-Finance in Coastal Bangladesh – The CODEC Experience

Traditionally, it was the low caste Hindus who engaged in the fishing profession. The Hindu society is still a caste-bound society and low castes are made up of people destined to take up manual labour-based professions. The Hindu fisherfolk are one of those caste-bound communities. The population increase together with the increasing landlessness caused by erosion and nagging poverty has changed the structure of the agriculture sector and thereby also the small-scale fisheries sector. The arable land has been divided into increasingly small units, often so small that they cannot support the family. Fishing has then become the alternative source of employment, part time or full time. Small-scale fishery is seen as a last resort to earn one's livelihood. Thus, the increasing number of newcomers in the artisanal fishing sector are making the traditional Hindu fishing communities more vulnerable.

On the other hand, the coastal and riverine communities are facing serious consequences. Owing to reasons such as landlessness along with declining fish resources from open water bodies, the population is often compelled to migrate to big cities, because the employment opportunities in the coastal region are very slim. The industrialization (in a very limited way) is happening primarily in the big cities. As such the job opportunities in the small towns in the vicinity of the coastal and riverine areas are also very limited.

" Most of the hundreds of MFIs that are providing micro finance services to the poor around the world are non-government organizations (NGOs), usually societies, trusts or foundations. They tend to have added micro finance to their earlier development oriented activities when they saw the need of their members for capital. However, strictly speaking, either the statutes do not usually permit micro finance services neither under which they are registered or the regulatory authority for financial institutions in their country, especially if the NGOs are accepting savings deposits from their clients. Yet without the micro finance activities of these small NGOs, mostly very poor households would not have access to capital for additional income-generation through self-employment." (Financing Micro finance for Poverty Reduction: David S.Gibbons and Jennifer W. Meehan, 20 March 2002)

In Bangladesh, NGOs are also facing this critical problem, though GoB for the last few years are discussing this issue and have promised that some laws will be passed in the parliament to give a legal status to all NGOs which are actively operating Micro-Finance activities in the country.

Further, a major problem in micro finance is that the model is giving emphasis on quantity rather than quality. It is definitely understood that quality of life cannot be ensured only by economic upliftment, in that the precondition of the quality of life is also dependent on the socio-political environment of the state. Furthermore, the model does not have any exit plan with the borrowers and the respective NGOs are somehow involved in a chain of patron-client relationship. Micro-credit starts with Tk.3000 to Tk.5000 to each member without any proper scrutiny. Each year the amount increases gradually. Whether the amount is used for consumption or properly used for production

purposes - the scope of this evaluation is not existent in most of the cases. In many cases the members are going to be indebted by a bigger amount as time passes. At the same time, the NGOs also do not have any option but to continue the loan program with each of the loanee members to keep the record in good shape. Thus, the repayment rate does not necessarily indicate the impact of the credit program. Neither the borrowers nor the respective NGOs are able to find a way to phase out from this relationship.

CODEC initially started its credit program by distributing mechanized fishing boats and gradually became involved both in micro-credit as well as mid-term and long-term financing against income generating activities. CODEC also provided loans against housing in limited capacity. In some very specific cases CODEC provided loans without interest; and under a very special project CODEC provided credit to the fishers to free them from *dadan*. In January 2002, CODEC also initiated a credit program for the hardcore poor and for the well-off members of the village communities. It is too early to make comments on these two initiatives.

Micro-credit somehow helps the poor population to have less dependency on moneylenders and *dadandars* however the total elimination of exploitative money lending and *Dadan* transaction is not possible through micro-credit. This is mainly due to the fact that micro-credit definitely requires some procedures and rules, which do not allow members to borrow money whenever they badly require money. On the other hand, moneylenders and *dadandars* do often have disbursable money without following any rules and procedures.

Moreover, the very rules, regulations and procedures of the established micro-credit programmes exclude the very poor (hard-core poor) and gradually it (micro-credit program) shifts its target groups to the upper strata of the poor population and the middle class.

Sometimes, the repayment schedules are also not feasible to the borrowers as most of the poor people are somehow dependent on the fishing season or availability of work. Even the loan money invested in a profitable project does not secure regular flow of money for repayment in accordance with NGO rules.

***Dadan*-Free Loan**

Nowadays, virtually, the fishers have to depend on the monoculture of *hilsha* fishing in the Bay of Bengal during mid-June to mid-November. The next four months (mid-November – mid-March) they barely earn their livings from the fishing of *Bombay duck* and small shrimps in the coast of the Bay.

During the following three months (mid-March – mid-June), they have hardly any earning source, because the sea cannot support them during the period due to gradual depletion of fish for various obvious reasons and also because of ‘reduced catch per unit effort’.

During the above three months (mid-March – mid-June), they either borrow from the usurers at an exorbitant rate of interest or buy their food and other daily necessities from the local shops on credit. In most of the cases, at the outset of the *hilsha* fishing season (May – June), they have to take resort to the *dadandars* for loan. At that time, this loan is urgently required for making their fishing gears ready for *hilsha* fishing in the ensuing season. For this fishing season, their investment on one boat ranges from Tk100,000 to Tk120,000 and they usually avail *dadan* to the extent of Tk10,000 to Tk70,000 in a season for meeting their fixed and working capital requirements.

It may be pointed out here that the typical usury rate of interest varies from 120% to 240% per annum. On the other hand, *dadan* is a sort of monopsony transaction that is built upon a highly skewed lending contract in favour of the lender to sell the produce (here the catches) to him/her at a price much lower than that of the normal market (usually 20% - 40% below the normal market price).

With the abovementioned situation in view, CODEC initiated its Savings & Credit Programme to meet the aforesaid requirement of credit of the poor fisherfolk/coastal communities and to bring them out of the clutches of the informal credit market. However, despite working over a decade among the fishing communities of Chittagong, CODEC felt that it has not yet succeeded to free most of the fishers from the clutches of the *dadandars* and usurers. Most of these years CODEC could support them with its micro-credit products of Short Term Loan (STL) for one year with an average loan size of Tk10,000 and Mid Term Loan (MTL) for two years with an average loan size of Tk30,000.

From the above realisation, during May and June 1997, CODEC introduced another credit product, named ***Dadan*-free Loan** (usury-debt redemption loan), on pilot basis for freeing some of the Chittagong fishers from the clutches of the *dadandars* and usurers. CODEC extended such loans to 110 members of the CODEC supported VOs (Village Organisations) of its Chittagong Area within a range from Tk20,000 to Tk70,000 for a period of two years from its own Loan Fund under the following terms and conditions:

- The amount of *dadan* and/or usury loan of the referred borrowers would have to be repaid to the respective lender(s) immediately after loan disbursement in presence of at least two appropriate representatives from the concerned Loan Committee and the concerned Centre/Branch and they should submit a certificate in this respect. Such repayments must also be acknowledged by the respective lender(s), and the concerned borrowers should be declared free of any *dadan* and/or usury loan. The respective borrowers should also ascertain that they would not resort to *dadan* and usury loan at least during the tenure of CODEC loan.

- To get rid of further *dadan* and/or usury loan, the proposed MTLs (Mid Term Loans) can be disbursed without Security Deposit in cash. But, in terms of proposal of the concerned organisations, the MTLs should be made secured with mortgage of the borrowers' movable and immovable properties as described in the said borrowers' profiles.

The program was aimed to cover 450 fishers, which is about 10% of the total fishers covered under Chittagong Area of CODEC.

The experience of "*Dadan*-Free-Loan" and Micro-Finance

The "*Dadan* Free Loan" gives the option to the fishers to sell their catches by their won, have the opportunity to bargain and thus, allow them to receive higher prices. But for their very urgent need (e.g. loss of fishing gears and catches in the sea due to piracy) in a few cases, they had to borrow money from the *dadandar* again. In some instances they just for social security take money from *dadandar*, which is not possible to obtain from any organization. Moreover the *Dadan* Free Loan was provided to the minority Hindu Community in Chittagong area, where every day they are facing the severe problem of piracy and losing their fishing nets, engines and fishes. This piracy which is increasing every day in the fishing ground is becoming a severe constraint for the fishers to repay the big loans.

Micro –credit may be an option to those people for survival, but in many cases difficult to self-sustain. In most cases, micro credit is used in non-productive purposes or for consumption. On the other hand, many NGOs are operating in the same region, which is creating an unhealthy competition among the NGOs. As a result, the members of the rural populations are taking advantage from the situation. Ultimately they are going to be more indebted day by day. In a recent CODEC study it was pointed out that one of the reasons of migration from rural areas to the cities was due to indebtedness to different NGOs.

As the same group members are taking loans from different NGOs, in most of the cases the money is used for non-productive or consumption purposes which do not allow them to repay the loan as per schedule. As a consequence, the debt burden is becoming heavier on a daily basis and the pressure from their fellow members and the NGOs worker compels them to flee their respective villages.

The result of micro-credit in the coastal & riverine areas is not good for most of the NGOs and even for Grameen Bank. CODEC, from its inception is trying to address some of the problems by introducing different types of loan products. Nevertheless, owing to the absence of clear laws and regulations by GoB, most of the time CODEC was compelled to compete with others just to stay in the arena, which hampers to initiate innovation as well as to attain the need of the coastal and riverine populations.

Loan Status of CODEC

The summary of the loan status of CODEC as at June 2002 was as follows:

Total Loanees:	137,305
Total Savings:	Tk.59, 946,451
Total Outstanding:	Tk.143, 418,966
% Of recovery rate:	93%

Findings from Other Studies on the Impact of CODEC's Savings and Credit Programme (Micro Finance):

- On the whole, the Savings and Credit Program of CODEC brought positive impact upon the lives of its target people. Most of them have not only succeeded in arresting the deterioration of their economic situation. Instead, they have achieved their household economic security and some of them even attained vertical mobility (upward) in terms of their asset acquisition and income-expenditure pattern.

- Positive impact has also been visualized in terms of their (i.e. the borrowers') food-intake, clothing and housing. Compared to their early life before their association with CODEC they can now spend more on these basic necessities of life. These have been possible due to their enhanced income through the "Savings and Credit" intervention of CODEC.

- Their (the borrowers') loan availability has been smoothened. Nowadays, they don't have to depend much upon the village moneylenders. Incidences of *dadan* have also been reduced to a substantial extent. Compared to other NGOs in the locality, they can borrow a higher amount of loan that roughly corresponds to their their requirements. In terms of loan tenure, their repayment of loan is also high, although they cannot always repay as per repayment schedules due to high seasonality and extreme uncertainty of their income stream.

Despite the above positive impact, the study also pointed out the following weaknesses of the Savings and Credit Programme of CODEC in the referred area:

- Sometimes the borrowers of CLF (CODEC Loan Fund) do not utilize their loan amount properly. Assessment of their loan requirement is not also done properly.

- Although, most of the time, the borrowers repay their loan within the period of the loan (i.e., within loan tenure), they often fail to repay installments on time. Both repayment and realization effort, as per installment, is very weak.

- In some of the cases, the female loans of the VO members go to their male counterparts. There is no wrong in investing the money jointly. But, many women have virtually no control upon utilization and management of their loans. This rests upon their husbands, sons or fathers.

- The seasonal variations and uncertainty of income of the target people adversely affect their IEGAs (Income and Employment Generation Activities). So is the case with loan repayment.

- The target people, as well as the CODEC personnel do not give much impetus to the social development programmes of CODEC. They are mostly interested in the economic development programme. But, it is to be understood that only income

generation is not enough. Arresting the erosion of income is also very important for the overall development of the target people. At least, here lies the importance of social development activities of CODEC.

Some more problems of the present state of Micro Finance in the context of the experiences of CODEC:

- The income of our target people is totally dependent upon the seasonality of their profession and it is characterized by a very high degree of uncertainty. Moreover, their income stream is very irregular and during a substantial period of the year they either suffer from absolute unemployment or disguised unemployment. As a consequence, it is very difficult for them to repay their loans regularly as per their respective repayment schedules.

- The target people are virtually dependent upon fishing in the estuaries of the nearby rivers and the Bay of Bengal. But, day-by-day, they are facing "reduced catch per unit effort" due to increasing pressure on this resource. On the contrary, there is very scanty scope for alternative income and employment generation opportunities for them. As a result they fail to repay their loans regularly.

- The CODEC target people are living in the severe disaster prone areas of Bangladesh. Almost every year, they face natural calamities like cyclones and floods, which seriously jeopardize their income and living. These factors impact negatively upon the repayment of loans.

- The target people are also the helpless preys of piracies in their fishing grounds. They also face theft and epidemic of their cattle and poultry. This situation also counts down upon their income and repayment of loans.

- The CODEC command areas are virtually outreached for everybody. As a consequence, the cost of operation of their Savings and Credit Programme is quite high.

- The increasing pressure on attaining and keeping financial self-sufficiency of the programme, and sustainability of the organization as a whole, systematically excludes the “poorest of the poor” from the umbrella of the Micro Finance Programme for its obvious reasons.

- Our target people often need emergency loans, both for consumption purpose (food and clothing requirements during lean season, marriage of daughters & sons, house repairing, medical treatment etc.) and working capital financing for loss of assets (due to piracy, theft, epidemic of cattle & poultry etc.) during the tenure of an ongoing loan.

Since they are not allowed to multiple loans, they have to resort to the traditional moneylenders and/or *dadandars* to meet their emergency need of finance. This seriously affects their loan (CODEC) repayment.

- Sometimes due to lack of proper management ability, some borrowers are provided with loans larger than their actual requirement for their respective IEGAs (Income and Employment Generation Activities). As a result, a portion of the loan amount goes to feed their consumption needs.

  Later on, they often fail to repay their loans in time. In some cases, they repay the CODEC loans by borrowing from the usury sources at high prices. This seriously endangers their sustainability. Even, in some cases, if they are under severe pressure from the debt collectors, sometimes they migrate to the big cities in search of income opportunities.

- Now, in consideration of financial self-sufficiency of the programme and sustainability of the organization as a whole, there is an increasing trend / demand to include the people in the programme, who are not considered as target people of CODEC.

- The management requirements of micro finance can undermine relationships and capacity to engage social mobilization. It is difficult for the same person to be both 'social mobilizer' and debt collector. The disciplines and practices of the one are at odds with the other. Micro-finance is concerned with economic empowerment of an individual; while the social mobilization Programme deals with the group and its socio-political development.

- The default of loan repayment seriously endangers group cohesion and its social development activities.

Key Findings

- The hardcore poor (estimated at 20% of the coastal population) do not have access to formal or informal credit;
- Micro-finance schemes are often not appropriate for coastal communities;
- High opportunity cost of capital in informal sector (e.g. 5-15% interest per month in the informal sector; this is also reflected in *dadan* transactions between traders and fishermen who do not have access to formal credit).
- Even large-scale operators in the community chain (e.g. *Aratdars*) do not have easy access to bank credits due to unfriendly procedures, collateral arrangements etc.

COASTAL LIVELIHOODS AND INSTITUTIONS

This section will provide an overview of the institutions involved in marine fisheries matters at national and local levels, and then analyse the principal institutional constraints encountered during fieldwork.

Organisations involved in Coastal Development

At the national level, The Ministry of Fisheries and Livestock (MOFL), which was created in 1985 when the Fisheries Division and Livestock Division were carved out of the Ministry of Agriculture, is primarily a policy making agency (Habib, 1999). The principal Government institutions responsible for regulation, management, and development of fish production from inland, coastal and marine resources are the Department of Fisheries (DoF), Bangladesh Fisheries Development Corporation (BFDC), and Bangladesh Fisheries Research Institute (BFRI).

At the same time, according to Habib (ibid), "The unclear DoF mandate does not adequately define the tasks and the demarcation of areas of responsibility in relation to those of sister agencies such as BFDC and FRI has resulted in the overlapping and conflict of programs. These are manifestations of lack of coordination and unhealthy competition. The regulatory situation postulates that, as the marine wing, the DoF is required by the MFO to manage the coastal and marine fishery resources and therefore, the duty to conduct research also falls within the domain of the DoF. The situation is obviously causing the underdevelopment of other institutions." …. Furthermore, according to the same source "The present structure is also incomplete in the sense that many key functions are either absent on the organogram or, if they appear on it, are not being followed. For example, although there is normally a "Research, Training, Project Planning, Evaluation, and Statistics Unit", none of the tasks expressed in its title seem to be actually carried out. There is also a Fisheries Extension Section, but the absence of an organized extension system and the lack of appropriate training for district and *thana* fisheries officers constrain and hamper field operations".

The local government structures, also intended for the coastal villages in Bangladesh are the various departments in an upazilla administration under an executive officer of the government known as the Upazilla Nirbahi Officer (UNO). The departments include: Agricultural Extension, Fisheries Extension, Rural Development, Health Complex/Centre, Land Settlement, Education Extension, Family Planning, Cooperative, Social Welfare, Special Project and Police Station etc. Besides, some other government departments like Relief and Rehabilitation, Meteorological Office, Water and Power Development Authority (WAPDA), Rural Electrification Board, Local Government Engineering Department (LGED), Public Health Engineering (PHE), National Economic Council (NEC), etc. are also responsible for transformation and rural development of Bangladesh. In every union and village there is a local government authority, which is the authority and means for rural development.

There are only a few social organisations that play a somewhat positive role for the poor. On the other hand, the religious organisations and their leaders often play a negative role through a campaign against the NGOs' development activities and female participation in the various livelihood activities.

The NGOs like Proshika, BRAC, ASA, Grameen Bank and others have poverty-focussed programmes for the poor people. However, only a few NGOs including CODEC and other members of COFCON (Coastal Fisherfolk Community Network) are involved only with the coastal communities. The NGO activities are centred on organising the poor into their own organisations, providing non-formal children education & adult literacy, awareness and skill development training, micro-finance, health & sanitation, safe drinking water, legal awareness & support etc. and to play an advocacy role to eradicate poverty.

Nevertheless, the NGO activities also have their many limitations. On the one hand, they cover only a small number of the coastal poor; and on the other hand the role of the government and its activities cannot be substituted by them (NGOs).

Amongst the bilateral donors, it is primarily DANIDA, DFID, The Dutch Embassy and the Japanese Government that provide support to the coastal areas in one form or another. In addition, the multi-lateral organisations like FAO or Asian Development are also active in the coastal belt.

Institutional Constraints

"Poor governance and weak institutions are the most important development constraints" (Bangladesh: Country Strategy Paper, DFID, 1998). The Local Government as a political institution to ensure public participation in development activities is yet to take proper shape in Bangladesh.

" Most administrative decisions still remain to be taken centrally…. Several attempts have been made at decentralization, but the system has remained highly centralized. As of such local bodies are characterized by weak administrative capacity, a limited financial and human resource base and little public participation." (Ahmed S.G. 1997: Local Government System in Bangladesh, Empowerment, Participation in Bangladesh: University of Dhaka)

In the context of the coastal communities it should be understood that poor representation of the coastal communities in the power structure do not allow them to reflect their problem and issues in the main stream. The Union Parishad is the only place where the community may raise their issues and in most of the cases the Union Parishad do not have enough power or resources to address or serve the people's needs. Union Parishad is primarily involved in distribution of wheat against Food For Works.

Although the Union Parishad can play a vital role for the development of their respective areas and people, that requires proper structural adjustments and also a decentralized authority to the Parishad.

Thus the formal institutions are not functioning properly or in most cases those are ornamental. In this context, the formation of non-formal institutions arises. Most of the NGOs are engaged in forming such informal institutions in different forms and dimensions. CODEC, thus, in all its command villages formed Village Organizations (VOs) for male, female and children. The Male and Female organizations also formed apex Organisations called Coordination Committees comprising representatives from 60-80 Village Organizations in each field level CODEC Branch. Through these Coordination Committees CODEC is trying to activate some of the very important institutional issues, which are in most cases linked with their political and social rights. Through policy advocacy campaign these Coordination Committees are trying to raise their voices at different levels.

The long –term aim of CODEC is to see that Coordination Committees have organized themselves into the decision making process at least at Union Parishad. By building the platform of empowerment, it is anticipated that the institution will be able to act as a successful pressure group for their communities and members in the local socio-political context. At least by Policy Advocacy these institutions will be able to raise their voices-if not to the central level but to the local levels (Union & Upazilla)

Coordination Committees need to have legal status under the government regulation. It will uplift its empowerment through legal reorganization and status. The legal status will accelerate the capacity of the Coordination Committee to address greater issues of their communities and create opportunities for linkage and network with related government and non-government agencies.

Those Coordination Committees are also facing legal problems. To be registered as formal institutions, the prevailing laws in Bangladesh are not favourable to their needs and causes. All these laws are regulatory in nature and not aimed at assisting these grass-root level organizations to grow up or to work towards their socio-political and economic development. It is also to be understood that if the Government does not have a clear agenda regarding these non-formal organizations, it is difficult, or in most cases not possible, to reach the ultimate goal of building sustainable institutions for the disadvantaged poor of the coastal area of Bangladesh. Policy Advocacy may play a pivotal role to address these issues.

The experience of CODEC shows that, to establish viable institutions at the grass-root level, the village organizations also require to practice democracy and transparency at primary member's level. The external factors in most cases hamper such practice. It is understood that the overall situation of the state necessarily imposes the pre-conditions for such situation.

The Linkages between the Strategies of the Poor and Policy Processes

It has been opined and observed that the policies concerning coastal communities are not often rooted in ground realities and the policy formulation process is too remote and inaccessible for the communities concerned, although participation of the stakeholders in that process is all the more necessary for proper formulation and implementation. Consequently, the existing policies and processes address the issues of poverty improperly and inadequately.

It has been observed in the coastal villages that the inadequate policy processes are actually criminalizing the poor. For example, for adoption of survival strategy due to abject poverty, the poor people are being forced to fish *jatka* (the juvenile *Hilsha*) with *current jaal* (monofilament net), although catch of *jatka* and use of current *jaal* is totally banned. Since there is no other alternative, and immediate survival is the natural priority for the poor, they are increasingly getting involved in this type of destructive fishing at the expense of their livelihood sustainability in the long term. In this process of criminal acts, they sometimes loose their assets like nets and the catches, whenever the police force comes in to destroy those assets. Sometimes they can save their nets and catches through bribing the police. Even the fish vendors have to bribe the police and market authority to get permission to sell jatka. As a result, the inadequate policy process not only criminalizes the poor, it also further marginalizes them even in the short run. The same is the case of shrimp-seed collection, which is going on unabated.

However this sort of policy process not only criminalizes the poor, it also criminalizes the policy implementers (police & the concerned people) as well as the well-off business persons, since they are involved with selling of the banned nets or threads of it. The government is contemplating banning of destructive nets like ESBN, Push Net etc. However, in the absence of sustainable alternatives, this type of policy will have an adverse immediate impact on the livelihoods of the poor.

Last but not least it needs to be highlighted that the poor members of coastal communities have only very limited access to justice. The increasing piracy in coastal areas is a clear sign of the sore state of the law and order situation in these parts of the country. The same applies to other aspects where the poor lack safety, security, and access to justice. As a consequence, a more accessible justice system that takes into account the needs of the poor is urgently required.

Appendix 1: Tables and Maps Prepared during the course of PRA Exercises

(tables and maps, including commodity chains and price information will be presented here)

Appendix 2

Summary of "The Sustainable Livelihoods Approach and its Relevance for Fish Marketing", based on Oudwater (2001)

The ultimate goal of Sustainable Livelihoods is to maintain an income, to minimise social exclusion, achieve social equity and a long term productivity of natural resources without undermining livelihoods or compromising livelihood options open to others. The focus of the development debate moved beyond the state of resources and began to include people, livelihoods and poverty alleviation as highlighted in DFID's Sustainable Livelihoods Approach.

In the White Paper on International Development 1997, DFID outlined its commitment to poverty reduction through policies and actions which:

- Promote Sustainable Livelihoods
- Education, health and opportunities for the poor
- Protection and better management of the natural and physical environment

Box 1: The three dimensions of Sustainable Livelihoods

In sum, there are three dimensions to Sustainable Livelihoods (SL):

- an objective supporting the goal of poverty elimination
- a framework for thinking about poverty
- an approach for addressing poverty (the most important dimension)

SL is **NOT**:

- A panacea for poverty eradication
- A blueprint to guide implementation of programmes or projects targeting poverty.

From this policy objective of elimination of poverty, DFID has worked towards developing a conceptual and operational framework that constitutes the Sustainable Livelihoods approach. Promoting the Sustainable Livelihoods approach within current development thinking is seen as a means to address the ultimate target of poverty elimination. Many NGOs like Oxfam and Care have contributed to the development of the SL approach by taking it up at an early stage and providing critical feed back and suggestions based on their ideas and 'field' experiences.

Definition and Principles underlying the Sustainable Livelihoods approach

A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Carney, 1998).

In this context, poverty focused development activities should be:
People centred – the emphasis is on people, not on resources per se. It mainly focuses on people and livelihoods at the micro community level (e.g. coastal fishing communities) and at higher policy and planning levels (e.g. local government and central government).

Holistic – it is important to look at all the different resources, opportunities and constraints that people face in pursuing and improving their livelihood strategies.

Dynamic – It is important to recognise that livelihoods are changing in response to external shocks and trends, and it is necessary to understand these changes, how the people themselves perceive these changes and how they have adapted their livelihood strategies in response to these changes.

Building on strengths **– the approach starts with an analysis of strengths and resources rather than a list of needs.**

Linking macro-micro levels – Bridges gaps and makes explicit links, e.g. effects of national policies on local communities.

Conducted in partnership – with donors, local organisations like NGOs and government.

Sustainable – People should be able to deal with and respond to external shocks, hardships and trends, and not being (entirely) dependent on outside support. There are four different dimensions of sustainability that are interrelated:
a) economic - e.g. supply and demand for fish
b) institutional – e.g. a well functioning fish marketing chain, availability of credit and loan facilities
c) social – e.g. support from within the family and the community in general
d) environmental - e.g. fish stocks

Box 2: Summary of Sustainable Livelihoods approach's principles

What the approach emphasises:

- A people centred participatory and responsive approach to development
- Starting with positives (what people have) and opportunities (what they can make of it)
- Build on existing development approaches
- Micro to macro policy influencing

What the approach does not emphasise:

- Starting with sectors or commodities
- Starting with needs and problems
- Replacement of existing development approaches (but sets them in broader context)
- A focus only on local development

The Sustainable Livelihoods Framework

The Sustainable Livelihoods approach is a way to understand the needs of the poor and identify key opportunities that will ultimately benefit the poor. In order to understand and analyse the lives of the poor, a Sustainable Livelihoods framework has been developed. It is important to note that it is not an ultimate blueprint. Its elements can be presented and applied in different ways (see Appendix).

SL embraces a wider approach to people's livelihoods by looking beyond income generation activities in which people engage. Through participatory approaches, it seeks to encourage various stakeholders, with their own perspectives, to engage in these discussions and debate about factors affecting their livelihoods.

Box 3: The key elements of the Sustainable Livelihoods framework

The key elements of the SL framework are:

- *Capital assets*: resources that help people survive and thrive (i.e. natural, social, human, physical and financial capital)
- *Vulnerability context*: things that the poor are vulnerable to
- *Policies, institutions and processes*: influence their livelihoods
- *Livelihood strategies*: how do people adapt and plan in response to threats and opportunities
- *Livelihood outcomes and aspirations*: what are people's objectives and priorities?

Capital assets

Capital assets are resources that help people survive and thrive. The main capital assets are natural, human, social, physical and financial capital (e.g. fishing skills, aquatic resources, social relations, access to credit, infrastructure, etc). Assets are important in terms of quantity and quality. In addition, the question is how do men and women access assets and what is the extent of their control, rights and security of access. Although it is not possible 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 hardships. A pentagon is sometimes used as a visual tool to present information about people's access to assets and the interrelationships.

Vulnerability

Next to an understanding of people's strengths and access to assets, it is important to understand the vulnerability context in which these assets exist. 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 (e.g. declining fish stocks, price fluctuations, floods, etc).

Policies, institutions and processes

As mentioned earlier, one of the key principles of the Sustainable Livelihoods approach is the attempt to link micro and macro levels: the household/community level with processes as initiated by the government, the private sector and NGOs. There is a two way influence between assets and policies and institutions. Existence or lack of policies can have important effects on the livelihoods of the poor. Changes or transformations in these policies and institutions can be used to mitigate negative effects of trends on the overall asset status and cushion the impact of shocks and seasonality, thereby reducing people's vulnerability.

Rules of access to natural resources will influence people's access and control over natural capital. The marine fishery is considered as a common property, which means it is shared amongst those who fish it. A common problem associated with common property resources is 'the free rider' problem, as individuals benefit from use of the resources but do not bear the full opportunity costs of their use of common resources. In general, there is a tendency towards short-term gains rather than an attempt to manage the natural resources in a sustainable manner as benefits might be reaped by others who have not made any investment in such sustainable resource management efforts. Consequently, many marine fishing grounds are considered as being overexploited. Not only fishers will be negatively affected by loss of fish resources but also those involved in the marketing chain and many coastal families as they depend on fish as an important source of animal protein. Among policy makers there has been an increasing awareness for the need to devolve user rights to lower levels, such as communities, to encourage sustainable resource management.

Livelihood strategies

Livelihood strategies are the range of outcomes of how people combine and use their assets to make a living given the factors that make them vulnerable and the policy and institutional context within which they live. In the past, development efforts often sought to improve services and opportunities available to categories of people e.g. fisherfolk. However, the Sustainable Livelihoods approach seeks to develop an understanding of the factors behind people's choice of livelihood strategy and to reinforce the positive aspects and mitigate the constraints or negative influences. In sum, the Sustainable Livelihood approach seeks to identify ways how to build on the strengths the people have while at the same time trying to reduce the level of vulnerability.

Appendix 3

List of Scientific, Bangla and English Names of Fish, Molluscs and Crustaceans

Scientific Names	Bangla	English
Fish		
Acanthopagrus datina	Datina	Sea bream
Actobatus narinari	Narinari	Eagle ray
Actomyleus nichofii	Sankachil	Eagle ray
Agyrops spinifer	Lal datina	Red bream
Alia coila	Banspala, Kanjuli	
Amblypharyngodon mola	Mola	
Anabas testudineus	Koi	
Anguilla nebulosa	-	Eel
Anadontostoma chacunda	Koi puti	Shad
Aristichthys nobilis	-	Bighead carp
Atrapus atrapus	Kanwa	Torredo trevally
Bagarius bagarius	Baghair	
Barbus sarana	Swar puti	Barb
Catla catla	Katla	Catla
Channa spp. see Ophicephalus		
Carcharinhus melanopterus	Kalo hangor	Black finned shark
Chirocentrus dorab	Karti	Wolf herring
Chorimemus spp	Chapa	Green fish
Cirrhina mrigala	Mrigal	Mrigal
Cirrhina molitorella		Bottom carp
Cirrhina reba	Vagna	
Clarius batrarchus	Magur	Walking catfish
Coilia dussumieri	Alua, Kariali	Pointed tailed anchovy
Ctenopharyngodon idella		Grass carp
Cynoglossus spp.	Kokorajib	Tongue sole
Cyprinus carpio		Common carp
Decapterus maruadsi	Nilambari	Round scad
Decapterus	Nilambari	Mackerel scad
Dussumieri acuta	Nailla	Shark
Eleutheronema tetradactylus	Tailya	Four threaded tassel fish
Elops machnata	Kundra	Lady fish
Epinephalus lanceolatus	Bole, Koral	Grouper
Euthynnus affinis	Bom maittya	Tuna
Eutropicthys vacha	Bacha	
Gadusia chapra	Chapila	
Glassogobius giuris	Bela	
Harpodon neherus	Nihari lottya	Bombay duck, Lizzard fish
Heteropneustes fossilis	Shingri	
Hilsa ilisha	Ilish (Hilsa)	River shad, Hilsa
Hilsa kanagurta	Chandona	Sea shad
Hilsa toil	Chandan ilish	
Himantura uarnak	Haush, Sankush	Sting ray
Hypophthalmichthys molitrix		Silver carp

Ilisha filigera	Choukya	Jewelled shad
Johnius (Otolithes) argentatus	Lalpoa	Silver jewfish
Johnius diacanthus	Kala datina	Black jewfish
Kurtus indicus	Shangrai	Hump head
Labeo calbasu	Kalibaush	
Labeo gonius	Ghonia	
Labeo nandina	Nandail	
Labeo rohita	Rui, Rohi	Rohu
Lactarius lactarius	Shadha mach	White fish
Lates calcarifer	Vetki, Koral	Sea bass, Cock-up, Giant sea perch, Barramundi
Leiognathus equulus	Tak chandra	Silver belly
Leiognathus spp	Tak machh	Slip mouth
Lobotis Surinamensis	Samudra koi	Triple tail
Lutjanus johnii	Ranga choukya	Red snapper
Lutjanus malabaricus	Ranga choukya	Red snapper
Mastacembalus armatus	Baim	
Mastacembalus paneales	Guchi baim	
Megalaspis cordyla	Kauwa	Hard tail
Megalops cyprinoids		Tarpon
Mena maculate	Chan chandra	Moon fish
Mugil spp	Bata, Parse	Mullets
Muranesox spp.	Kamila, Kaila	Conger eel
Mylopharyngodon piceus		Black or Snail carp
Mystus (Osteopagrus) aor	Aur	
Mystus vittatus	Tangra	
Nemipterus japonicus	Rupban	Japanese threadfin bream
Notopterus chitala	Chital	
Notopterus notopterus	Foli	Featherback
Ompok pabda	Pabda	
Ophicephalus spp.		
Ophicephalus (Channa) striatus	Shoal	Snakehead fish, Murrel
Otholithoides brunneus	Lambu	Long jewfish
Otholithoides microdon		Jewfish
Pama pama	Poa	
Pampus (Stromatues) orgenteus	Foli chanda	Silver pomfret
Pampus chinensis	Rup chanda	Chinese pomfret
Pangasius pangasius	Pangas	Catfish
Paraplagusia spp.	Kokorajib	Tongue sole
Parastomateus niger	Hail chanda	Brown pomfret
Polynemus paradiseus	Topshi, Muni, Rissi	Long thread tassel fish
Pomodasys hasta	Shadha datina	White grunter
Priacanthus spp.	Pari	Saw fish
Pristus spp.	Aishya	Saw fish
Psenes indicus	Makkon chanda	Buterfish
Psettodes erunei	Samudra, Serboti	India halibut
Puntius spp.	Puti	Puntius carp
Rastrelliger kanagunta	Champa	Indian mackerel
Recunda russellana	Phatra	Smooth herring

Rhinomugil sorsula	Khorsula	
Rita rita	Rita	
Rynchobatus diidensis	Pitambari	Skate
Sardinella longiceps	Takhya	Sardine
Sarotherodon mossambica	Tilapia	Tilapia
Sarotherodon nilotica	Nilotica	Tilapia
Saurida undosquamis	Achila	Lizard fish
Scatophagus argus	Chitra, Bishtara	Spade fish
Scoliodon sorrokowah	Hanga	Dog fish
Scomberoides commersionamus	Chapa	Queen fish
Scomberomorus guttatum	Maittya	Spanish mackerel
Sillago domina	Hundra tulordandi	Lady fish
Silonia silondia	Shilong	
Sphyranea spp.	Dharkuta	Barracuda
Sphyrna blockii	Mioshja hanga	Hammerhead shark
Tachysaurus spp	Gongra guizza	Sea catfish
Therapon spp.	Barguni, Girpai	Therapon, Perch
Triacanthus brevirostris	Sukura	Tripod fish
Trichiurus spp.	Chhuri	Ribbon fish
Trichogaster pectoralis		Sepat Siam, Siamese Gourami
Upeneus sulphureus	Sonali bata	Red mullet, goatfish
Wallago atu	Boal	Catfish
Molluscs		
Anadara granosa		Blood clam, Cockle
Crassostrea spp		Oyster
Mytilus smaragdinus (viridis)		Green mussel
Crustaceans		
Macrobrachium lancesteri		Rice prawn
Macrobrachium malcomsonii	Chatka chingri	
Macrobrachium rosenbergii	Golda chingri	Giant freshwater prawn
Metapenaeus affinis	Hani chingri	Endeavour shrimp
Metapenaeus brevicornis	Kachu chingri	Short-horned shrimp, Brown shrimp
Metapenaeus monoceros	Hainna chingri	Sand or brown shrimp
Parapenaeopsis stylifera	Ruda chingri	
Penaeus indicus	Chapda chingri	Indian or white shrimp
Penaeus japonicus	Bagda chingri	Banded or Kuruma shrimp
Penaeus merguiensis	Bara chingri	Banana or blue tail shrimp
Penaeus monodon	Bagda chingri	Giant tiger shrimp, Grass shrimp
Penaeus penicillatus	Baro chana	White shrimp
Penaeus semisulcatus	Bagda chingri	Red-legged shrimp

Source: Coulter and Disney (1987)

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