

Living in the Coast  
**PEOPLE AND LIVELIHOODS**

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PDO-ICZMP  
Saimon Center (5<sup>th</sup> Floor)  
House 4A, Road 22  
Gulshan 1, Dhaka 1212  
Bangladesh

Tel: (880—2) 9892787, 8826614  
Fax: (880-2) 8826614  
E-mail: [pdo@iczmpbd.org](mailto:pdo@iczmpbd.org)  
Web: [www.iczmpbangladesh.org](http://www.iczmpbangladesh.org)

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PDO-ICZMP project has initiated a series on *Living in the Coast* to enhance knowledge base on communities, issues, processes and dynamics in the coastal zone of Bangladesh. This document is the first in the series with focus on coastal livelihoods

The document is a result of a teamwork led by Mohiuddin Ahmad. Other members of the team, who were involved at different stages, are Afsana Yasmeen, Md. Sayed Iftekhar, Rounakul Islam, Md. Shahjahan, Begum Shamsunnahar, Hamidul Huq, Marianne Nugteren and Dirk Frans. John Soussan, Rob Koudstaal and M. Rafiqul Islam provided conceptual guidance.



## PREFACE

Livelihoods differ in different social, ecological and institutional settings. One important task of the PDO-ICZMP project is to improve the understanding of the livelihoods in the coastal zone. This is essential for the development of a meaningful coastal zone strategy. The underlying objective is to find ways and means that facilitates strengthening of the community capacity to enhance livelihoods and thereby well-being of households.

From the outset the sustainable livelihood framework (SLF) was used as a conceptual tool for a coastal livelihoods analysis (CLF). Information about the way people perceive their conditions and the possibilities to improve them is important. To this end, a household sample survey was carried out across the coast on the *perceptions of direct stakeholders on coastal livelihood* (PDSCL) in May-August 2002. Findings were presented in a working paper (WP004, September 2002). Then an introductory analysis of coastal livelihoods was attempted along with limited secondary data (WP011, January 2003). Shortly, a more detailed analysis combining PDSCL survey data and secondary data was done (WP015, June 2003). Besides, an inventory of social safety nets and micro-credit programs of the government and NGOs has been made to obtain a general understanding of targeted interventions for the poorest sections of the population (WP012, April 2003). This was followed by an analysis of the urban poor in the coastal zone (WP021, August 2003). At the same time it was endeavored to obtain insight about local level institutional arrangements of selected coastal projects that aimed to enhance livelihoods of the poor. Three cases were studied: the KJDRP in Khulna-Jessore (WP013, May 2003), CDSP in Noakhali-Chittagong (WP019, August 2003) and the ECFC project in Cox's Bazar (WP023, September 2003). Moreover, a gender status paper has been prepared highlighting gender dimension of coastal livelihoods (WP027, January 2004). The present document is an attempt to synthesize all the findings and analyses incorporated in these working papers and to draw some exploratory conclusions.

The core objective of this exercise is to understand and conceptualize coastal livelihood issues in the backdrop of vulnerabilities and opportunities. This brings in three broad sources of information, aiming to obtain a more representative picture of the coastal livelihood conditions: primary data (people's perceptions obtained through PDSCL survey), secondary data (BBS and other literature) and the experience and opinion of experts involved in an interactive process.

The document has been kept as short and simple as possible so that cross-sections of policymakers and development practitioners can smoothly sail through the pages. For details, one may refer to other PDO documents mentioned above that are used as building block for the analysis.

The analysis is likely to broaden the discourse on coastal livelihoods under concrete realities of Bangladesh. Given a complex and dynamic coastal environment, this should not be viewed as a one-time exercise, but needs to be updated periodically.

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## GLOSSARY

Bagda	Brackish water shrimp
Beel	Wetland that retains water round the year
Bahadder	Owner of fishing boat
Bawali	Wood cutter/collector in Sundarban
Char	Newly accreted land
Gher	Shrimp field
Ghush	Bribe
Golda	Fresh water prawn
Golpata	Plant grown in Sundarban, used as housing material ( <i>Nypa Fruticans</i> )
Hat-bazar	Market place
Jaladasshu	Pirate
Kantha	Quilt made of used clothes
Khal	Canal
Khas land	Indisposed government land
Kistee	Installment (for loan repayment)
Masjid	Mosque
Mawali	Honey collector in Sundarban
Mazar	Mausoleum of a saint
Mohajan	Moneylender; patron
Maund	Traditional unit of weight (1 maund = 40 kg)
Muri	Puffed rice
Samaj	Traditional social coalition
Salish	Informal institution comprising community leaders for conflict resolution
Taka	Bangladesh currency (58.5 taka = 1 US\$)
Union Parishad	Local government at the union level



## 1. INTRODUCTION

### Context

A livelihood analysis essentially envisages characterization of major livelihood groups with respect to their ownership of and access to resources, their strategic choices to use their assets in income-earning (or cost-saving) activities and their susceptibility to vulnerabilities. This has been attempted in this document for the concrete conditions of the coastal zone to see whether livelihoods in this zone are different from the rest of the country or not and, if different, to what extent.

The coastal livelihood analysis provides a better understanding of coastal livelihood conditions at present and in future. This understanding has been instrumental in preparing a meaningful coastal zone policy, and would guide the formulation of a pragmatic coastal development strategy and a feasible investment program for enhancement of livelihoods of the coastal people, particularly the disadvantaged groups.

### Delineation

The foremost issue is to grasp a sense of the coastal zone itself. Nineteen districts facing the Bay of Bengal or having proximity to the Bay and the exclusive economic zone (EEZ) in the Bay are grouped into a zone in terms of three geo-physical characteristics that distinguish the coastal zone from rest of the country: interplay of tidal regime, salinity in soil and water and cyclone and storm surge; with economic and social implications on the population. These districts are Bagerhat, Barguna, Barisal, Bhola, Chandpur, Chittagong, Cox's Bazar, Feni, Gopalganj, Jessore, Jhalkati, Khulna, Lakshmipur, Narail, Noakhali, Patuakhali, Pirojpur, Satkhira and Shariatpur (PDO-ICZMP, 2003a).

The coastal zone of Bangladesh is a mixture of very old settlements and new land developments. It was part of different kingdoms and ruled by different dynasties for many centuries, which consequently shaped the cultural trait and the social fabric of respective populations.

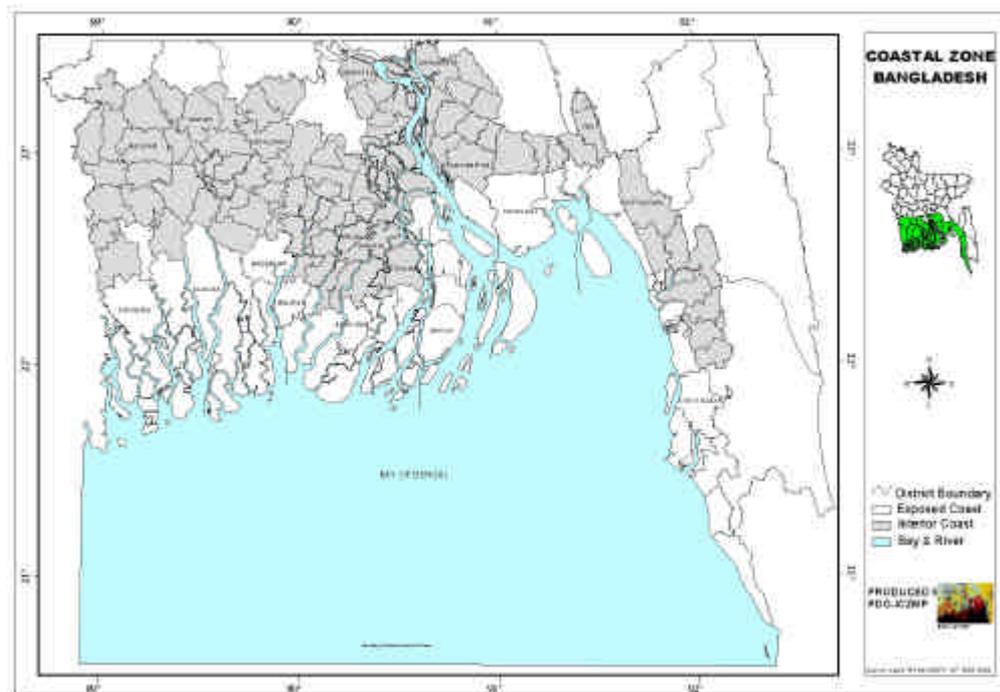
Along the coast in easterly direction, the physical features change, as well as the social makeup. The western part is a moribund delta (in this part the largest mangrove forest, *Sundarban*, is located); the middle part (the *Meghna* estuary area) is an active delta; and the eastern part (Chittagong coast) is a stable landmass. These parts have also some cultural differentiations rooted in the political history. The western part (Khulna) belonged to the territory of *Rarh*, the Barisal area (formerly called Bakerganj) was known as *Chandradwip*, the Comilla-Noakhali area was part of *Samatat* and the eastern part (Chittagong coast) belonged to *Horikel*. These

“regional” entities continued for centuries until the *Mughals* integrated them in the seventeenth century (PDO-ICZMP, 2003b).

In a southern direction, further compartmentalization of the coastal zone is observed. These are:

- ◇ old land: more integrated with the mainstream economy, consolidated human habitat, some are vulnerable to erosion and drainage congestion;
- ◇ *char* land: newly accreted land, new settlements, lack of social cohesion, higher salinity level and low access to services; and
- ◇ offshore island: isolated, exposed to natural calamities and little access to services.

There are 48 upazilas/thanas with cyclone risks, salinity and tidal movement above threshold level facing the sea or the lower estuary in 11 districts, which comprise the ‘exposed coast’. This includes among others all *chars* and more than 50 islands. The rest of the area mainly constituted by old and stable lands is considered as the ‘interior coast’ (see Figure 1).



**Figure 1: Map of the coastal zone of Bangladesh**

## Natural system

The natural configuration of the coastal zone is related to its unique composition and landscape that includes:

- ◇ inter-tidal land;
- ◇ beach;
- ◇ wetland/ rivers and *beels*;
- ◇ floodplain; and
- ◇ hill.

This natural system has some explicit functions. These are:

- ◇ flood alleviation;
- ◇ storm surge;
- ◇ water retention and drainage;
- ◇ habitat for fish;
- ◇ assimilation of wastes;
- ◇ regulation of saltwater intrusion;
- ◇ transport of sediments; and
- ◇ sedimentation/accretion.

The coastal zone has a myriad of natural resources that stems from its natural system. Some are renewable (freshwater, soil, forest, salt, wind, solar energy, wildlife, etc) and some are non-renewable (oil/gas, sand, minerals, space, etc). The natural system sets the stage where the people pursue their livelihoods.

## People

According to 2001 population census, the coastal zone of Bangladesh has a population of 35.1 million. They are 28 percent of the total population. Average size of household is 5.1. The density of population is 743 per km<sup>2</sup>. Women are 49 percent, while 23 percent are urban-dwellers. Size of the labor force (population of 15-59 year age group) is 18.6 million who are 53 percent of the population. Population increased at an exponential rate of 1.36 percent annually during the inter-census period of 1991-2001. This is lower than the national rate (1.48%) and is indicative of net out-migration from the coastal zone to other areas.

Although Bangalees are the major ethnic community, there are 10 other ethnic communities who also live in the coastal zone. Among them are Chakma, Khiyang, Marma, Munda, Murang, Rakhaine, Tanchangya, Tripura, Mahato and Pundra-

Khatrio. Their total population was estimated at 0.2 million in 1991 (Kamal, Quazi and Akhter, 2001).

More than a quarter of the population of the country lives in a coastal environment with multiple vulnerabilities and opportunities. Their despair and dream, their plight and struggle, their vulnerability and resilience, are uniquely situated in an intricate ecological and social setting that makes their livelihoods distinctive from other parts of the country to a considerable extent.

## 2. LIVELIHOODS

A household is the basic social institution that also performs as an economic unit. It draws on a set of assets or capital it possesses. Besides, it may (or may not) have entitlements or access to other resources that constitute the local resource base. Ownership and access to these assets, entitlements and resources provides a household with the basic infrastructure to make choices, which are translated into concrete activities for living. These activities then generate some income, which is disposed in various ways. These activities define and differentiate groups or social categories engaging in one or a set of such activities and entering into certain relations of production and modes of exchange.

A household can change its resource base by taking certain strategies and decisions. But there are processes and dynamics beyond the control of a household or even of a public authority to which a household may be vulnerable. A household tends to cope with the vulnerability factor using its resource base. If a household lacks resilience or coping capacity, it becomes more vulnerable. Some sections of the population within a seemingly homogeneous group may be more vulnerable than others.

It is important to know how the coastal zone looks in terms of resource endowment. Are the people worse than the rest of the country, or better off? An analysis has been attempted in this chapter using selected indicators that are representative for the household assets and for which some disaggregate data is available.

### Household assets

Livelihood conditions of the people largely depend on what resources are available at the household level in terms of ownership and access<sup>1</sup>.

Household asset base provides the necessary condition for selection of livelihood option, going for gainful activities and coping with all odds. Table 1 presents an indicative list of such assets (for details, see PDO-ICZMP, 2002).

**Table 1: Livelihood assets**

Cluster	Assets
Human	Household members, health, education, training
Social	NGO/cooperative groups, UP, network/connection
Natural	Land, water, common property resources (CPR)
Physical	House, tube well, latrine, electricity, cattle, poultry, tools and utilities
Financial	Savings, credit, food/cash assistance (safety nets)

Source: PDO-ICZMP, 2002

<sup>1</sup> Resources are synonymous of 'assets' or 'capital' used in the "sustainable livelihood framework" (SLF).

## Local resource base

Households exist and operate in a given local resource base. The local resource base encompasses a host of open access natural resources (*khas* land, wetland, forest, etc.), physical infrastructures (road, telecommunications, school, hospital, polder, cyclone shelter, embankment, tube well, etc.), social capital (formal institutions like *Union Parishad*, VGD committee, other service providers, legal regime, etc. and informal institutions like *samaj*, *salish*, traditional laws and tenets, social sanctions, community regulations, etc.) and financial resources (safety net programs, micro-credit, relief, etc.). Access to these resources often influences livelihoods of the people to a significant extent. The process of pauperization and marginalization is aggravated because of shrinkage in open access resources, degradation of the ecosystems, coercive and discriminatory attitude and policy of some institutions and whim of the local power brokers. This is manifested in the excerpts from life stories cited in Box 1 (PDO-ICZMP, 2002).

Access to local resource base is determined by at least two factors.

First, certain resources must exist locally, such as, a road (for passenger and freight traffic), a hospital (for medical treatment) or a deep tube well (for safe water) or a UP office (for wide range of services). In far-flung areas of the coastal zone, such institutions or services are absent or are not in close proximity of the inhabitants.

Secondly, even if infrastructures, services and institutions exist, everybody does not have access to these because of unequal power structure or higher cost or rigid conditionality or social discrimination or cultural prejudice.

## Options

Based on household assets (ownership and/ or access), members engage in a host of activities to earn their living. Choices are conditioned by the extent of the respective asset base. A household with a diversified asset base has obviously more options and is in a better position to maximize household well-being by attaining a higher level of income, consumption, comfort and security, and diversifying risk as well.

Activities are of different nature. Some are directly cash earning (cow selling, agriculture labor) and some are cost saving (boat maintenance, net repairing); some are related to self-employment (farming on own land, crab collection, horticulture) and some correspond to wage employment (agriculture labor, industrial labor, paddy husking); some contribute directly to household income (farming, fishing) while some relate to housekeeping for comfort of all household members (house cleaning, cooking). All these together define human existence in a particular setting.

### Box 1: No space for the poor

- *Goriber jonno kono sarker nai (there is no Government for the poor). If the MP allocates wheat for us, his local leaders just eat it; they never give it to us. There is a pond for common use, but it is not deep. Water is already polluted. Government can excavate it deeper where we can cultivate fish collectively. We could use the pond water for bathing. We demanded for the re-excavation but until now nothing happened (Baten, Chakaria).*
- *If cyclone occurs again, Allah banchabe (God will help us). NGO and government must help us. Otherwise there will be kiamat (doomsday). And we all will die. But if there is scope we shall try to survive. We will take shelter in the neighboring buildings. We will not go to the cyclone shelter that is located in one and a half kilometer far from our village. Number of thieves and dacoits has increased in our area. They give 1-2 kg rice or wheat, but they abuse our women, girls. There is no toilet in the cyclone shelter. Jaigai no kulai (very small space) in the cyclone shelter. If we do not listen to the crooks and do not please them, then we do not have any place there (Ekramullah, Chakaria).*
- *We do not get any support from the government. If relief comes, the Chairman and members distribute it among their own people. Once I came to know that government would give rice/wheat as relief. I went to our Member for a card. He replied to me, "It is not possible to give you a card, because there are other people." The cardholders never bring the rice/wheat home; they sell it in the market. Because they do not need it (Majnu, Dumuria).*
- *We go to the government hospital but we are to pay the doctor, 40 taka each time. He writes only prescription. He never gives medicine. If I say, "I am poor, I have no money or I have only 15 taka," then he says, "Take a part of the prescription, buy only that part of the prescribed medicine, and die." I do not understand why the people do not protest this. Because, the doctors are paid by the government. But this doctor is taking money from us (Shajahan, Moheshkhali).*
- *I took loan from a NGO where my sister is a member. I borrowed 5000 taka and repaid much of it. I am not a member because the NGO wants weekly savings. I get monthly wages. As I am poor, I cannot keep cash in hand for giving kistee (repayment in installment). I do not like to be a member of NGO samity because I do not want to deposit my savings to them. If I can save money I shall keep it with me for my emergency. Because I shall not get it back from NGO during my need (Roksana, Chittagong).*

Livelihood activities in the coastal zone may be clustered into some broad categories: These are:

- ◇ natural resource based activities, such as: agriculture, salt making, fishing, aquaculture, shrimp fry collection, fuel collection, extraction of forest products, etc; and
- ◇ human resource based activities, such as: livestock and poultry keeping, boat building (carpentry), net making, *kantha* making, fish processing, trading, etc.

These two categories broadly correspond to farm and non-farm activities. Both categories of activities may be based on self-employment and wage employment. It is also true that one engaged in self-employment is also available for wage employment and vice versa.

### Diversification

Diversification of livelihood activities at the household level is not a recent phenomenon. In a traditional peasant economy, a typical *grihastha* (farmer) was not only a “man behind the plough”, but was also involved in fishing, animal husbandry and trading (selling crops or dairy products to buy other essentials). As the subsistence household economy is withering away, more and more people are opting for different “service” occupations, as a market has been growing for these services to cater the need of the non-producing (agriculture) consumers, particularly the urban consumers. This has resulted in a situation, where more and more people are resorting to “wage employment” in addition to traditional agriculture (self-employment). The process has been further accelerated with changing demography (population increase, migration) and changing culture (occupational mobility). This is characterized by the following.

- People involved in traditional (often hereditary) occupations are changing their livelihood activities.
- People are impinging on other’s occupational domain.
- Women are participating in activities beyond the domain of “housework”.

The driving force behind opting for multiple occupations is to maximize household income and to minimize risk. However, nature and extent of choices are mostly limited by opportunities offered by household assets and the local resource base.

Households with single activity or occupation are rare. Almost all households have multiple livelihood activities. Many of these activities are of seasonal nature and people tend to seek employment as many days as possible by diversifying their choices. Besides household chores, women also engage in multiple “remunerative” activities. For example, a man may resort to as many as four activities (or more),

such as, agriculture, fishing, cattle trading and pond aquaculture; while a woman may be engaged simultaneously in agriculture (harvesting), *muri* trading, livestock rearing, poultry keeping and egg selling. The traditional connotation of a “farmer” is withering away (see Box 2).

**Box 2: I must do something**

*I have no cropland but I grow paddy as a sharecropper. I can manage food for three-four months of a year from this income. I work as a bodoilla (day laborer) from which I can earn 50-60 taka a day. But this work is very seasonal. Some time I go to other places to work as mistree (mason) for some days and then I can bring 500- 1000 taka. Some time I work as gachhira (dressing coconut trees) from which I can also earn some money. In fact I have no regular work. But I must do something to earn an income. Otherwise I have to starve.*

Halim Mian, Lakshmipur

Certain activities are common everywhere and some are typical of the coastal zone. Coastal zone-specific activities are those, which stem from special geo-physical specialty of the area conditioned by its natural systems and the opportunities unique to the area. Some occupations can be exclusively attributed to the coastal zone and some are prevalent in the coastal districts to a greater extent than other areas. These are the following<sup>2</sup>:

- ◇ salt production;
- ◇ fishing (coastal and marine);
- ◇ fish processing (drying);
- ◇ net making;
- ◇ fry collection;
- ◇ shrimp farming;
- ◇ crab/shell collection;
- ◇ extraction of forest products (wood, honey, *golpata* and wax collection from *Sundarban*); and
- ◇ boat building (boat carpentry).

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<sup>2</sup> This is not an exhaustive list.

## Livelihood groups

Land is considered a major determining factor of the socio-economic status of a rural household, though there are other factors that also contribute to defining the social status. Occupation and relations of production often characterize a livelihood group. For example: a *jailla* (fisher) or a *kamla/ badailla/ kishen* (day laborer/farm laborer as they are called in different parts of the coastal zone) or a *chasha/ grihastha* (farmer) is perceived as a member of a distinct group. Along with the process of land concentration and pauperization, the bulk of the rural landless crowds in urban slums and turns to wage labor or to self-employment in a wide range of occupations, such as, garbage collection, peddling and rickshaw pulling, who are no better off than the wage laborers.

In rural areas, agriculture laborers comprise the largest livelihood group in terms of number. At least one in every three rural households lives on agriculture labor. The group with smallholdings closely follows them. Among the non-farmers (those whose principal occupation is not agriculture), fishers are the single largest group. In urban areas, the majority is poor and either sells labor in the formal and informal sectors or is engaged in a wide range of self-employment activities (PDO-ICZMP, 2003b).

Coastal livelihood groups are those who earn their living from activities defined by coastal conditions. They often vary from each other in terms of production relations and marketing. Some work independently (fry collector), some work as lessee or sharecropper (salt farmer, shrimp farmer) and some are contractual laborer (fisher hired by a *bahadder*). Some live on exploitation of natural resources (salt farmer, fry collector, fisher, honey collector) and some live on skill-based human resources (boat-building carpentry, net making). Profiles of some livelihood groups in the coastal zone are briefly presented below.

### **Salt farmer**

Salt farming is overwhelmingly concentrated in Cox's Bazar district where 15 percent of total rural households of the district are salt farmers. They meet bulk of the demand for raw salt in the country. As of June 2003, 38,328 salt farmers operated on 23,735 ha of land in Cox's Bazar. Moheshkhali upazila has the highest concentration of salt farmers. Their



number is 10,118 and they operate on one-third of the total land area under salt farming in Cox's Bazar (BSCIC, 2003).

Salt farmers are mostly poor and operate on a small scale. Their average size of farm is 0.62 ha. They work under adverse conditions. This is a hardworking job that interests only the poor and the landless. Many of them lease in land from others. They are in close proximity to the open sea and often face all the hazards coming from the sea. Sometimes the whole output is washed away by heavy rain and storm surge because of lack of storage facility (see Box 3).

### Box 3: Tale of a salt farmer

*We start salt farming in Agrahayan (mid-November to mid-December). Total cycle for salt farming is five months, while we can harvest salt only for three months. We take loan from mohajan (moneylender) for the expenses and we repay in April. We do not store salt, as we have no facilities. We sell salt every week. At the end of the season we can repay the mohajan and in average we get about 4000 taka as profit. We lease in some land to cultivate rice. We are many in the family. So my husband has to work as a day laborer. But he never allows me to do work as laborer. I am always busy for housework and children. Though we are not rich but we have a social status. As a woman, I cannot go out.*

Shamsunnahar, Chakaria

### Fisher

Eight percent of rural farm households in Bangladesh live on fishing. But in the coastal zone, fishing is the predominant source of livelihood for 14 percent farm households. They operate in the estuary, on coastal waters and sometimes in the deep sea.

Fishers are overwhelmingly poor, as about 70 percent are "small farmers" (BBS, 1999a). The estimated number of fisher households as of 2001 is over half a million with a population of about 2.65 million.<sup>3</sup>



<sup>3</sup> Estimates are based on 1996 agriculture census and 2001 population census of BBS.

Monsoon months are the main fishing season characterized by inclement weather. A small stratum of *bahaddars* (boat-owners), who also own nets and liquid cash, control fishers' lives. With increasing poverty at one end (landlessness) and growing entrepreneurship at the other end (investments in boat and gear), more and more people are encroaching into the domain of traditional fishers, and fish resources along the coast are dwindling fast. Added to these phenomena is the risk of being robbed by armed looters, which has become a regular phenomenon (see Box 4).

#### **Box 4: Fishers are vulnerable to looters**

*There are six members in my family – my mother, wife, one son, two daughters and myself. If I catch fish, I can earn about 70-80 taka daily. We go for 7-10 days, 6-7 persons together in a group including my son. I can earn 1,000-1,200 taka from each going. We share the catch. The boat owner gets one share for boat, one and a half shares for engine of the boat, one share for the fishing net and one share goes to each fisher. Fish is available during the months of Baishakh, Joishtha and Ashar (mid-April to mid-July). When there is less fish in the river, during Kartik, Agrahayan, Poush and Magh (mid-October to mid-February), we do not go for fishing.*

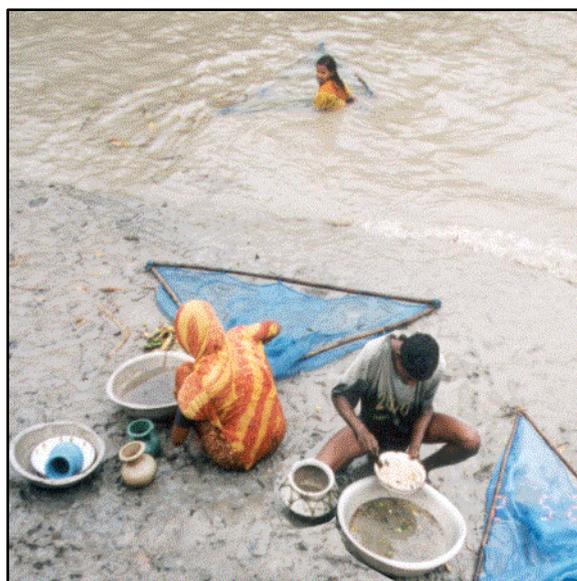
*There is a big problem for the fishermen. Jaladasshu (dacoit) often attacks and robs everything from the fishers. I was robbed once. My son was victimized thrice.*

Dilip Kumar Jaladas, coastal char – Noakhali

#### **Fry collector**

Estimated number of fry collectors in the coastal zone was about half a million (Frankenberger 2002). The number has now come down almost to fifty percent. A large number of them are children.

The cycle of fry collection is from mid-February to mid-August. In Khulna region, the main period of fry collection is mid-November to mid-July. However, *golda* fry is collected round the year, though the peak season is April-May. Fry



collectors substantially depend on the shrimp sector deriving 41 percent of their household income (BCAS 2001).

The number of fry collectors is high in some districts, particularly in Patuakhali and Barguna, which indicate the dependence of poor people on this particular activity. Although shrimp farms are more concentrated in the greater Khulna district, there are fewer fry collectors from that region. Opportunity (or lack of opportunity) for gainful employment in other activities is plausible explanation for this employment pattern (see box 5).

#### **Box 5: Fry collection brings regular income**

*Afsana is 26. She has an eight years old son. She was divorced for non-payment of dowry. She works as day laborer, as shrimp fry collector, as fisher and so forth, depending on the opportunity. Shrimp fry collection from the river is a hard work. She has to stay whole day and even at night during the gon (full moon) when more fry and fish are available in the river. It gives her regular income. She prefers this work than working as a maidservant. As a maidservant she did not get any cash and received food for one person that she had to share with her son. Now she has freedom to do work and can spend some money for her son's education.*

*She also tried to work as agriculture laborer, especially when there is scarcity of shrimp fry. But she noticed that the landowners had reduced crop cultivation and shifted to shrimp gher in their land. As a result, there was a reduction in demand for agricultural labor. The gher owners hire only male laborer. According to popular belief, females are unwanted in the gher. At present, shrimp fry collection is her only source of earning. Though this is very hard work and she got some skin disease. She uses a cream regularly to get rid of itching.*

Afsana Begum, Satkhira

It may be mentioned that fry collection has been prohibited for conservation and sustainable use of aquatic resources, though enforcement of this law has not yet started. If enforced properly, tens of thousands of fry collectors would be affected.

#### ***Extractor of forest resources***

Many households depend on forest resources for their livelihood. In the impact zone of Sundarban (in surrounding upazilas), 18 percent households are dependent on Sundarban resources.<sup>4</sup>

<sup>4</sup> The SBCP baseline survey was carried out in 17 upazilas of five districts in the Sundarban-impact zone having a population of 3.5 millions.

The proportion of Sundarban-dependent households varies from four percent in Pirojpur district to 27 percent in Khulna district. Among them are shrimp fry collectors (35%), fishers (33%), *bawalies* (22%), boatmen (4%), *golpata* collectors (3%), shell/crab collectors (2%), *mawalies*, and medicinal plant collectors (SBCP, 2001). Many poor households depend on recently planted forests in *chars* and islands in Patuakhali, Bhola and Noakhali for fuel wood and materials for house construction. They are to work amidst various insecurities corresponding to threats from wild animals, intimidation from public institutions, prolonged period of unemployment and so forth (see Box 6).



#### **Box 6: We pay bribe and cut tree**

*Chaitra-Baishakh (mid-March to Mid-May) is the best season for honey collection. I can earn 60-70 taka per day. We 8-9 persons in a group go to the forest with a boat, which we hire, from a mohajan. Mohajan gives us capital. We are to sell the honey to the mohajan. If the market price of honey is 3,000 taka per maund, we are to sell it to him for 2,000 taka. Every time we go to the forest, we risk our life. We pay ghush (bribe) to the forester every time we go. Otherwise they threaten to arrest us.*

*Since we pay ghush, we cut tree and sell it in the market. It would be a great help if the government protects us from the torture of the forester. We have to pay ghush, 200-300 taka every time, to BDR. Ghush o debo, abar nao o khali anbo, ta hoi na (if we pay bribe, we cannot return with empty boat). Some times the dacoits snatch everything from us. I was victimized more than hundred times in my life. But I have to go to the forest, because honey collection is my main source of income. When I do not get honey, I catch fish from the river. Some time I sell labor to agriculture field during harvesting time. Some time there is no work.*

Liakath Ali, Shyamnagar

### ***Agriculture laborer***

There are about 1.74 million households in the coastal districts whose main source of living is “agriculture labor”. They are the largest occupational group in a broad sense accounting for 33.2 percent of coastal rural households.<sup>5</sup> They are engaged in diverse activities. Majority of them (55%) are small farmers (with operated area less than 1 ha) and 43 percent are landless (owning less than 0.02 ha). Distinct livelihood conditions of this group are characterized by:



- ◇ seasonal employment/ unemployment;
- ◇ low demand for labor in most periods of the year in most parts of the coast, as vast areas are single-cropped;
- ◇ low wage in the lean season (period between plantation and harvesting);
- ◇ discriminatory wage for women; and
- ◇ chronic indebtedness.

### ***Small farmer***

Small farmers are the second largest broad group closely following the agriculture laborers.<sup>6</sup> There are 1.72 million small farmer households in the coastal zone, constituting 32.1 percent of the coastal rural households.<sup>7</sup> Historically, ‘small farmer’ is a transient class between the propertied (landowner) and the landless. In the past

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<sup>5</sup> Estimates are based on 1996 agriculture census and updated according to 2001 population census.

<sup>6</sup> BBS defines a small farmer with landholding from 0.05 to 2.5 acres.

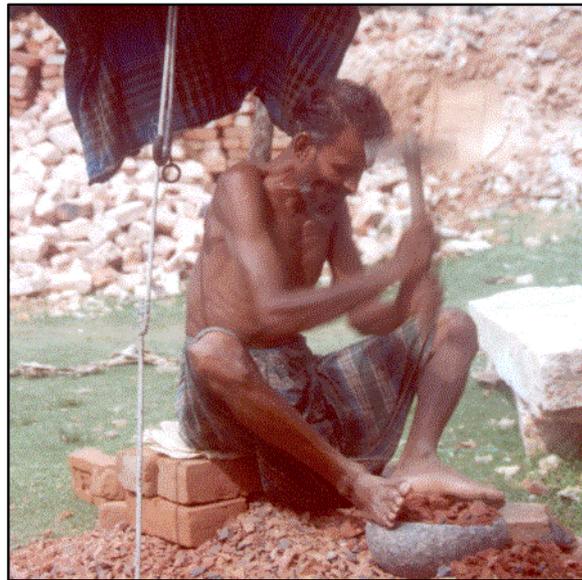
<sup>7</sup> Small farmers whose principal source of income is “agriculture labor” have been excluded from “small farmer” category” and have been included in “agriculture laborer” category. Similarly, whose principal source of income is “fishing” have been excluded from “small farmer” category” and have been included in “fisher” category.

decades, many medium and large farmers have turned into small farmers because of the increasing population (consequent fragmentation of holding) and natural process of pauperization. Many small farmers ended up as laborers in various rural and urban occupations. Agriculture census data shows that while the proportion of small farmers (and also non-farm households) had increased, the proportion of medium and large farmers had sharply declined during the inter-census period from 1960 to 1996.

### *Urban poor*

According to the Household Investment Survey 1998-99 (BBS, 2002), 47 percent of urban households are 'poor'<sup>8</sup>. The survey indicates that 'day labor' is the primary occupation of 21 percent of the urban heads of households. Besides, there are many engaged as "contractual wage laborers", mostly in the formal sector. Assuming 50 percent of the urban households as "poor", their number is estimated at 0.8 million according to 2001 population census (PDO-ICZMP, 2003c).

Industrial workers are mostly concentrated in metropolitan areas of Chittagong and Khulna. Besides, many are engaged in the informal sector. Many poor people are engaged as transport workers, restaurant workers, dockworkers, other services in the port and domestic servants. Among typical



<sup>8</sup> Here, poor households are defined as those "living on hand to mouth, do not have any savings, or do not possess any land" (BBS, 2002).

coastal industries are fish/shrimp processing factories, ice factories, shrimp hatcheries, ship-breaking plants, salt processing, tourism, etc., which employ a large number of people (see Box 7). Ship-breaking industry alone employs about 100,000 people (PDO-ICZMP, 2004), while about 10,000 are employed in shrimp processing factories (PDO-ICZMP, 2003d).

Poor people live in impoverished neighborhoods with no or little access to basic amenities of life. Majority of them lives in makeshift houses called *jhupri*<sup>9</sup> and *chhai*<sup>10</sup> in the slums.

Most of the slum-dwellers are recent immigrants from rural areas. They come mainly for economic reasons. Among other reasons are social (uprooted, driven out, abandoned, etc.) or natural disasters (river erosion).

#### **Box 7: No work no pay**

*I got a work, through a contractor, in a sea-fish processing factory. I thought my new work would fetch a higher income, a regular income, a fulltime job and other job benefits. But it is a work on a daily basis: 'no work, no pay'. I work very hard, but wage is not enough. The contractor decides the rate. If he wants he may pay little higher or less. There is no work if there is not enough supply of fish to the factory. It depends on the harvesting of fish from the Gher (shrimp field). However, I can earn about 1,300 taka per month. But, sometime there is no work. My work depends on the wish of the contractor. If he does not want me, I do not have work and income on that day. I go to work at 6 o' clock in the morning till 6 in the evening. Many days I work without lunch. Some time I cannot go to work because of illness and I don't have any income for those days. I have to spend money for medicine. Because I must be okay for going to work.*

Kamal Uddin, Khulna – urban

Besides, there are many people who are categorized as 'floating'. They are vagrant category of rootless people who have no permanent dwelling units whatever worse these are and they dwell in the premises of bus stands, railway stations, jetties, *hat-bazars*, *mazars*, staircase of public/government buildings, open space, etc. Twenty percent of the floating population of the country lives in Chittagong and Khulna SMAs alone. Many of them live on charity (begging). Among other occupational

<sup>9</sup> *Jhupri* has a ceiling, which is less than four feet and is made of very cheap construction materials like straw, bamboo, grass, leaves, polythene, gunny bags, etc.

<sup>10</sup> *Chhai* is a half arch shaped small structure open in front and rear sides. It has very low height so that the inhabitants enter it by scrawling and can hardly sit upright inside it.

groups are construction laborer, porter, housemaid, rickshaw puller, hawker, etc (BBS, 1999b).

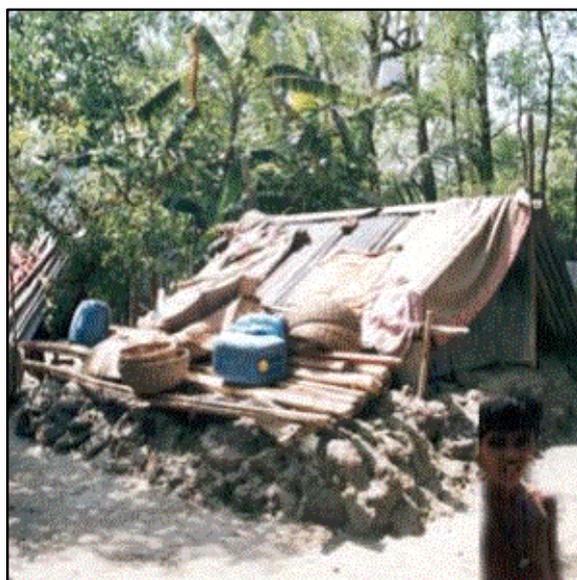
Street children are considered as the poorest of the poor and perhaps the most vulnerable section of the society who suffers from human deprivations of all forms. Many children are forced to live and earn on the street due to their vulnerable and distressed situation.

### Poverty

Under conventional yardsticks, about half of the coastal population are poor. They are at the bottom rung of the economic and social ladder. As poverty is a predominant issue, reduction of poverty is also the agenda for intervention.

In the perception of the people, poverty is a syndrome that manifests various dimensions of life and livelihood. This has been synthesized in Table 2.

The notion of poverty has changed over time. What was hitherto defined as less access to food (caloric intake) has been put on a wider context of human deprivations in the form of access to basic needs and services. In this sense, the extent of poverty is higher in the coastal zone. This may be appraised in terms of what strengths and weaknesses the coastal zone has.



**Table 2: Poor people's perception of poverty**

Indicator	Poor	Non-poor
Asset	No	Yes
Occupation	Day labor; seasonal employment	Regular job; multiple occupation
Economic participation	One person in the family	More than one person in the family
Income	Hand to mouth; less	Enough
Saving	No	Yes

Source: PDO-ICZMP, 2002

The situation of the coastal zone compared to rest of the country is summarized in Table 3 and Appendix A.

Table 3 demonstrates that income-poverty is higher in the coastal zone compared to rest of Bangladesh. This is reflected through lower GDP per capita and higher extent of population without access to the required caloric intake. With respect to human development indicators, the situation is mixed. For example, primary school enrolment rate is lower, while literacy rate is higher. Access to sanitation is a bit better, and so is the sex ratio. On the other hand, health situation is poorer in terms of population-hospital bed ratio, as well as the extent of severe child malnutrition.

**Table 3: Position of the coastal zone with respect to country situation**

Above average	Below average
<ul style="list-style-type: none"> <li>○ Sex ratio is low</li> <li>○ Agriculture wage rate is high</li> <li>○ Literacy rate is high</li> <li>○ Primary school density is high</li> <li>○ Proportion of households with durable wall is high</li> <li>○ Proportion of households with sanitary latrine is high</li> <li>○ Density of road is high</li> <li>○ Land is accreting in some areas</li> </ul>	<ul style="list-style-type: none"> <li>○ Average size of household is high</li> <li>○ Demographic dependency ratio is high</li> <li>○ Proportion of small farm households is high</li> <li>○ Per capita GDP is low</li> <li>○ Poverty (both absolute and extreme) is high</li> <li>○ Primary school enrolment rate is low</li> <li>○ Severe child malnutrition is high</li> <li>○ Population per hospital bed is high</li> <li>○ Union Parishad density is low</li> <li>○ Per capita gross cropped area is low</li> <li>○ Proportion of functionally landless is high</li> <li>○ Proportion of households with durable roof is low</li> <li>○ Proportion of households with electricity connection is low</li> <li>○ Proportion of households with access to tap and tube well is low</li> <li>○ Household coverage by major micro-credit NGOs is low</li> <li>○ Share of industrial sector in GDP is low</li> <li>○ Density of growth centers is low</li> <li>○ Land erosion is severe in some areas</li> <li>○ Susceptible to cyclone and storm surge</li> </ul>

## Vulnerability

For poor people, vulnerability is both a condition and a determinant of poverty, and refers to the ability of people to avoid, withstand or recover from the harmful impacts of factors that disrupt their lives and that are beyond their immediate control. This includes shocks (sudden changes such as natural disasters, conflict or collapsing market prices), seasonality (low demand for farm labor between plantation and harvesting periods) and trends (gradual environmental degradation, oppressive political systems or deteriorating terms of trade).<sup>11</sup> In the coastal zone of Bangladesh, a wide range of vulnerabilities is identified. These are:

- ◇ the threat of cyclones and storm surges that causes deaths and destruction;
- ◇ the threat of land erosion that causes untold sufferings and dislocation;
- ◇ deterioration and the declining viability of many distinctive and threatened coastal ecosystems;
- ◇ widespread poverty, limited livelihoods opportunities (especially outside agriculture) and poorly developed economic linkages;
- ◇ poor levels of service provision that make the isolation of many coastal areas worse.
- ◇ highly unequal social structures, with a small powerful elite dominating the mass of people, allied to high levels of conflict and poor law and order;
- ◇ changing patterns of land use (including the growth of shrimp and salt production) that are affecting the coast's morphology and water resources characteristic;
- ◇ resource degradation;
- ◇ poor access to many forms of infrastructure and technologies;
- ◇ surface and sub-surface salinization including saline intrusion into the freshwater aquifers; and
- ◇ flooding and drainage problems.

These vulnerabilities affect the livelihoods of coastal communities. Their significance, however, vary greatly between localities, occupational groups and sexes. Also important is the ways in which vulnerabilities interact with each other, with most coastal households, and especially the poor, facing multiple vulnerabilities that compound each other in terms of both the impact of specific events and the

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<sup>11</sup> For details, see Soussan, 2002.

capability to recover from these events when they do strike. For example, the poor infrastructure and remoteness of many coastal localities means that the immediate impact of a major cyclone is likely to be more severe and relief efforts are hampered. Subsequently, when the survivors are rebuilding their livelihoods after the disaster, poor access to market, credit and other services, institutional weaknesses and the deterioration of the coastal resource base delay and hamper the recovery process.

These vulnerabilities affect different households differently. In general, the more affluent a household is, and in particular the more assets it possesses, the more resilient it is to disruption in its livelihoods base from these shocks, seasonality and trends. People, of course, are not passive in the face of these risks, but the poorer the asset base of a household the more they have to forego potentially profitable but risky opportunities. The experience of one person on two different occasions is presented here, which narrate how people can or cannot cope with particular situations (see Box 8).

### Box 8: Coping with disaster

#### Survival

*My house was totally damaged by the cyclone of 1991. More than 100 trees, 102 chicken and 10 goats were killed. We took shelter in upazila office. We stayed there for one night. When we came back home, there was nothing left. We then made a small shed using polythene sheet. We lived on relief.*

*I rebuilt my house collecting materials from different sources. I borrowed some money. I started my shutki business again with the help of a mohajan. Gradually, I could recover from the loss that I suffered in the cyclone. Again I became rich.*

#### Plight

*I had a stock of shutki, worth 200,000 taka, in which a mohajan invested 56,000 taka. The rest I borrowed. The Tornado of 1997 ruined the total stock. I became almost mad, because of this heavy loss. My house was blown away, and I got nothing of my house back. Our life was saved, because we took shelter in upazila office.*

*The tornado of 1997 made me a poorest man again. I had to rebuild my house with help from mohajan and relatives. Again I have started again my shutki business. Until now I have not been able to recover from the loss.*

Mohammad Rafiq, Moheshkhali

### Gender perspective

People's livelihoods are affected by a set of conditions or phenomena that prevail in their immediate environment. However, they do not affect all sections of the population in the same manner. Women are often degraded, deprived and discriminated by contemporary values and attitudes, social sanctions, norms and traditions, rules and regulations that together characterize a situation of patriarchy. The following statements and revelations obtained through the PDSCL survey in the

form of life stories characterize the social environment that defines the space for women's livelihoods (see Box 9). The overall social environment makes women more vulnerable.

However, there are some positive aspects too. Many women have been able to enhance their situation with support from NGOs, particularly micro-credit. Their attitude toward developing human capital is generally positive and they, with support from their husband, try to arrange education for their children, both girls and boys (PDO-ICZMP, 2002).



### Exogenous factors

Livelihoods are often affected by exogenous factors beyond the control of individuals, households and even public authorities in a particular territory. For example, WTO conditionality may significantly affect the livelihoods in the shrimp sector and thereby tens of thousands of small producers and workers in the shrimp chain (globalization). Unwarranted sea-level rise may dislocate millions of farmers and dislocate enterprises in low-lying coastal areas. A dispute and conflict regarding the use of the marine area (EEZ) with a neighboring country may dislocate thousands of marine fishers. Price fluctuation (market failure) may ruin large number of producers (shrimp, fish, vegetables, etc.) who produce for the global market (globalization and monetization).

Monetization process is taking place in both urban and rural areas. The process is being accelerated by the expanding financial sector characterized by credit (both government and NGO), market development (through development of growth centers, roads, etc.) and government policies (tariff, subsidy, etc.).

Market is gradually replacing subsistence economy. However, there are differences between rural and urban areas in adapting with the monetization process.

In some rural areas, people are adopting more specialized production system. For example, in Khulna and Satkhira districts people are involved in *Bagda* and *Golda* farming, and in Cox's Bazar district people are involved in salt farming. These production systems have some adverse effects on the natural environment (bringing saline water) and make the local resource base (land) unsuitable for other production

<b>Box 9: The world of women</b>	
Social environment	Revelations
Mobility and security	<i>Dola is worried about her daughter's security, as she has grown up. She often faces problems when she walks in the road in the evening.</i>
Norms of veil	<i>We have to go a long distance to see the flag, which is the only signal we see about the weather. I have to wear a borka many times to go and see the flag, as other male members of the family leave in the early morning for work and return in the evening.</i>
Access to health service	<i>Harabala works as a birth attendant. There is no medical facility around. So she has to tackle the situation by herself. Only few families can bring the patient to the town for better treatment.</i>
Working condition	<i>Saleha is a day laborer and works in a factory. The factory owner prefers to employ female workers as they work sincerely and can be paid less. They never go for strike and are not involved in any political work. They can be hired and fired any time.</i>
Rigid condition	<i>I have never been involved with any samity. If I become a member, I have to deposit money every week. But where from I will get money? I am afraid of kistee. So I never take loan from any samity. If I need money, I take it from my sister-in-law.</i>
Early marriage	<i>Hanufa gave birth her first child when she was only 13. After the birth of the second child at 16, she became blind. Doctor said that lack of vitamins, some other complications and possibly early marriage might be the reason for her blindness. Her husband had to take a loan for her medical treatment and she got back her eyesight. She is now convinced that early marriage may lead to complications and she will not allow it for her daughter.</i>
Social attitude	<i>The gher owners only hire male laborer. According to popular belief, females are unwanted in the gher.</i>
Discrimination	<i>Nilima realized that by doing housework she could manage food only, and that was not sufficient for all. She started working as a daily laborer. The attitude of the villagers was against such work by women. So she had to convince people by showing and proving that she can do hard work like men. Initially she had to accept half of the wage a man used to get.</i>
Dowry	<i>I had to pay 20,000 for wedding of my two daughters. Still there is demand for more money, but I could not pay. My eldest daughter is a divorcee. She has a son of 7-8 years. Second daughter's husband is demanding 15,000 taka more. It is not possible for me to pay this amount. He is not taking back my daughter. She is pregnant for 3-4 months. I do not know what will happen.</i>

systems (e.g., rice farming). Due to shrimp farming, production of agriculture, poultry and homestead trees are declining. Shrimp and salt are produced for the market and profitability at the farm/enterprise level determines the choice of activity.

### **Development dynamics**

Throughout the coastal zone, development is taking place to different extent from where regional differences or diverse urban-rural development strategies and their impacts are visible. For example in Dumuria (Khulna), proximity to the city and project intervention (KJDRP) have opened up the opportunity for both men and women to work in the diversified public domain rather than hang with their ascribed occupations or remain in the domestic circumference. In contrast, in Chakaria (Cox's Bazar) existing trend in social mobility and diversification of occupation is mostly restricted by social values (less mobility of women) and tradition (salt farming), though government and agency involvements are eminent there. However, it should be mentioned that development initiatives are bringing urban facilities closer to rural areas and reducing the gap between the center and the periphery and thereby slowly impacting livelihoods strategies, behavioral pattern, and social attitude.

As more and more people are pushed out of the natural resource based activities, they are to embark on trading and skill-based activities in the secondary and tertiary sectors to earn a living.

### **Institutional environment**

The people have intricate relationship with government institutions. They are utilizing services provided by the government, like, physical infrastructures, health and educational services, relief and rehabilitation services for the destitute and agricultural extension services for farmers. But in some sectors the government institutions have negative images, like, law and order, natural resource management, credit, relief distribution and rehabilitation of destitute people. The main reasons behind the negative connotation are corruption of some government officials, inactive police department, delayed justice, mismanagement, indiscriminate banning on natural resource exploitation without providing alternatives and delayed response to natural disasters. Some of these issues have been highlighted in Box 1.

On an average, the role played by the government institutions is very much important. But accessing to the services provided by the institutions is influenced by many factors, like economic and social status of the people, relation with power brokers and rules and regulations.

### **NGO coverage**

NGOs are an important provider of certain services, particularly micro-credit. Their coverage has a direct correlation with the coping capacity of the people. Areas with higher NGO coverage enable the poor people to diversify their options. They had been instrumental in enhancing their asset base. It is not only their presence, but also

their mode of operation, such as, credit and savings conditionality, that determines to what extent they would be able to serve their clients.

### **Synthesis**

Coastal livelihoods depict a dynamic context in which households undertake a wide range of activities. They are influenced by many external factors, in which they make conscious choices to maximize opportunities and minimize risks.

- First, household assets play a dominant role in choices and activities of the members of that household.
- Secondly, people are linked with the local resource base. This is not direct, but filtered through a system of access and entitlements.
- Thirdly, the local resource base includes among others, the overall institutional context that influences all other aspects. This context includes the local informal beliefs, rules, attitudes etc., as well as the local, national and international institutions, treaties and conventions, formal and informal.
- Fourthly, people are vulnerable to a host of exogenous factors. The vulnerabilities do not impact the households directly but are filtered through a layer of resilience and sensitivity, which reflects the capacity of the households to cope with these vulnerabilities and determine their risk-seeking or risk-avoiding behavior in making strategic choices. This capacity is a function of assets they own or control and the degree of their access to the local resource base. Resilience of the people is often influenced by possession of/ access to cash. Social network plays an important role in adopting coping measures.

This may be understood with the help of a schematic presentation (see Figure 2). Figure 2 depicts a conceptual model that represents a typical rural poor household in a coastal setting.

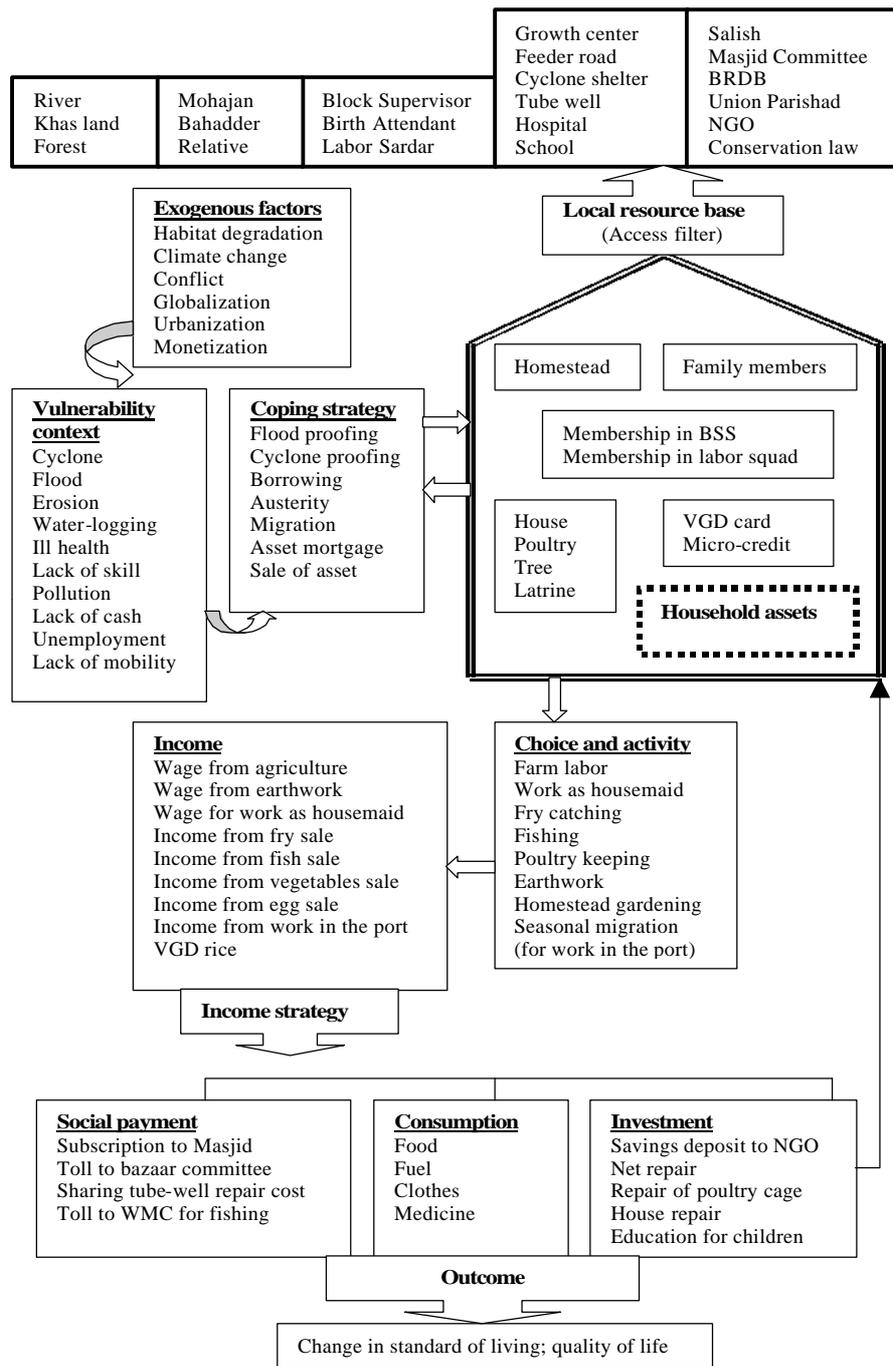


Figure 2: Livelihood model for a poor rural household in the coastal zone

### 3. SCENARIOS

The future is unpredictable. It may grow without any flux. It may be twisted by erratic and exogenous factors. It can be shaped through planned interventions. In order to make a strategic decision, it is important to comprehend the future scenario. As people's well-being is the central focus, it is necessary to know at the outset about its size, composition and resource endowment in the foreseeable future.

#### Population

Population is increasing. It is increasing at a faster rate in urban areas. It is likely that population will increase at a “declining rate” in the future years assuming reduced fertility rate and improved services. Projections based on different assumptions may lead to different scenarios. Assuming a declining growth of coastal population from 1.36 percent in 2001 to 0.71 percent in 2050,<sup>12</sup> coastal population would increase from 35 million (2001) to 58 million in 2050 (see Table 3, Figure 3).

**Table 3: Population projection**

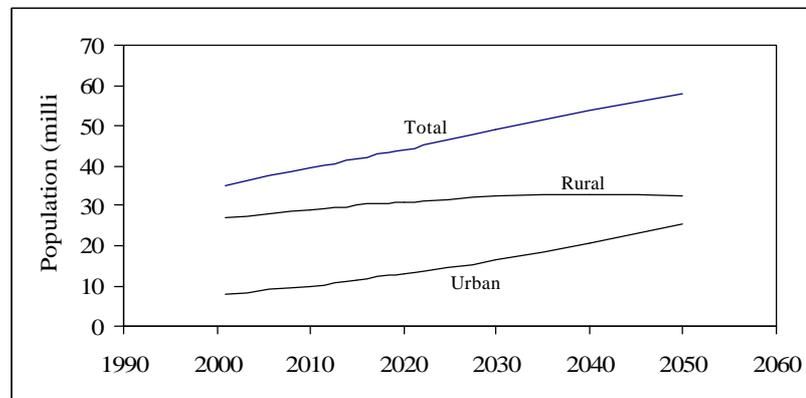
Year	Population in million								
	Total			Urban			Rural		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
2001	35.1	17.9	17.1	8.0	4.3	3.7	27.1	13.7	13.4
2010	39.4	20.0	19.4	10.2	5.9	5.3	29.2	14.1	14.1
2015	41.8	21.1	20.7	11.6	6.8	6.2	30.2	14.3	14.5
2020	44.2	22.2	22.0	13.2	7.7	7.1	31.1	14.5	14.9
2030	49.0	24.5	24.6	16.7	9.5	8.9	32.3	15.0	15.6
2040	53.6	26.7	26.9	20.8	11.3	10.7	32.8	15.4	16.2
2050	57.9	29.0	29.0	25.6	13.1	12.5	32.3	15.9	16.5

Assuming a declining growth of coastal urban population from 2.82 percent per annum in 2001 to 2.00 percent in 2050, urban population would increase from 8.0 million in 2001 to 25.6 million in 2050. Thus the share of urban population would increase from current 23 percent to 44 percent in the mid-twenty first century, leaving rural population to the extent of 56 percent.<sup>13</sup>

<sup>12</sup> Assumption has been made based on projections that population in Bangladesh will grow at an annual rate of 0.71% during 2025-2050 (World Bank, 1994). Here, declining growth has been considered in a linear fashion for convenience of analysis.

<sup>13</sup> Underlying assumptions are: coastal zone sex ratio will decline from 105 (2001) to 100 (2050) and CZ urban sex ratio would decline from 118 (2001) to 105 (2050).

Based on a conservative estimate (assuming a declining growth), about half of the coastal population will live in urban areas in the mid-twenty first century. This means more squatters and slums, more street children and more pressure on urban infrastructures unless these issues are addressed properly.



**Figure 3: Population projection**

### Labor force

“Economically active” population (15-59 years) is 53 percent of the total population in the coastal zone. In future, dependent population (below 15 years) would decline mainly because of declining fertility and mortality rates. This phenomenon is likely to be offset by more adolescent population pursuing studies and they will not be available for work.

Assuming that all people of working age are currently employed, more job opportunities need to be created to absorb the incremental labor force in gainful employment. To achieve the targets of millennium development goal (MDG) in terms of reducing poverty to 50 percent from the current (year 2000) level, a minimum of 7 percent<sup>14</sup> growth in per capita GNP would be necessary compared to current rate of 5 percent. This means more jobs, higher level of income and therefore higher level of investments are needed. According to a modest estimate, there will be a need for about 247,000 new jobs annually on the average for next fifty years, 190,000 for urban areas and 57,000 for rural areas (see Table 4).

<sup>14</sup> PRSP target (ERD, 2003).

## Infrastructures and services

Reduction of poverty requires major investments in infrastructures and services and making these accessible to the poor. A few examples would reveal what sort of planning would be required. For example, to cater the need of the incremental population, more schools would be needed. Even maintaining the current population-school ratio, average annual demand for primary schools would be 317 up to 2050. Similarly, maintaining the current level of population-hospital bed ratio, which is far from being adequate, and to bring it to the level of the country average (about 3000 persons per bed) by 2015 and thereafter gradually reducing the ratio to 2000 persons per hospital bed in 2050, 402 additional hospital beds should be installed annually on the average.

The government has already declared that, it would achieve 100 percent coverage in sanitation by 2010. This means that 660,640 new sanitary latrines must be installed annually until 2010 and 155,647 new latrines annually thereafter (see Table 4). Similar investments are needed in other sectors too.

Table 4 gives only partial estimates on future needs. In other fields, such as, transport and communication facility, access to commercial energy, disaster management infrastructure and other infrastructures should be developed to cope with the needs of the increasing population and increasing demand.

**Table 4: Future need**

Year	Extra job needed annually			Additional primary school needed annually	Additional sanitary latrine to be installed annually	Additional hospital bed needed annually
	Urban	Rural	Total			
2001						
2010	129,519	123,824	253,342	326	660,640	339
2015	149,157	107,565	256,722	330	155,647	339
2020	164,044	100,319	264,363	330	155,647	407
2030	187,420	66,809	254,229	327	155,647	402
2040	219,611	24,599	244,209	314	155,647	402
2050	251,749	(25,228)	226,521	291	155,647	487
Annual	190,193	56,723	246,916	317	248,401	402

## Natural resource base

Natural resource base is shrinking fast as more and more people are competing with scarce resources. People are concerned about their surrounding environment, its changes and the factors behind these. In many areas environment is deteriorating due to over-exploitation, increasing population and development interventions. Some of the sectors in which people have expressed their concerns are:

- ◇ decline in fish stock due to over-fishing/ fry collection;
- ◇ siltation of watercourses / riverbeds;
- ◇ loss of vegetation due to deforestation, urbanization;
- ◇ water pollution due to use of agro-chemicals, industrialization and urbanization;
- ◇ land degradation due to salinity intrusion (for shrimp and salt farming), industrial affluent disposal, use of agro-chemicals;
- ◇ declining land productivity due to drainage congestion;
- ◇ loss of productive land due to tidal flooding;
- ◇ scarcity of ground water because of indiscriminate extraction; and
- ◇ declining quality of ground water due to arsenic.

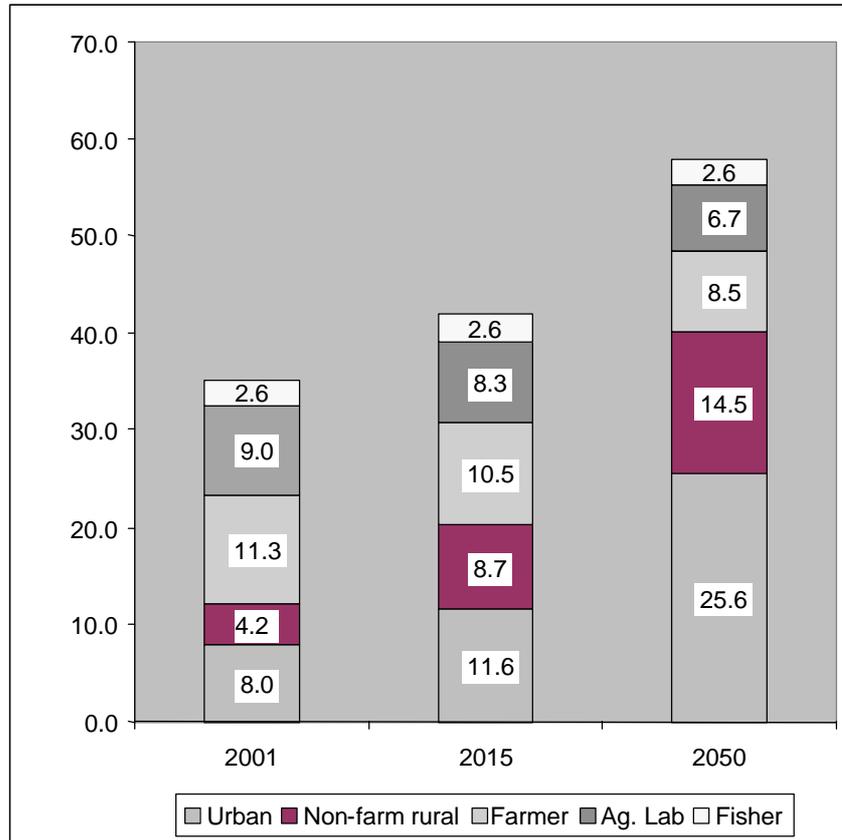
In the future, more cultivable land will be used for homesteads and other purposes. Urbanization will increase. Hence less and less land will be available for agriculture, aquaculture and forestry. According to a modest estimate, per capita availability of cultivable land would decline by half from 0.056 ha in 2001 to 0.025 ha in 2050 (see Table 4). This means that land should be used more judiciously and agriculture land should be more intensively cultivated to maintain the current level of food security. In the context of degradation of the natural resource base and increasing population, more and more people should be withdrawn from natural resource-based activities to skill-based activities.

### **Shaping the future**

The important question is what would be the ideal composition of population in terms of livelihoods in the backdrop of increasing population, shrinking natural resource base and available opportunities. If the current level of land-farm and land-labor ratio in agriculture is maintained in future years, the absolute number of farmer and agriculture labor population would decrease as less and less amount of land will be available for cultivation. It is likely that the coastal and marine fisheries resource base would be able to sustain the livelihoods of the current size of the fisher population if the resource base is exploited sensibly. This means that, a large population will have to shift to the urban sector and to non-farm activities in the rural sector. This scenario has been presented in Figure 4.

An autonomous development means the present composition of population with predominant farm population (farmer and farm laborer) is likely to continue. This means increasing differentiation, marginalization and poverty, as more and more people would live in discord with scarce resources (land). An induced development strategy in harmony with scarce natural resource base and in view of specific opportunities suggests that areas should be identified where there is potential for

growth and development. The current trends of landlessness and rural-urban migration are indicative of shrinking traditional domains of livelihoods. The non-farm rural sector, as well as the urban sector, comes as a logical corollary for absorbing the surplus labor force in gainful employment. This strategy, if judiciously applied, will not only absorb the surplus labor from natural resource-based traditional sectors, but will also enable conservation of the critical ecosystems.



**Figure 4: Population scenario**



#### 4. CONCLUSION

A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Carney, 1998). Any poverty reduction strategy would necessitate interventions to enhance the capacity of the people and pave the way for their sustainable livelihoods.

The poor often pay the price for development. One major development objective of the government is to ensure a pro-poor growth (ERD, 2003). In order to achieve this and other objectives mentioned in the national strategy for poverty reduction that incorporated the millennium development goals, it is necessary to target resources for the poorer and vulnerable sections of the population on a priority basis, thereby enabling and empowering them to reduce their vulnerabilities, so that they can reap fruits of development in a sustainable manner. While setting priorities, vulnerabilities (exclusion of the peripheral communities) and opportunities (potential sectors) should be identified.

The coastal zone is lagging behind in many respects. However, the variation within the zone is high, implying that there are areas within the coastal zone that are the most disadvantaged in terms of infrastructure and accessibility. *Chars* and offshore islands belong to this category. A coastal development strategy should focus on these areas on a priority basis. This echoes the national strategy (ERD, 2003) “to reach out to the poorest and remote rural areas, which are vulnerable to adverse ecological processes (including *chars* and river erosion affected areas).”

It is amply evident in Figure 4 that a strategic thrust is needed to prioritize investments in non-farm sectors, both rural and urban, to create opportunities for sustainable livelihoods. This is very much in line with the national strategy “to make the rural non-farm sector as the leading sector”. For rural non-farm sector, the thrust will be on activities in and around growth centers having high growth potential and in periurban fringes of major cities to strengthen both backward and forward links to farm activities (ERD, 2003).

In pursuing a development strategy, non-material dimensions are often ignored. It is now widely acknowledged that the fruits of development do not necessarily trickle down to the beneficiaries in the absence of an enabling institutional environment. The government emphasizes in the PRSP document that “enabling environment needs to be created for the development of local-level democracy through promotion of grass-roots organizations of men and women as well as fostering community activities that encourage greater social solidarity.” Therefore, beneficiary (stakeholder) participation should be an integral component of development mechanism that allows a greater “agency role of the poor” (ERD, 2003).



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## APPENDIX A: RELATIVE POSITION OF THE COASTAL ZONE

Indicator	Unit	CZ	BD	Reference year (source) <sup>1</sup>
<b>Above national average</b>				
Sex ratio	Males/100 females	105	107	2001 (BBS)
Agriculture daily wage rate	Taka	49	46	1997/98 (PDO-ICZMP)
Literacy rate (7+)	%	51	45	2001 (BBS)
Primary school density	No./10,000 persons	6.9	6.3	2001 (PDO-ICZMP)
Households with durable wall	%	47	42	1991 (BBS)
Households with sanitary latrine	%	45.60	36.87	2001 (BBS)
Density of road	Km/km <sup>2</sup>	0.71	0.67	1996 (PDO-ICZMP)
Land accretion	Ha/yr	5,080		1973-2000 (MES)
<b>Below national average</b>				
Average size of household	Number	5.1	4.9	2001 (BBS)
Demographic dependency ratio	Pop (0-9+>59)/10-59	0.90	0.83	2001 (BBS)
Small farm households	% owning 0.05-2.49 acre	57.7	52.9	1996 (BBS)
Per capita GDP	Taka	18,198	18,269	1999/2000 (BBS)
Absolute poor households in terms of calorie intake	%	52	49	1998 (BBS)
Extreme poor households in terms of calorie intake	%	24	23	1998 (BBS)
Primary school enrolment rate	% of children 6-10 years	95	97	2001 (PDO-ICZMP)
Severe child malnutrition	%	6	5	2000 (BBS & UNICEF)
Population per hospital bed	Number	3,782	2,981	1996 (BBS)
Union Parishad density	Average area (km <sup>2</sup> )/UP	35	32	1991 (BBS)
Per capita gross cropped area	Ha	0.093	0.109	1996 (BBS)

<b>Indicator</b>	<b>Unit</b>	<b>CZ</b>	<b>BD</b>	<b>Reference year (source)<sup>1</sup></b>
Functionally landless households	% owning <0.50 acre	53.5	52.6	1996 (BBS)
Households with durable roof	%	50	54	1991 (BBS)
Households with electricity connection	%	30.8	30.9	2001 (BBS)
Households with access to tap and tube well	%	72.5	85.7	2001 (BBS)
Household coverage by major micro-credit NGOs	%	19	21	2001 (PDO-ICZM)
Share of industrial sector in GDP	%	22	25	1999/2000 (BBS)
Density of growth centers	Average area (km <sup>2</sup> )/growth center	80	70	1996 (World Bank)
Land erosion	Ha/yr	3,199		1973-2000 (MES)
Susceptibility to severe cyclone and storm surge	No. of occurrence	51		1948-98 (PDO-ICZMP)

<sup>1</sup> Used in different PDO-ICZMP document

**PDO-ICZMP**

Integrated Coastal Zone Management Plan (ICZMP) project is a multi-sectoral and multi-agency initiative. In support of this initiative, a Program Development Office (PDO) has been established, which is guided by an inter-ministerial Steering Committee and a Technical Committee. The Ministry of Water Resources is the lead ministry, while the Water Resources Planning Organization (WARPO) is the lead agency.

ICZMP aims to establish a framework that defines and directs the development of the coastal zone. Its goal is to create conditions, in which the reduction of poverty, development of sustainable livelihoods and the integration of the coastal zone into national processes can take place. The project period is from February 2002 to December 2005.

Activities of PDO-ICZMP are structured through six outputs. These are:

- Coastal development strategy
- Coastal zone policy
- Priority investment program
- Enhancing livelihood capacity
- Enabling institutional environment
- Integrated knowledge base