Journal of Animal and Veterinary Advances 2 (10): 564-571, 2003

Issues Related to Livelihood and Socioeconomic Condition of Costal Fishers in Bangladesh, with Special Reference to Integrated Coastal Zone Management

[1]M. A. K. Azad and [2]M. M. Haque
[1]Patuakhali Barguna Aquaculture Extension Project, Patuakhali 8600,Bangladesh
[2]Department of Aquaculture, Bangladesh Agricultural University, Mymensingh-2202,Bangladesh

Abstract: A study was conducted to deal with different issues related to livelihood and socioeconomic condition of the fishers living in the coastal zone of Bangladesh. Data was collected from different secondary sources and simple survey to serve the objectives of the study. The coastal fishers folk population of Bangladesh is approximately 550,000. Coastal zone of Bangladesh is basically blessed with fertile soil, mangrove forest and fisheries resources. In recent past years, the coastal fisheries resources have declined drastically due to overexploitation, destruction of near-shore habitats and inappropriate development policy and planning. The poor fishers are left behind and failed to reap the benefit of development policy and planning, as they have no power to participate in development processes. Natural calamities mostly cyclone and tidal surges affect the coastal fishers very frequently due to geographic position. Approximately 45 damaging cyclones have been reported in the coastal area of Bangladesh from 1793 to 1997. It is necessary to develop sound management practices of capture fisheries, developing alternative employment opportunities and social infrastructure for coastal fishers through integrated coastal zone management (ICZM) system for sustaining their better livelihood and socioeconomic condition. The basic social infrastructures including better communication network, educational institutes, cyclone shelter and safe water, sanitation & marketing facilities should be developed through the technical and financial support from government and non-government organizations.

Key words: Socioeconomic condition, costal fishers, water resources

Introduction

Bangladesh is fortune enough having an extensive and huge water resources scattered all over the country in the form of small ponds, beels (natural depression), lakes canals, small and large rivers and estuaries covering an area of abut 4.34 million ha. The culture fisheries include freshwater ponds (0.15 million ha) and coastal shrimp farms (0.14 million ha) (DOF, 2001). The total inland open water resources comprise rivers, flood plains, lakes, reservoirs and ponds covering an area of 4.05 million ha.

The country has coastal area of 2.30 million ha and a coastline of 710 km along with the Bay of Bengle, which supports a large artisanal and coastal fisheries. In addition to this, the country has 200 nautical miles EEZ (Exclusive Economic Zone) in the Bay of Bengle, which is bigger (164000 sq.km.) than that of the area of the main landmass (144000 sq.km) of the country (Khan *et al.*, 1997).

Sustainable utilization of land and water resources is vital task in a developing country with a large population, such as Bangladesh, especially to ensure nutritional and livelihood security for her people. The coastal zone of Bangladesh blessed with fertile soils, mangroves forest and different fisheries resources. Consequently, unregulated, uncontrolled and uncoordinated horizontal expansion of shrimp farming has caused serious environmental and social impact such as cutting of mangrove forests, occupation of agricultural lands, intrusion of saline water, decreased crop diversity and fisheries, local water pollution and changed hydrological characteristics. In addition to that, costal fishers are catching marine fishes indiscriminately causing reduction of fish stock day by day. Moreover, collectors of shrimp Post Larvae (PL) are destroying large number of juveniles of different marine organisms during PL collection. A number of comprehensive assessments of coastal capture fisheries and environment of Bangladesh have been conducted in recent years (BOBP, 1993 and Mahmood, 1995) but limited study has been focused on livelihood and socioeconomic condition of the fishers who are the main stakeholders of coastal and marine resources. The nature and extend of this problem needed an assessment for public awareness and a guidelines for adopting integrated coastal zone management (ICZM). The present study has been carried out to deal with the issues related to livelihood and socio-economic condition of costal fishers in Bangladesh with special reference to the integrated coastal zone management.

Materials and Methods

The study was conducted mostly on the basis of secondary data collected from different sources. The various reports of the Department of Fisheries (DoF), Ministry of Fisheries and Livestock (MoFL), Bangladesh,

have been relied upon for the statistical data. In addition, the books and research articles dealing with various issues of coastal fishers were used. Moreover, simple survey within the fisher's community in Patuakhali and Barguna districts has been performed to serve the purpose of this study.

Results and Discussion

Fishing Population: About 12% of total population is directly or indirectly involve in fisheries activities (Ali and Hossain, 1996). About 1.2 million of people are depended on fisheries as their primary sources of income (Ali, 1998). This group of people are known as professional fishers, among them 60% are engaged in inland and 40% are engaged in marine fisheries (Islam, 1994). According to the Bay of Bengal Programme, the coastal fisher folk population of Bangladesh is approximately 550,000 (BOBP, 1992). They operate their fishing activities at about 1350 coastal villages (CODEC, 1991).

Fishing Castes and Groups: Although, fishing is not a socially respectable occupation, however traditionally it has become the profession of low caste Hindu section. While a majority of professional fishers are low caste 'untouchable' Hindus, there are also Muslim fishers (lately entered to the occupation) all over the country (Pokrant *et.al.*, 1997). In coastal area, those who catch and do related activities of fisheries have been grouped into four categories such as I) traditional (Hindu) fishermen ii) non traditional (Muslim) fishermen iii) jalmahal lease holders and mechanized boat owners and iv) the people who catch fish for subsistence purpose. The main fishing casts and groups are given in Table 1.

Table1:Fishing related castes and groups in Bangladesh

Hindu	Muslim	Others
Kaibartta/Kaivarta	Gutiya jelia	Magh (Rakhaine)
Malo/Malla/Jhala/Jhalo /Jele Jiani	Nikari Jiani	
Das shikari/Jaldas	Mahimal/Maimal	
Tiyar/Tiwar	Pajar/Pajhra/Pajara	
Karal/Charal	Dom-patni	
Nadial	Machhua	
Muriari/Mariyari	Motshojibi	

Sources: Risley, 1981; Jensen, 1985; Habib, 1992; Pokrant *et al.*, 1997 and Alam, 1998

The castes Kaibarta/Kaibartta jelle/Jalia kaibartta: The Kaibartta are one of Bengal's largest castes and thought to be descendants of some of the first inhabitants of the region who were Hinduised in later years (Pokrant, *et.al.* 1997). The meaning of their name is unclear. However, there being at least three different explanations of its origin. De (1910) said it comes from Sanskrit 'Ka" meaning water 'Vrit' means to engage. Risley (1981) reported that 'Ka' comes from water and 'Vartta' come from livelihood. Over the centuries the Kaibartta become increasingly differentiated both socially and economically .In some areas sections of the caste were able to enhance their social status through intermarriage, landholding, political role and the adoption of cultural right

The castes Malo/Mallah/Maimal/Motshojibi: Malo, the subject of a classic Bengali novel (Barman, 1992) is one of the original peoples of the Ganges delta. The name malo may come from the Arabic Mallah, which means boatman also called Jalo/Jhalo/Jalia/Jalya/Jele/Jalwa (Risley 1981). These can be referred to all fishers and boatmen regardless of caste and group. In late 19th century at Noakhali district, the name jaliya referred to a caste group with four endogenous sub-divisions I). Chatgoan Jalia (those are come from Chittagong district) ii) Bhulua Jalia (those are come from Bhula district) iii) Jhalo Jalia (those are come from Jalkathi district) and iv) Kaibartta, of which kaibartta were the traditional fishers. In Northeast Bangladesh some villages have Muslim communities specially associated with fishing they called by themselves/others as 'Maimal' or motshojibi. In the decade 1960 many rich people entered to fisheries related activities and they like to use the word 'motshojibi' instead of 'jele' to develop their social status (Habib, 1992).

Access to Fishing Ground: Hundreds of years ago, the fishing community evolved a sophisticated co-existence with the rich natural resources of the lands and the sea and with each other. They enjoyed unlimited access to and control over their fisheries resources, which they used for social, economic and cultural purposes. During the Zaminder system under the British rule, the fishermen could fish freely in all open waters in exchange for a nominal nazrana (tax) to the Zaminder. The word Zaminder comes from the Arabic 'zamin' (earth/land) and the Hindi 'dar' meaning "one who holds" the right of private ownership of the water bodies or jalkar (Sanskrit jal means water and kar means tax) attached to their estate. Pre-British customary right to fish in such water bodies under which fishers paid tolls (tax), handed over some portion of their catch to estate holders or their agents or took fish freely from various water bodies. But it was increasingly replaced by a leasing system. Under this system, Zaminders let out stretches of water to leaseholders, which were mostly non-fishers. They are locally called ijaradars. They were usually local well- to-

do farmers and have greater control over the labour process of fishers. There were some direct leasing of jalkar to fishers ijaraders but this appears to have been of lesser importance than the system of non-fisher ijaraders (Reeves, 1995). The state also sometimes took into public ownership of water bodies who were unable to pay the fixed yearly tax imposed on them through permanent settlement. These jalkar were then either leased out or sold off to private users. After the abolition of Zamindary system especially in 1960s when the leasing system became fully operational, the life and the livelihood of the traditional fishers started to come harder. In the name of lease management, a group of rural elite and middlemen (Shely and Alam, 1998) profit seekers started to exploit the fishers. Up to the mid of 1980, the government used to give the open water fisheries (Jalmahal) on an annual or in some cases multiple years lease through an auction or through invitation of tenders. This was done by the Ministry of Land (MOL) and obtained the lease revenue. As a result leaseholder who paid money for a year or more had no interest in sustaining the production of the fishery and tried to catch every last fish before his/her lease expired. This led to even more pressure on the remaining open water fisheries resources (Raja, 1985). In the year 1986, the Government has declared a new fisheries policy known as New Fisheries Management Policy (NFMP). There was a popular slogan "Jal jar jola tar" means "fisheries resources are for those who have net" that refers the fishers. This policy was implemented mainly for inland and some coastal water bodies. The objectives of the NFMP were I) to divert the maximum benefits of the jalmahal from the middlemen lease holders to genuine fishers groups and ii) to develop and implement measures to ensure sustainability of fisheries resources.

The Department of Fisheries (DOF) under the overall supervision of the Ministry of Fisheries and Livestock (MOFL) implemented the NFMP. After the first few years Govt. decided that the NFMP would be implemented by Ministry of Land. In the field the Deputy Commissioners and Upozilla Nirbahi Officers (sub-district executive) would implement the policy with the assistance of the Fisheries Management Coordination Committees at district and upozilla level respectively. In the initial years, license fees determined on the type of gears and number of fishers for fishing unit were collected from the fishers groups. However, after 2-3 years it was found that in a fisher groups; the group members are not genuine fishermen. They become a member of the group due to the lack of commitment and loss of morality of government officials. Also the inadequacy of manpower at the thana level did not permit to implement successfully the NFMP. Currently the NFMP has been discontinued and as result conflict between fishers, local pressure group, private leaseholders and government over water access is common.

Many fishers of coastal zone believe that during British colonial regime they got right for fishing from near shore and offshore fishing ground. However, traditionally the oldest habitants enjoy right to harvest fish from the area in front of their residence (Habib, 1992). In Marine Fisheries Ordinance, 1983 (XXX of 1983) these areas for fishing was mentioned: I) area for fishing with the set bag nets is earmarked up to 40 meters depth of marine water at its highest tide; ii) area for fishing using hooks and lines are earmarked up to 40 meters of depth of marine water at its highest tide; iii) area for fishing with drift seine net (Bhasan jal) for fishing Ilish (*Tanuolosa spp*) and like fishes are earmarked up to the depth of 40 meters of marine waters at its highest tide; iv) area for fishing with drift net (bara vasajal-lakhajal) are earmarked up to the depth of 40 meters of marine water at its highest tide and v) area for fishing with trawlers are earmarked for operation beyond 40 meters of marine waters at its highest tide.

Local subsistence fishers who live along the coastline, they can catch fish from coastal river and even offshore without any restriction. However, for the commercial harvesting, each fishing vessel, both domestic and foreign must have license to catch fish in the Exclusive Economic Zone (EEZ) of Bangladesh. Although there is the rule that trawlers cannot harvest fish within 40 meters from shoreline but in practice trawlers are operating within the mentioned areas. Small artisanal fishermen claimed that due to trawlers operation in the near shore they could not operate their gears properly and sometimes destroy their nets. They also reported that due to trawler operation fish school become scattered and they cannot fish smoothly (Habib, 1992).

Fish Harvesting and Marketing: According to the Department of Fisheries, presently 68 well equipped trawlers, about 21,830 mechanized and 28,700 non-mechanized fishing boats are engaged to harvest fish from coastal zone and from the Bay (DoF, 2001). During the last two decades wild shrimp fry *(Peaneus monodon)* collection and marketing have emerged as profitable trade in coastal zone. Ali (1992) reported that the number of those population is about 0.3-0.5 millions. Another 20,000- 25,000 (Ali, 1987) operate as primary and secondary traders who carry the fry from the primary collection points to the shrimp farmers.

The country produced about 1.66 millions tonnes of fish in 1999-2000 of which 0.67 millions tonnes (40%) came from inland open water, 0.65 millions tonnes

(39%) closed water and 0.34 millions tonnes (21%) came from the marine fisheries resources. Out of the total marine fish production about 95% was contributed by the small scale artisanal fishers equipped with mechanized and non-mechanized fishing boats and remaining about 5% of catch came from industrial fisheries or deep sea trawling fleet (DoF, 2001). In terms of volume, value and employment the fish market in Bangladesh is huge, varied and complex. These fish markets are controlled by the powerful intermediaries (middlemen). Four to five numbers of intermediaries are usually involved in fish marketing network (Fig.1).

In coastal zone of Bangladesh, Saint Martin's island, Technaf, Moheshkhali, Shonadia, Kutubdia, Anowara, Baskhali, Shitakundu, Shandip, Hatia, Bhola, Hazimara, Char Fashan, Rangabali, Kuakata, Alipur, Mohipur, Golachipa, Patharghata, Bagherhat, Parerhat, Dublachar are the major primary landing and marketing centers of fish (Hussain, 1994). From these centers the fish and shrimp go to Chittagong, Chandpur, Barisal, Dhaka, Khulna, Shatkhira, which are the major secondary landing and marketing centers. From the secondary landing centers fish are sent to city/town market centers throughout the country. Except for the initial and terminal points where the commodities are purchased from the fishers/farmers and sold to consumer respectively, the prices are set at each intermediate transfer/ sale points. Sales agents provide certain services including handling, sorting, auctioning, preservation, packing and repacking. Price is set by different methods, but the most common method is the open auction. In this system the auctioneers get 3-5% commission on sale value of the commodity and the actual expenses incurred thereupon. In case of trawler catch, the owners of the trawler sometimes sell fish through tender. In smaller landing centers however, fish are sold by negotiation between local buyers and sellers. Except at Bangladesh Fisheries Development Corporation (BFDC) stalls where price are fixed but retail prices are always negotiable. Ahmed (1983) conducted a limited scale of studies related to the marketing of Hilsa shed (*Tenualosa* spp), carps and air breathing catfishes. He reported that the primary producers (fishers/farmers) got 51-63% out of consumer's money. Middlemen got between 37-40%, while the remaining 12-24% were spent for transportation, preservation and other charges. Rahman (1993) made a socioeconomic survey among the boat owners and the fishermen crews and found that 60% of the value of the catch, after covering the operational costs go to the boat owner and the remaining 40% is distributed among the hired fishermen. Also Hussain (1994) gave an estimate of fishers share and marketing margins of marine fisheries products sold in Chittagong and Cox's Bazar areas. The primary producer got a share of 60-63% after meeting the marketing cost of 21.7-22.2% and the quality/weight loss of 1.6%. The middlemen on the other hand got the net margin of 13.3% to 16.1% out of consumer's money. The middlemen of major primary landing/marketing centers of the coastal areas especially of those of Cox's bazar, Chittagong, Bhola, Patuakhali, Barguna, Bagerhat, Shatkhira have formed some sort of association called Syndicate/ Godighor/ Arotdars/ Mohajon. These associations provide loan to the poor fishers just before the harvesting season, in condition to sell all the fish to the syndicate.

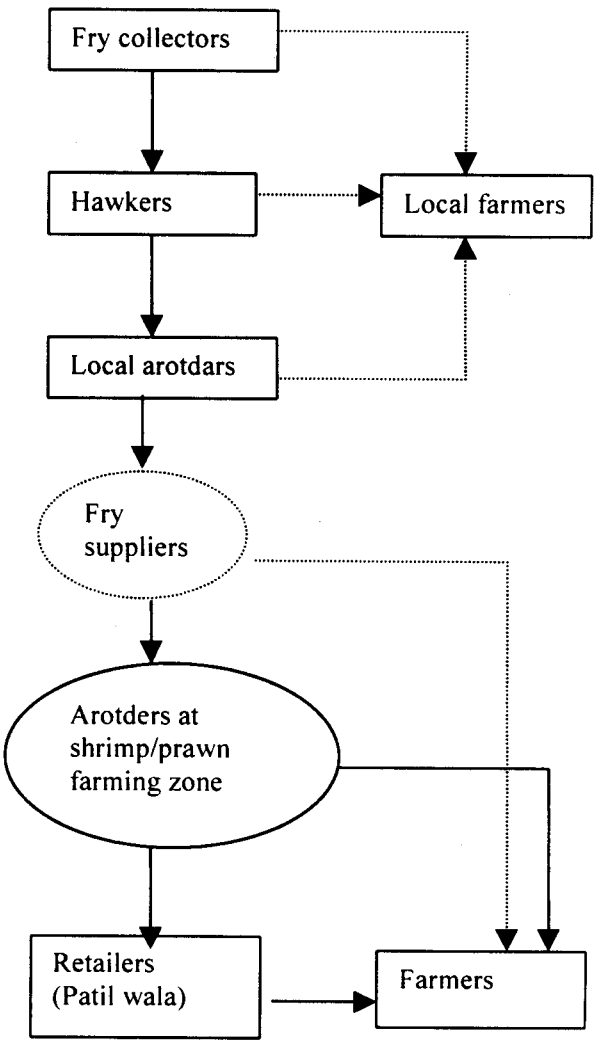

Fig.1: A typical marketing channel for wild source shrimp/prawn fry (Azad, 2002)

The syndicate fixed the price of the fish and kept the

fishers in dark of fish price. The buyers on the other end also remain in darkness. The fishers are bound to follow the system, since the moneylenders exert pressure by giving them credit/advances when required. Survey report from CODEC (Community Development Center) and PDP (Poor Development Programme) revealed that money lender exploit the fishers in four ways I) collect 50 TK. per hundred as interest for five months, ii) forced to sell fish to them at a nominal price iii) cut 5 percent commission and take away 1- 4 fishes free (Observer, 2000). Papri (1998) reported that in Patuakhali district moneylender gave only 2500Tk (Tk. 58 = US$ 1) for one pun (80 nos fish) medium size (1.5-2.0 kg) *Hilsa* fish to the fishers but they (money lender) got 6 –7 thousand taka by selling it to Barisal or Khulna district. A study within the shrimp seed collectors of Patuakhali and Barguna districts revealed that the collectors are getting only a share of 31% of selling money. Local moneylenders and traders (Godighor) getting 12% and 25% respectively. The rest spent for caring and quality lost cost.

Level of Education: In many instance fishers, like other occupational sub-cultures form societies unto themselves. Coastal fishers of Bangladesh are relatively isolated, because they are living along the narrow margins of rivers and the sea. This relative isolation is increased by their separation from land-based society while fishing. In addition, because many fishing people work at night or extremely early in the morning times when most of others are asleep. For offshore fishing, fishers sometimes stay 2-3 weeks into the sea. Social exclusion may inhibit their access to formal education. Rabbani and Sarker (1997) reported that 22% of the fishers of Sundarban (mangroves) Reserve Forest (SRF) areas are can write name and only 16% can read and write. Chantarasri (1994) found that a significant number of younger male and female (less then 15 years) involved with fishing activities. A survey (Azad, 2002) from Patuakhali and Barguna districts revealed that about 50% of school going children does not participate in class during peak season (February-May) of shrimp seeds collection.

Fisher's Cooperative: In true sense the fisher's cooperative is not working in Bangladesh. Resources limitation is one of the major causes for less effectiveness of cooperative. The relatively low level of formal education characteristic of many fishing communities in the developing world also has a negative effect, particularly on the management of cooperatives. Since the fishers are often illiterate it is difficult either to train them or to find qualified managers and accounts among them. In Bangladesh there are about 4500 primary cooperative societies of fishers, mainly in coastal and marine sector. Total number of members is about 5,37224 (Rahman, 1997). All are registered with the national apex organization called Bangladesh Jatiya Matshajibi Samabaya Samity (BJMSS). In local level some NGOs, those are working in coastal belt trying to organized the fishers. The government and some international agencies including DANIDA of Denmark, DFID of UK, Asian Development Bank (ADB) are funding the NGOs to operate the development programme for the coastal fishers. The leading NGOs including Community Development Center (CODEC) CARITAS, Poor Development Programme (PDP) are providing soft loans to the fisher groups and cooperatives.

Role of Women in Fishing Activities: Although traditionally fishing activities are male dominated but female members are playing a good role in the fisheries sector now a days in Bangladesh. A large number of women are employed in the export-oriented fish processing centres. They are found very punctual, attentive and sincere in their duties. In the coastal areas of Chittagong district women, belongs to the low caste Hindu community are engaged in small-scale fish trading (Rahman, 1997). In coastal area some of the fishers family spent most of the time in river with their boat. They cook and sleep inside the boat and the female member help the male member to harvest fish (Azad, per. obs., 2002). Female members also support in making, repairing nets, drying and curing of fish. BFRI (1994) conducted a socioeconomic and environmental study on the shrimp seed collection in coastal zone and found that 32% of total collectors are female. Most of them are widow and girl those came from the poor section of coastal community.

Access to Credit: Although there are available policies, programme and priority for giving credit support to the poor and marginal fishers/farmers from formal financial institutions, the fishers are not yet derive the benefit. According to survey conducted by two NGOs (CODEC and PDP) working with fishers, most of the fishers of 17 coastal districts are borrow money from local moneylender in absence of loan facilities from the scheduled banks (Observer, 2000). Absence of collateral, too small loans, poor communication network, lack of manpower, fixed monthly repayment system, poor repayment rate are the major constraints for credit from the scheduled banks. On the other hand traditional moneylenders in most fishing communities have a long relationship with fishers. During communal unrest in 1990 and 1992 the Muslim moneylenders protect and help the Hindu fishers (Alam, 1998). Even in 2000, when government imposed regulation to stop shrimp seed harvesting from wild sources, the local

(39%) closed water and 0.34 millions tonnes (21%) came from the marine fisheries resources. Out of the total marine fish production about 95% was contributed by the small scale artisanal fishers equipped with mechanized and non-mechanized fishing boats and remaining about 5% of catch came from industrial fisheries or deep sea trawling fleet (DoF, 2001). In terms of volume, value and employment the fish market in Bangladesh is huge, varied and complex. These fish markets are controlled by the powerful intermediaries (middlemen). Four to five numbers of intermediaries are usually involved in fish marketing network (Fig.1).

In coastal zone of Bangladesh, Saint Martin's island, Technaf, Moheshkhali, Shonadia, Kutubdia, Anowara, Baskhali, Shitakundu, Shandip, Hatia, Bhola, Hazimara, Char Fashan, Rangabali, Kuakata, Alipur, Mohipur, Golachipa, Patharghata, Bagherhat, Parerhat, Dublachar are the major primary landing and marketing centers of fish (Hussain, 1994). From these centers the fish and shrimp go to Chittagong, Chandpur, Barisal, Dhaka, Khulna, Shatkhira, which are the major secondary landing and marketing centers. From the secondary landing centers fish are sent to city/town market centers throughout the country. Except for the initial and terminal points where the commodities are purchased from the fishers/farmers and sold to consumer respectively, the prices are set at each intermediate transfer/ sale points. Sales agents provide certain services including handling, sorting, auctioning, preservation, packing and repacking. Price is set by different methods, but the most common method is the open auction. In this system the auctioneers get 3-5% commission on sale value of the commodity and the actual expenses incurred thereupon. In case of trawler catch, the owners of the trawler sometimes sell fish through tender. In smaller landing centers however, fish are sold by negotiation between local buyers and sellers. Except at Bangladesh Fisheries Development Corporation (BFDC) stalls where price are fixed but retail prices are always negotiable. Ahmed (1983) conducted a limited scale of studies related to the marketing of Hilsa shed (*Tenualosa* spp), carps and air breathing catfishes. He reported that the primary producers (fishers/farmers) got 51-63% out of consumer's money. Middlemen got between 37-40%, while the remaining 12-24% were spent for transportation, preservation and other charges. Rahman (1993) made a socioeconomic survey among the boat owners and the fishermen crews and found that 60% of the value of the catch, after covering the operational costs go to the boat owner and the remaining 40% is distributed among the hired fishermen. Also Hussain (1994) gave an estimate of fishers share and marketing margins of marine fisheries products sold in Chittagong and Cox's Bazar areas. The primary producer got a share of 60-63% after meeting the marketing cost of 21.7-22.2% and the quality/weight loss of 1.6%. The middlemen on the other hand got the net margin of 13.3% to 16.1% out of consumer's money. The middlemen of major primary landing/marketing centers of the coastal areas especially of those of Cox's bazar, Chittagong, Bhola, Patuakhali, Barguna, Bagerhat, Shatkhira have formed some sort of association called Syndicate/ Godighor/ Arotdars/ Mohajon. These associations provide loan to the poor fishers just before the harvesting season, in condition to sell all the fish to the syndicate.

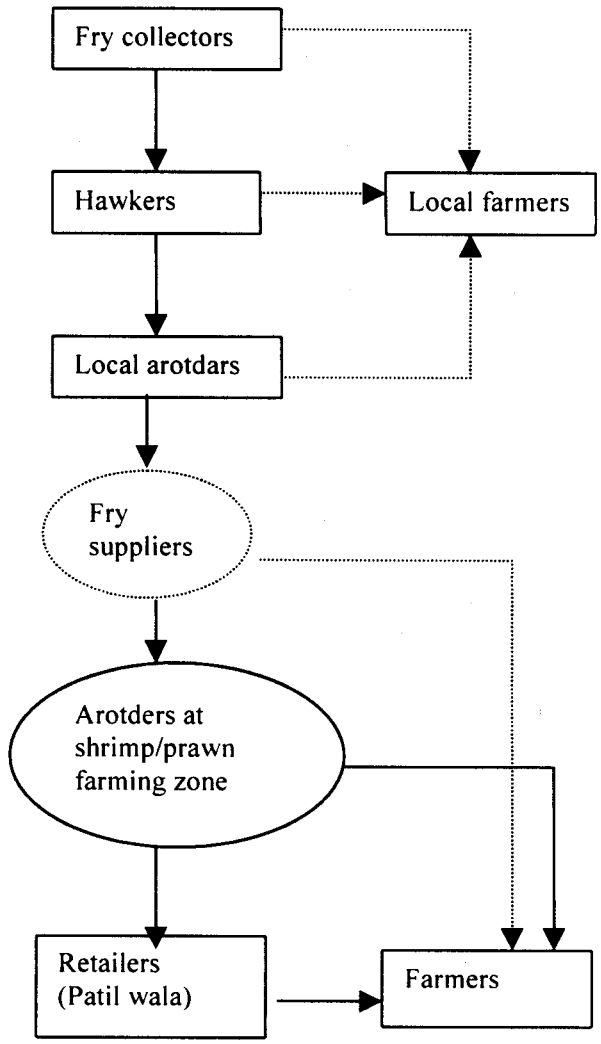

Fig.1: A typical marketing channel for wild source shrimp/prawn fry (Azad, 2002)

The syndicate fixed the price of the fish and kept the

fishers in dark of fish price. The buyers on the other end also remain in darkness. The fishers are bound to follow the system, since the moneylenders exert pressure by giving them credit/advances when required. Survey report from CODEC (Community Development Center) and PDP (Poor Development Programme) revealed that money lender exploit the fishers in four ways I) collect 50 TK. per hundred as interest for five months, ii) forced to sell fish to them at a nominal price iii) cut 5 percent commission and take away 1- 4 fishes free (Observer, 2000). Papri (1998) reported that in Patuakhali district moneylender gave only 2500Tk (Tk. 58 = US$ 1) for one pun (80 nos fish) medium size (1.5-2.0 kg) *Hilsa* fish to the fishers but they (money lender) got 6 –7 thousand taka by selling it to Barisal or Khulna district. A study within the shrimp seed collectors of Patuakhali and Barguna districts revealed that the collectors are getting only a share of 31% of selling money. Local moneylenders and traders (Godighor) getting 12% and 25% respectively. The rest spent for caring and quality lost cost.

Level of Education: In many instance fishers, like other occupational sub-cultures form societies unto themselves. Coastal fishers of Bangladesh are relatively isolated, because they are living along the narrow margins of rivers and the sea. This relative isolation is increased by their separation from land-based society while fishing. In addition, because many fishing people work at night or extremely early in the morning times when most of others are asleep. For offshore fishing, fishers sometimes stay 2-3 weeks into the sea. Social exclusion may inhibit their access to formal education. Rabbani and Sarker (1997) reported that 22% of the fishers of Sundarban (mangroves) Reserve Forest (SRF) areas are can write name and only 16% can read and write. Chantarasri (1994) found that a significant number of younger male and female (less then 15 years) involved with fishing activities. A survey (Azad, 2002) from Patuakhali and Barguna districts revealed that about 50% of school going children does not participate in class during peak season (February-May) of shrimp seeds collection.

Fisher's Cooperative: In true sense the fisher's cooperative is not working in Bangladesh. Resources limitation is one of the major causes for less effectiveness of cooperative. The relatively low level of formal education characteristic of many fishing communities in the developing world also has a negative effect, particularly on the management of cooperatives. Since the fishers are often illiterate it is difficult either to train them or to find qualified managers and accounts among them. In Bangladesh there are about 4500 primary cooperative societies of fishers, mainly in coastal and marine sector. Total number of members is about 5,37224 (Rahman, 1997). All are registered with the national apex organization called Bangladesh Jatiya Matshajibi Samabaya Samity (BJMSS). In local level some NGOs, those are working in coastal belt trying to organized the fishers. The government and some international agencies including DANIDA of Denmark, DFID of UK, Asian Development Bank (ADB) are funding the NGOs to operate the development programme for the coastal fishers. The leading NGOs including Community Development Center (CODEC) CARITAS, Poor Development Programme (PDP) are providing soft loans to the fisher groups and cooperatives.

Role of Women in Fishing Activities: Although traditionally fishing activities are male dominated but female members are playing a good role in the fisheries sector now a days in Bangladesh. A large number of women are employed in the export-oriented fish processing centres. They are found very punctual, attentive and sincere in their duties. In the coastal areas of Chittagong district women, belongs to the low caste Hindu community are engaged in small-scale fish trading (Rahman, 1997). In coastal area some of the fishers family spent most of the time in river with their boat. They cook and sleep inside the boat and the female member help the male member to harvest fish (Azad, per. obs., 2002). Female members also support in making, repairing nets, drying and curing of fish. BFRI (1994) conducted a socioeconomic and environmental study on the shrimp seed collection in coastal zone and found that 32% of total collectors are female. Most of them are widow and girl those came from the poor section of coastal community.

Access to Credit: Although there are available policies, programme and priority for giving credit support to the poor and marginal fishers/farmers from formal financial institutions, the fishers are not yet derive the benefit. According to survey conducted by two NGOs (CODEC and PDP) working with fishers, most of the fishers of 17 coastal districts are borrow money from local moneylender in absence of loan facilities from the scheduled banks (Observer, 2000). Absence of collateral, too small loans, poor communication network, lack of manpower, fixed monthly repayment system, poor repayment rate are the major constraints for credit from the scheduled banks. On the other hand traditional moneylenders in most fishing communities have a long relationship with fishers. During communal unrest in 1990 and 1992 the Muslim moneylenders protect and help the Hindu fishers (Alam, 1998). Even in 2000, when government imposed regulation to stop shrimp seed harvesting from wild sources, the local

moneylenders raised their voice in favor of the fry collectors. The moneylenders also understand the problem of fishers and usually permit flexibility to repayment of loans. These are perhaps the reasons the fishers are interested to take loan from the local moneylenders. From two villages (Punjupara and Nasnapara) of Patuakhali and Barguna districts, it is found that 79% of the fishermen had taken loan from the local moneylenders.

Water and Sanitation: Safe water is a big problem in the coastal zone of Bangladesh. Due to salinity and arsenic contamination installation of shallow tube wells are not suitable in the coastal districts. On the other hand Deep Hand Tube Well (DHTW) installation cost in coastal area is much more higher (US$ 1200) than the other parts (US$ 120) of Bangladesh. The fishers cannot afford such amount of money for DHTW. Previously the Department of Public Health and Engineering (DPHE) has taken action to set up DHTW but most of them are installed at public (school premises) places or at the doorsteps of the socially well being household. Fishermen of west Kuakata and Amtoli informed that they usually go to 2 km far to fetch drinking water. DPHE-DANIDA (2001) reported that people of coastal zone generally use tube well water for drinking purpose but for other household activities including household washing, bathing, cooking they use pond and river water. It is also reported that although 60% people defecated in fixed place (pit latrine) but most of the latrines are not up to the mark of sanitary point of view. During rainy season most of the pit latrines go under water and contaminate the pond and river water. As a result diarrheal disease and parasitic infection are common within the coastal community including the fishers.

Vulnerability to Natural Disaster: Bangladesh is a disaster prone country faces flood and cyclone very frequently due to its geographical location. Approximately 45 damaging cyclones were reported in the coastal area from 1793 to May 1997. The frequency of cyclone during this period averaged once in every 4.5 years (Hossain, 2001). About 131,000 to 139,000 people were killed during the devastating cyclone on 29 April 1991. The majority of them were the fishers and their family members (Talukder and Ahmed, 1992). It is reported that poor weather forecasting system, lack of transistors in boat, lack of cyclone shelter are the main causes of severe loss of lives. Fishermen argued with grieve that a boat has insurance but there is no insurance for their lives. Moreover man-made calamities (robbery and snatchery) are very common in the Bay of Bengal (Monto, 1996).

Development Intervention and the Fishers: In the past, there were a small number of populations who were involved with fishing activities but there were ample fisheries resources in the rivers and coastal zone of Bangladesh. The traditional fishermen community enjoyed absolute communal right to fishing and enjoyed better economy due to abundance of resources relative to the size of the population. In the 1960 decade when Food and Agricultural Organization (FAO) declared 'Green Revolution' programme to promote cereal crops the than Govt. of Bangladesh had taken steps to recover the coastal agricultural land through poldering (Chanda, 1997). The planners termed the coastal wetland as "wasteland" (Khan and Karim, 1982). Government also took necessary actions to raise the coastal river embankments (locally called *beri bath*) to control flood and saline water intrusion. These steps made the people more confident to live in coastal area and many people migrated for permanent settlement in the coastal area. Now the population density is much more higher (1018 person/sq. km) in coastal zone than that of upland (827 person/sq.km) of Bangladesh (BBS, 1998). The coastal fishers could not keep pace with the development, as they were poor and as they did not get chance to participate in the development process. In mid 1980s shrimp become an important export commodity and coastal mangroves areas become the gold mine for shrimp farming. Investors occupied vast mangroves areas of the coastal districts including Khulna, Bagerhat and Cox's Bazar for shrimp farming. As a result common property resources become private owned property and many fishers lost their access right to mangroves areas, which were their mean of livelihood (Brown, 1997). Unplanned development also destroyed the spawning and migratory ground of fishes. On the other hand some development programme brought positive impact upon the livelihood of the fishermen community (Alam *et. al.*, 1998). Some national and international organization have been trying to enhance the economic, increase the educational, water sanitation and rural communication condition; which includes CODEC, CARITAS, Dhaka Ahsania Mission, DANIDA of Denmark and DFID of UK.

Conclusion

It can be recognized that fishers are in threatened condition because of growing imbalance between fisheries resources and needs of better livelihood and socioeconomic condition. Illiteracy, unemployment, poverty and inequality are the major obstacles for development the fishers and the coastal resources. Also frequent shifting in policy and non-cooperation from government authority created frustration among

the fishing community.

For sustainable development of livelihood and socioeconomic condition of the coastal fishers, integrated coastal zone management (ICZM) approach should be adopted. It has been widely promoted as a framework for the management of coastal resources in many developed countries of the world. The key principle of this approach are vertical integration between national and local policy as well as horizontal integration between different sectors including fisheries, forest and land ministry. Some others key points related to ICZM should be taken under consideration, such as:

* Strict enforcement of rules and regulations on the coastal resources use and management are needed. Fish catch quotas, licensing or combination of these could be effective for empowering the fishers and for management of fisheries. Fisher community people should be involved in every step of planning and implementation process.
* Government and NGOs should come forward to create alternative employment opportunities including silviculture, aquaculture, agriculture, eco-tourism etc; so that fishers can earn through out the year.
* Social infrastructure including better marketing facilities, communication network, school, safe water and sanitation, health center, cyclone shelter should be developed.
* Provision of formal bank credit and insurance for the fishermen should be developed, so that the fishers can cope with immediate natural shocks and recover from the losses with dignity.
* Systems should be developed to have regular weather forecasting, frequent naval visit to save the lives of fishers. Coast gourd should play an active role to stop robbery and snatching.

References

Ahmed, N., 1983. Marketing of selected fishes in Bangladesh: A study in efficiency. Ph.D.Thesis. Department of Marketing. Univ. Dhaka.

Ali, Y. M., 1987 Fisheries report on coastal environment management for Bangladesh. ESCAP Symposium. 37-66 pp.

Ali, S., 1992. Shrimp production and culture in Bangladesh (in Bengali). Bangla Academy: 98 p.

Ali, M.L. and M.M. Hossain, 1996. Fisheries resources development and management in Bangladesh. Fish Fortnight Supplementary 1996 (in Bengali). Department of Fisheries (DoF), Bangladesh . 11-12pp.

Ali, M.L., 1998. Techniques of Fisheries Resources Management and Development. Fish Fortnight Supplementary, (in Bengali). Department of Fisheries (DoF), Bangladesh. 110 p.

Alam, Q.K., 1998. Two Fishing Village of Bangladesh: A community Study. Ph. D. thesis. The Centre of International Studies. Aalborg Univ., Denmark. 210p

Alam, K., R. Dastidar and S.E.A. Reza, 1998. Pain and pleasure of the fishing communities around the river Megna. Community Development Centre (CODEC) Chittagong, Bangladesh. 49p.

Azad, M.A.K., 2002. The biological and socioeconomic aspects of shrimp fry collection in Patuakhali and Barguna: Two coastal districts of Bangladesh. M.Sc. Thesis. Asian Institute Technology (AIT), Thailand.

Barman, A.M., 1992. A River Called Tista, Penguin, New Delhi, India.

BOBP, 1992. Extension Approaches to Coastal Fisher folk Development in Bangladesh. Bay of Bengal Programme (BOBP). FAO, Madras 6000 18, India.

BOBP, 1993. Studies of interactive marine fisheries of Bangladesh. Bay of Bengal Programme (BOBP).FAO, Madras 6000 18, India.

Brown, B.E., 1997. Integrated Coastal Management: South Asia. Department of Marine Science and Coastal Management, University of Newcastle, Newcastle, UK.

BBS, 1998. Statistical Pocket Book of Bangladesh-1987. Bangladesh Bureau of Statistics (BBS), Dhaka.

BFRI, 1994. Shrimp Farming and Export in Coastal Area: Problem and Prospect (in Bengali). Bangladesh Fisheries Research Institute (BFRI). Proceedings of the workshop. 84p.

CODEC, 1991. Changes in Fishermen's Lives of Coastal Villages in Chittagong, CODEC Experience. Report 5. Community Development Centre (CODEC), Chittagong, Bangladesh.

Chantarasri, S., 1994. Fisheries Resources Management in Sundarban Reserved Forest. Integrated Resources Development of the Sundarban Reserved Forest, Bangladesh. BGD/84/056 UNDP and FAO.

Chanda, A.C., 1997. Shrimp Farming in Bangladesh: Economic Prospect and Environmental Disaster. Fish Fortnight Supplementary (in Benga). Department of Fisheries (DoF), Dhaka. 68-72 pp. De, K.C. 1910, Report on the Fisheries of East Bengal and Assam, Shillong. Bengal District Gazetteers, India.

DoF, 2001. Year-wise Fish Production of Bangladesh. Fish week Supplementary. Department of Fisheries (DoF), Dhaka, Bangladesh.

Dphe-Danida, 2001. Annual Report on Coastal Belt Rural Water Supply and Sanitation. October 2000-June 2001. DPHE-DANIDA Water Supply and Sanitation Project. Regional Office, Patuakhali, Bnagladesh.

Habib, A., 1992. Delipara: An Obscure Fishing Village of Bangladesh. Community Development Centre (CODEC) Publication. Chittagong Bangladesh. 35-40pp

Hussain, M.M., 1994. Fish marketing in Bangladesh. In the proceedings of INFO FISH/ LKIM/ FAO regional workshop of fish marketing in Asia. 26-29, September 1994. Kualalumpur, Malaysia. 24-44pp.

Hossain, M.S., 2001. Biological aspects of the coastal and marine environment of Bangladesh. Ocean and Coastal Management 44: 261-282.

Islam, M.S., 1994. Socio-economic Status of Marine Fishermen and Their Upliftment. In: Mazid, M.A.; Sinha, V.R.P. and Kamal, M (eds); Sustainable Development of Marine Fisheries Resources in Bangladesh. Proceedings of a workshop held in Cox's Bazar.

Jenson, K.M., 1985. By the River Meghna. Centre for Development Research, Copenhagen, Denmark. 34-35pp

Khan, M.S. and A. Karim, 1985. Bangladesh: Utilization of the Deltaic Zone. In: Chandra H. Soysa, Chia Lin Sien and William L. Collier (eds) Man, Land and Sea: Coastal Resources Use and Management in Asia and the Pacific. 85-100pp

Khan, M.G., H. Alamgir and M.N. Sada, 1997. The Coastal Fisheries of Bangladesh. In: Sildvestre,G.T. and D. Pauly, (eds). Status and management of tropical coastal fisheries in Asia. ICLARM Conf. Proc. 53, 203 p.

Mahmood, N., 1995. On the fishery significance of the mangroves of Bangladesh. A paper presented at the workshop on Coastal Aquaculture and Environmental Management, 25-28 April 1995, Cox's Bazar. Organized and sponsored by Institute of Marine Science, Chittagong University and UNESCO.

Monto, R.I., 1998. Life-Style and Human Rights in Char (shoal) Area. (In Bengali) 80p. Mass-Line Media Centre (MMC) Publication. 5/3 Block D, Lalmatia, Dhaka 1207.

Observer, 2000. Fishermen of coastal belt demand bank loan. A Survey Report of Community Development Centre (CODEC) and People Development Program (PDP). The Daily Observer.

Pokrant, B., P . Reeves and J. MeGuire, 1997. Riparian Rights, the Organization of Work and Market Relations Among the Inland Fishers of Colonial Bengal, 1793 to 1950. In: Chi-fa Tsai and Ali, M.Y. (eds) Open Water Fisheries of Bangladesh. 27-48 pp.

Papri, N.F.H., 1998. Abject Life of Fishers Family. The Fortnight Rural News.

Risley, H.H., 1981. The tribes and castes of Bengal. vols 1 and 11, Firma Mukhopadhyay. Culcutta,West Bengal.

Raja, B.T. A., 1985. A review of biology and fisheries of *Hilsa ilisha* in the upper Bay of Bengal. BOBP/WP/37, 66p.

Rahman, A.K.M., 1993. Socioeconomic Issues of Fisheries Sector in Bangladesh. A paper presented in the workshop on Fisheries Socio-economics and Marketing. Organized by South Asian Association for Regional Cooperation (SARC), Dhaka. 16-17.

Reeves, P., 1995. Inland waters and freshwater fisheries: Some issues of control, access and conservation in colonial India. In: D, Arnold and R, Guha (eds): Nature, Culture, Imperialism: Essays on the Environmental History of South Asia. Oxford Univ. Press, Delhi, 260-292pp.

Rahman, A.K.A., 1997. Fish marketing in Bangladesh: Status and Issues. In: Chi-fa Tsai and Ali, M.Y.(eds), Open Water Fisheries of Bangladesh, 27-48pp.

Rabbani, A.G. and M.S. Sarker, 1997. Study on the current status of the fish extraction and revenue collection from Sundarbans Reserved Forest. A project research paper in Fisheries and Marine Resources Technology Discipline. Khulna Univ. Bangladesh.

Shely, A.B. and S.M.N. Alam, 1998. Community Participation in Open Water Management. Fish Fortnight Supplement (in Bengali). 110p

Talukder, J. and M. Ahmed, 1992. The April Disaster: Study on Cyclone Affected Region of Bangladesh. Community Development Library Publication, Dhaka.