PEASANTS' ADJUSTMENT TO NATURAL HAZARDS IN BANGLADESH: A CASE STUDY OF TWO UPAZILLAS IN THE BRAHMAPUTRA FLOODPLAIN

by

Md. MATIUR RAHMAN

A thesis
presented to the University of Manitoba in partial
fulfillment of the requirements for the degree of
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Abstract

Natural Hazard is a test of survival efficiency of the peasantry in Bangladesh. Peasants have generally been successful in coping with extreme natural events for centuries. The challenges of environmental extremity are overriding the survival efficiency of the people in recent years. The objective of my work was to look into the causes of such "erosion" of adjustment ability through examining the agrarian structure in the Brahmaputra flood plain and impact therein of the natural hazards such as river bank erosion and flooding.

In the present study, it has been shown that a certain group of elites have brought the whole country into a condition similar to "internal colonialism". The existing political institutions deliberately foster a policy of resource concentration into the hands of a few. There were impressive achievements in rural infrastructure development programmes, but these infrastructure buildings associated with modern innovation in agriculture have benefited the land-rich farmers.

It has been argued that the structure of social relations of production moulds the peasants' ability to respond to natural hazards. This ability is a function of socio-economic position of a peasant in the social structure. The peasantry in Bangladesh is clearly differentiated into classes. Therefore, the impact of flood and bank erosion is experienced differentially by different social classes. Hence, adoption of efficient mitigation measures against a potential hazard is subject to ones' economic ability.

Findings from this study suggest that the distress, dislocations and poverty of peasants are not due to extreme physical phenomenan only . Rather, natural hazards only accentuate the prevailing precarious socio-economic condition. Peasants in the flood plains are as socio-economically stratified as anywhere else in Bangladesh. They are increasingly confronted with the social process of impoverishment which is drastically weakening their ability to adopt suitable strategies for facing hazards of riverbank erosion and flooding.

It was found that a high proportion of farms operate at a marginal condition. The majority of farms (more than 90 percent) in the study areas fall drastically short of being viable. In terms of production, most of the peasants are incapable of maintaining a bare subsistence and lack the capacity needed to recuperate from disasters. In order to survive, peasants innovate strategies in various informal sectors to supplement their income. Sharecropping as an alternative access to land does not hold any hope for the poor peasants or the landless. It was found that the overall proportion of those renting-out land in the study areas is very insignificant, and the relationship between tenancy and natural risk is negative. A very high proportion of households in the study areas does not employ wage labour and a very insignificant number of permanently hired labourers are actually involved in a similarly insignificant number of households.

There is a positive relationship between farm size and natural risk. In other words, the households with higher agricultural income are those who experience higher loss of land due to riverbank erosion. However, the proportion of households vulnerable to erosion-loss is not very high compared to the overall population in the study areas.

The study suggests that natural hazards are viewed as serious problems, but the majority of peasants are concerned more with day to day problems of survival. Lack of sufficient land, alternative employment opportunities, education and health care services, and housing are all of prime concern for the millions of landless or virtually landless people in the floodplains. The resilience of natural hazard victims is a function of their control of resources or occupational diversity. The amount of land lost to riverbank erosion does not necessarily make one destitute. Moreover, riverbank erosion is not the only cause of loss of land.

Despite their economic limitations, villagers offer assistance to victims at a rate exceeding expected levels. It was noted that while larger farmers expect more assistance from local or national government, the poorer peasants expect assistance from within their own community (relatives, friends, and villagers). The role of the state is hardly noticeable

despite peoples' expectations. It was found that assistance from local leaders and government administration is nil.

The most prominent adjustment strategies in Kazipur and Chilmari were to (a) abandon land, (b) sell livestock, and (c) dismantle housing structures and move out. Some have to sell cultivable land and ornaments in order to bear the cost of resettlement. However, it is the poorer peasants who are forced to make the highest proportion of distress sales.

Results of the present study suggest a need for a drastic shift in rural development strategies, including water resource management, from those currently being pursued. A comprehensive endeavor to generate rural employment outside of agriculture is urgently needed. It is possible to encourage informal sector investment which will diversify income-generating activities in rural areas . Besides offering formal incentives, monitoring and forecasting of disasters would be needed as necessary mitigation strategy. Since flooding and fast currents cannot be stopped from occuring and eroding lands, peasants can be encouraged to live with such hazards. In fact, that is what the peasants have been trying to do for ages. Thus, peasants urgently need a more pragmatic form of support to be successful in their struggle with nature.

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GLOSSARY

ABBREVIATIONS

UNECOSOC	United Nations Economic and Social Council
BWDB	Bangladesh Water Development Board
EPWAPDA	East Pakistan Water and Power Development Authority
FFWP	Food for Works Programmes
PWP	Public Works Programmes
RWP	Rural Works Programmes
FFW	Food For Works
WFP	World Food Programme
IDA	International Development Agency
CIDA	Canadian International Development Agency
SIDA	Swedish International Development Agency
ILO	International Labour Organization
USAID	U S Agency for International Development
BARD	Bangladesh Academy for Rural Development
IBRD	International Bank of Reconstruction and Development
ADB	Asian Development Bank
UNDP	United Nations Development Programme
SSFCD	Small Scale Flood Control, Drainage and Irrigation
SSRC	Social Science Research Council
WDR	World Development Report
EIC	East India Company, A British Trading Company that invaded India in the 18th century, and subsequently turned India into a British colony in which Bangladesh was a province

FAO	Food and Agricultural Organization
REIS	Riverbank Erosion Impact Study, a collaborative research project sponsored jointly by IDRC, U OF M AND JU.
NSRB	Nutritional Survey of Rural Bangladesh
DTW	Deep Tube Well
STW	Shallow Tube Well
HTW	Hand Tube Well
MOSTI	Manually Operated Shallow Tube Well for Irrigation
HYV	High Yielding Variety (Paddy)

BENGALI TERMS

UPAZILLA	Sub-District, a second level administrative unit
UNION	A Sub-Division of upazilla, a third level administrative unit
MOUZA	A fourth level administrative unit; a sub-division of union
CHAR	A sand bar or an island in a river
ZAMINDAR	Now defunct traditional land-rent collector.
AMLAH	A Bureaucrat in the government or of the landlords
TALUKDAR, JOTEDAR, CHAKLADER, CHUKANIDAR, DARCHUKANIDAR	Subordinate land-rent collectors in the British period Some of these titles have become tradition of naming persons in rural Bangladesh.
RYAT	Settled Peasants under a traditional landlord
ADHIAR	A term for share-croppers, especially in the North Bengal
GRAMSARKAR	Village Government, a futile attempt by the government under president Ziaur Rahman to formalize village level administration and rural development
DAL	Pulse, especially lentils
TAKA (TK)	Bangladesh Currency, CDN$ 1= TK. 27
BODLEE	Exchange-labourer between poor peasants in rural areas, usually free of wages, but often food is provided

NIRANEE	Traditional weeding spade
LANGAL	Wooden plough
DAO	A blade for cutting woods.
DHEKI	A Pedal Paddy husker.
KACHI	A blades for cutting grass
KAMLA	Workers, (Wage labourers)
KHET MOJUR	Agricultural wage labourers
UTHULI	Free users of homestead-land, a term used in North Bengal
GOAL BATHAN	An area for rearing herds of cattle, away from farmstead
CHUKANI	A job-contract labourer
LATHYALS	An army of musclemen for a Talukder
CHOURA	Pertaining to Char; a person from a Char
SARDER	Leader (usually of a gang)
CHOR-DAKATS	Thieves and robbers
BORSHA	Normal flooding of the agricultural fields
BONNA	High flood

CHAPTER I

ENUNCIATION OF THE PROBLEM OF PEASANTS' ADJUSTMENTS TO NATURAL HAZARDS

1.1 PERSPECTIVES ON THE PROBLEM OF NATURAL HAZARDS

Natural hazards are a chronic problem in underdeveloped countries. More than 88 percent of disasters occur in the poorer countries of Asia, Africa and Latin America, and Asia alone accounts for 41 percent of the world total (UNECOSOC, 1971; cited in Westgate and O'Keefe, 1976). Of all disaster types, floods are the most common natural event (more than 90 percent) haunting poor countries in the world (Long, 1978). Moreover, their frequency appears to have increased significantly in recent years. Stanissis (1972; cited in Westgate and O'Keefe: Table 8, 9 and 10) notes that an average of 2.9 floods occured per year over the 52 year period between 1919 to 1971, and increased to an average of six per year during 1951-1971. In the period between 1968 and 1971, the frequency increased further to 6.75 per year. This global increment in flood frequencies has also been reflected in the Bangladesh situation in recent years. Over the last two decades, about a dozen severe floods have occured (Table 1.1); the country experienced exceptional severe floodings in the 1984-88 period.

Bangladesh is a low lying flat flood-plain situated at the confluence of the Ganga, Brahmaputra and Meghna rivers. The country is crossed by about 250 river channels which have a total length of 24,140 km. The shallow gradient of these rivers results in very sluggish run-off as some 1,200 million acre feet of water annually pass through Bangladesh. At the peak flood season of June to September, the flow often exceeds five million cubic feet per second (Tarafder, 1974). The result of such flow is extensive flooding of the countryside. The impact of these floods is manifest in extensive crop damage and in the destruction of rural infrastructure, and often runs into millions of dollars

in damages. For example, in the 1974 flood there was an estimated US$380 million in crop damage and destruction of rural infrastructure; twenty-five percent of livestock was also lost and poor peasants were compelled to "distress-sell" three percent of their scarce farm land (Bangladesh Planning Commission, 1974; Alamgir, 1980; cited in Long, 1978 and Torry, 1984).

Table 1.1: Area Flooded in Bangladesh since 1954.

Year	Area		Percentage of Total Area
	Square km	Sq. miles	
1954	41,584	16,000	28.57
1955	50,680	19,500	34.85
1956	35,606	13,700	24.46
1960	28,589	11,000	19.64
1961	28,849	11,100	19.82
1962	37,426	14,400	25.71
1963	35,346	13,600	24.29
1964	31,188	12,000	21.43
1965	28,589	11,000	19.64
1966	33,527	12,900	23.04
1967	25,990	10,000	17.85
1968	37,426	14,400	25.71
1969	41,584	16,000	28.57
1970	42,624	16,400	29.28
1971	36,386	14,000	25.00
1972	25,990	10,000	17.85
1974	52,700	20,277	36.21
1975	33,787	13,000	23.21
1980	33,267	12,800	22.86
1984	57,178	22,000	39.29
1987	83,168	32,000	57.14
1988	103,960	40,000	71.43

Source: Tarafder, 1974; Elahi, 1985; World Bank, 1987;
Canadian Red Cross, Mail # 1, Sept. 19, 1988.

Distress sale of land during floods is accompanied by another land-losing phenomenon in rural areas namely, land lost due to riverbank erosion. Because rivers in Bangladesh flow through unstable alluvial soils, most of the net-work of 250 rivers is affected by erosion each year. Severe erosion occurs through 356 km of bankline along the major rivers, and a further 195 km of bankline along minor river channels is also subjected

to severe erosion (Kamal, 1988). The flow discharge of the Ganga, Brahmaputra and Meghna fluctuates from 0.25 million cubic feet per second in the dry season to five million cubic feet per second in flood season. At that time, these rivers carry between 1.5 to 2 billion tons of sediments. This fluctuation in river flow 'poses a unique hydraulic problem associated with river instability' (Khan and Rashid, 1985). Besides fluctuations in flow discharges, Kamal (1988:4) notes that there are four other causes contributing to bank erosion, namely (1) rapid rise and fall in water levels, (2) rate of sedimentation and scouring of bed materials, (3) the formation and movement of large bed forms, and (4) the soil condition of bed materials.

Chronic flooding, soil instability, and shifting of river channels are manifest in the destruction of towns and villages, agricultural crops, and mortality among humans and livestock. A Bangladesh Water Development Board (BWDB) study records that rivers have been eroding in about 254 places in recent years (Islam and Islam, 1985). The significance of such hazards can be highlighted thoroughly on consideration of the economic burden to society of rebuilding flood-effected infrastructure and taking other protective measures on the one hand, and of the economic and social dislocations inflicted upon poor peasants on the other hand. BWDB estimates that it would cost about TK. 60,000 million[1] to control the river-borne hazards for the whole country. This amount is about double that of the Annual Development Budget of the country.[2] Under the existing socio-economic condition, these hazards pose serious problem in deciding development needs, and priorities, in terms of ability of the national economy. Flooding and bank erosion places agricultural development planning into dilemma.

The fact that 90 to 95 percent of the disaster losses in underdeveloped countries arise from floods suggests an immediate need for pragmatic agricultural planning. For

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[1] Cdn $ 2,222 million at the rate of Cdn $ 1 to TK. 27

[2] For example, the Annual Development Budget for 1982-83 was Tk. 27,000 million and for 1984-85 was TK. 38,960 million, 90 percent of which was funded through foreign aid.

obvious reasons, agriculture, being the dominant economic sector, is most susceptible to the flood hazard in underdeveloped countries. Amidst the existing problems that pervade Third World agriculture, flood hazard intensifies the vulnerability in poorer countries like Bangladesh. The challenges of undertaking preventive and curative measures against pervasive natural hazards are colossal for the national government of a poverty stricken country like Bangladesh. The limited internal availability of resources and technology simply do not permit the adoption of mitigation measures on a self-help basis. Hence, governments in underdeveloped countries draw heavily on foreign resources and technology.

1.2 STATEMENT OF THE GENERAL PROBLEM OF THIS STUDY

Bangladesh is stranded in a poverty trap. About 85 percent of its 115 million people live below the poverty level.[3] It is one of the world's poorest countries, perhaps second only to Ethiopia, with a per capita income of US $ 150.

Table 1.2: Land Distribution in Bangladesh.

Landholding sizes (acres)	Percentages of households	Percentages of land owned
0.0	28.80	0.00
0.01 - 2.00	47.80	21.70
2.01 - 4.00	12.70	22.40
4.01 - 10.00	8.20	30.70
10.0 +	2.50	25.20

Source: Jannuzi and Peach, 1978.

[3] According to The Second Five Year Plan (1980), a poverty level is calculated on a minimum in-take of 2,122 calories. The same document defines an extreme poverty level at 1,805 calories in-take; about 54 percent of the population are at this level. Alamgir defines the poverty level as a 'level of per capita expenditure adequate to purchase a bundle of food and related items which is adequate to satisfy a minimum need of a person' (Alamgir, 1978:2-3).

The crowding of 115 million people within an area of only about 146,000 sq.km (56,000 square miles) results in a density of about 1,964 persons per square mile. Agriculture, the country's prime economic sector, is characterized by small-holdings, with average farm sizes of under 2 acres (0.81 hectare) per household.[4] However, this average does not depict reality, for more than 76 percent of the rural households are virtually landless and practically deprived of any meaningful employment (see Table 1.2).

Despite attempts of various rural development and self-reliance programmes since the 1960's, agricultural production has not increased sufficiently to feed the population that is increasing at the rate of about 3 percent per year. After an initial growth in output following 1967, the beginning year of the 'green revolution', production declined during 1970-75. Rahman (1983) notes that, "in 1975-76 agricultural production exceeded the levels achieved in 1969-70, and since then has increased substantially". But the benefits from this increase in production did not reach the majority of the population; a small minority of rich peasantry reap all the benefits of modernization (Farmer, 1977 and 1983; Johnson, 1982; Dewan, 1978; Dasgupta, 1977).

Table 1.3 : Landholding size and calorie intake in rural Bangladesh.

Landholding size	Calorie intake*	Protein
Below 1.00 acres	1961.33	54.4
1.00-3.00	2193.00	62.5
Above 3 acres	2375.00	67.6

Source: Nutrition Survey of Bangladesh, 1975-76,
Bangladesh Bureau of Statistics (BBS),1981.
*BBS considers 2248 calories as the minimum level.

[4] It has been found that the average farm size decreased from 3.5 acres in 1960, to 2.8 in 1974, and to 2.0 acres in 1977 (Alamgir, 1979:94-95; Wood, 1981:11).

As can be seen from Table 1.3, all rural households of over 3 acres (1.21 hectare) are placed well above the poverty line (2122 calories). A significant difference between the rich farmers and the small and marginal farmers is that their accessibility to, and reproduction of the means of production is biased in favour of the former. Institutional credits, HYV seeds, fertilizers, pesticides, and water pumps, are all monopolized by the rural elites. Reproduction of the means of production in the sphere of small and marginal farms remains archaic. Modernization has been minimal and hence land and labour remain by far the most important economic factors for the majority of the peasantry. Clearly, an unequal class structure is characteristic of the peasantry in Bangladesh.

The process through which natural and human resources are exploited in Bangladesh intensifies the unequal resource distribution and the unequal social class structure. The process has a long historical background during which the actual producers (the peasantry) were gradually separated from the means of production.[5] This process of separation was accompanied by a deliberate neglect of agriculture. Exploitation of agriculture was geared to developments in the industrial sector during the Pakistani colonial period. Attention directed to the rural sector was in the form of infrastructure development to enhance the extraction of more resources for the benefit of the urban centres. The agricultural crises in the country are frequently intensified by deliberately conceived biased development policies. The development strategies of the 1950's and 1960's unduly favoured urbanization and industrialization. Industrialization was dependent on the importation of highly advanced capital intensive technology. The whole economy was streamlined through export-oriented strategies that encouraged only cash-crop production. Much needed foodcrop production was neglected, and this neglect has resulted in an inability to meet crisis situations in particular, and has led to an overall food deficit.

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[5] This separation of the producers from the means of production is not necessarily a negative phenomenon if there is scope for replacement in meaningful alternative employment.

The contemporary view in natural hazard studies is that the occurrence of extreme natural events is a random, uncertain phenomenon, while in the 'human-use system', "...the on going conditions that provide the setting for disaster are inferred to be stable, orderly and predictable, or at least sufficiently so to be called managed and even planned" (Hewitt, 1983: 22; emphasis added). Hence, any natural event perturbing the 'stable' and 'orderly' life is an accident. Hewitt holds that hazards are characteristic rather than accidental features of the places and societies where they occur and are more expected and 'knowable' than many of the contemporary social developments that pervade everyday life. He reasonably believes that modernization in developing countries weakens the ability of those societies to deal with hazard problems. The processes of "...alienation of people from land and therefore from nature and the 'man-environment relations' that must develop to deal with natural extremes, are integral to the unavoidable vulnerability of ordinary folk to natural calamity" (Hewitt, 1983: 25, 27; emphasis added).

The concept of natural hazards being uncertain, unpredictable, and peoples' 'stupidity' in responding to it, has seen policy responses evolve that have remained unchanged over the last 2,300 years.[6] There are other views, which prefer to see the hazard problem as administrative or institutional weaknesses, and propose structural remedial measures (Brammer, 1975; Currey, 1978). Like many others, the structuralists also suffer from naivete in understanding the historical process of weakening of the ability of the rural peasantry. Their naivete is reflected in statements, such as Bruce Currey's

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[6] It is interesting to note that the modern public responses are really not that 'modern', like distribution of gruel in *Langarkhana*, agricultural loans, seed and fertilizer distribution and construction of embankments and so on. For "...In the times of famine, according to Kautilya (a minister in the court of the emperor Chandragupta Maurya, around 320 BC), the king should provide to his subjects, *seeds and food* obtainable from king's own store or from rich subjects or *from king's friends* (modern foreign aid/relief?). Kautilya also recommends--*encouragement of agriculture* (grow more food/IRDP?), *charging additional revenue or contributions from the rich* (President's Relief Fund?). In the 1334-35 famine, "the measure adopted by the state (of Sultan Mohammad Bin Tughlaq) to fight the calamity, like *advances of loans, sinking of wells, encouragement of agriculture and establishment of charity houses to distribute cooked food.* In 1583-84 famine, Emperor Akbar laid foundation of *an embankment, opened alms houses and free kitchen* in the cities" (Srivastava, 1968: 14-17). For similar approaches in public responses to natural hazards during colonial rule (British and Pakistani) and self rule since 1971, see Ghosh (1944); Mukerji (1965); Srivastava (1968); Muqtada (1981); Sen (1981); Alamgir (1977); and Skeet (1977).

(1978: 92): "...more than 500 of the 790 households surveyed were eating less than one rice meal per day which is in sharp contrast to the normal three rice meals per day in rural Bangladesh" (emphasis added). It is quite wishful to assume three rice meals to be norm in rural Bangladesh. In Bangladesh as a whole, more than 80 percent of the population live below the poverty line, and more than 76 percent of the rural people are virtually landless and have no meaningful employment alternatives. In the face of such pervasive poverty, such statistics as Currey's only generate misunderstanding.

1.3 THE THEORETICAL BASIS OF THE STUDY

1.3.1 The Development Controversy

The orthodox notion of an underdeveloped country like Bangladesh is that agriculture is backward and traditional; the underdeveloped countries are poor because of lack of capital, technology and expertise. Furthermore, it is held that peasants are fatalistic and are subject to pervasive hunger, malnutrition, disease and natural hazards. In order to redress these conditions in third world countries, a host of western development theories have been tested during the last 40 years without significant success. Despite the unqualified adoption and implementation of western development theories into various sectors of the Third World economy, poverty could not be alleviated; rather it has intensified. Generally, Third World countries have made some progress, but there is continuing and widespread poverty, inequality and unemployment. Bangladesh, for example, experienced a kind of agricultural growth in absolute terms during the period between 1960s and 1970s, yet it needs to import about 2 million tons of food grains each year.

What went wrong with the enthusiastic development approaches so far undertaken? The conventional development theories are characterized with a variation in contention. Theoretical generalizations about prosperous and depressed nations and regions have been put forward by a number of researchers since the 1950s. Despite their ceaseless efforts,

there is not yet a generally accepted theory based on common and fundamental elements of development and underdevelopment. However, as Kates (1980: 164) suggests, "...it is widely conceded by both critics and defenders of conventional development policies that development exacerbates differences among people and groups."

The basic idea behind conventional theories is that growth is necessarily unbalanced and takes place through a "chain of disequilibria," (Hirschman, 1958). It appears that for both the equilibrium theorist (takeoff theory of Rostow, 1960) and tunnel theorist (Hirschman, 1958) development is a necessary process for increasing a nation's resources prior to sharing them. Marxist contenders hold that the deliberate unbalancing of development is an inevitable adjunct to capitalist accumulation and is contemptuously viewed by Frank (1970) as the development of underdevelopment (cited in Kates, 1980). The development approaches so far put forward all centre around the proposition that technological innovation is necessary in the underdeveloped countries, but disagreement revolves around the question of how to get those technologies adopted and located in the underdeveloped economies. This disagreement can be summarized as follows.

In the 1950s, the concept of unbalanced growth was the prime theme following the dissatisfaction with equilibrium or balanced regional development concepts. Hirschman noted that growth is communicated from the leading industry's sector to the other sectors. He argued that development is possible with an increase in output of existing industries which will have a kind of multiplier effect through backward and forward linkages between industries having complementary relationships. The main theme of his argument is that agglomeration at a growing point will, at the initial stage, have polarization of growth that imposes costs on the other areas. This deliberate unbalancing shall be redressed by ultimate convergence through the play of the forces in the market. Hirschman further contends that growth is necessarily unbalanced geographically and takes place through a "chain of disequilibria". Convergence will occur, as he hoped, through a process of 'trickle-down' that works particularly through interregional trade and transfer of capital to

the backward regions. Hirschman believed that scarce resources cannot be invested everywhere at once and, hence, projects must be selected for their growth potential. In his concept it is also presumed that the state will intervene to influence the growth of imbalance if the normal market mechanism fails to bring about convergence.

Myrdal's concept of cumulative causation highlights ideas similar to Hirschman. He focused on the problem of inequality and postulated the concept of 'backwash' effects and 'spread' effects comparable to Hirschman's polarization and trickle down effects. Myrdal's 'backwash' is effected through migration, trade and movement of capital and the 'spread' is effected through trade through interregional complementarities that are reflected in the increased flow of agricultural products and raw materials to, and technological diffusion from, the growth centres. He proposes that any weakness arising out of externalities will be countered by public policy formulations, specially in the regulation of the market. Yet the problem is with the market mechanism. In underdeveloped countries the market is not organized and integrated nationally and it is on this ground that the market mechanism by itself would not bring about any convergence as expected by theorists. Williamson (1965) holds that state intervention is, therefore, expected to control the market in the first place as to effect an integrated capital, labour and trade market so that the equilibriating market effects will be realized and the regional disparities will disappear. Williamson postulated his hypothesis as follows:

> "...the early stages of national development generate increasingly large North-South income differentials. Somewhere during the course of development, some or all of the disequilibriating tendencies diminish, causing a reversal in the pattern of interregional inequality. Instead of divergence in interregional levels of development, convergence becomes the rule, with the backward regions closing the development gap between themselves and the already industrialized areas. The expected result is that a describing static regional inequality will trace out an inverted "U" over the national growth path..."

His empirical evidence shows that the countries with highest income tend to display lower levels of regional disparities; newly industrializing underdeveloped countries like

Brazil and Colombia have the highest levels of interregional disparities; low income countries like India have moderate level of interregional disparities; the long-term profile of regional disparities indicate a decline from an early higher trend in disparities. Friedmann (1966) holds that:

> "...centres not only grow so rapidly as to create problems of an entirely new order, but they also act as suction pumps, pulling the more dynamic elements from the more static regions. The remainder of the country is thus relegated to a second-class, peripheral position. It is placed in a quasi-colonial relationship to the centre, experiencing net outflows of people, capital and resources, most of which rebound to the advantage of the centre, where economic growth will tend to be rapid, sustained and cumulative".

Friedmann presumed that through a space system of hierarchical growing points the distinction between the centre and the periphery can gradually be eliminated and integration of the whole national economy can be effected through the extension of an efficient commodity and factor market. Earlier, Siebert noted that the regional difference occurring due to the difference in factor mobility, and price differences for commodities are caused by immobilities of factors. Friedmann holds that successful innovation (factor distribution) increases the potential power of innovators and when this power is accepted socially, it becomes the authority and the adopters become dependents. The points of highest potential interaction within a communication field tend to be the centres of such change; innovation tends to spread downward and outward from such centres. Through various feedback effects, the centres economic strength is concentrated and without a political intervention the spread effects cannot be operationalized. There appear conflicts between the centre and the periphery about the concentration. The local peripheral elites may develop a sense of deprivation and lack of accessibility to the centre's authority. This may lead to demand for decentralization, autonomy, and even separation.

The concept of innovation diffusion originated from the postulations of Schumpeter (1947) and Perroux (1952) and were pursued further by several authors who hypothesized how development originates from innovation in general and innovations in a leading

industry generate diffusing growth, and in turn results in a pole. Contributions of Haggerstrand (1953), Brown (1968), Morrill and Pitts (quoted in Sunderam, 1983) are important in this context. Berry (1972) suggested that knowledge relating to the poles of growth, the channels of spread and the sequence of change can point to a means whereby the spatio-temporal lag between innovative and backward regions can be narrowed by setting up new growth poles and new channels, and by changing the pace and sequence of spread.

The growth pole concept is operative in the diffusion of innovations through the process by which impulses of economic change are transmitted, in order, from higher to lower centres in the urban hierarchy and by the process whereby the spatial incidence of economic growth is a function of distance from the central city. These processes of diffusion are a function of the probability of contact between poles and probability of acceptance at the lower levels of the hierarchy. The neo-classical and 'disequilibrium' theories of development and underdevelopment, however, were subjected to severe criticism from structuralist and neo-marxist authors. Of them, Frank (1969), Bettleheim (1972), Amin (1976) and Emmanuel (1972) are note worthy. Their postulations can be summarized as follows:

- the problem of spatial organization of economic and social development of underdeveloped countries cannot be adequately understood without considering it in the context of the overall structure of the world capitalist economy and the dependent position of these countries within that structure,

- the internal distortions in the space economy of the underdeveloped countries can be attributed to the prevailing unequal and exploitative relationship they have with the developed countries, and

- the unequal exchange between developed and underdeveloped countries due to wage-price differentials of the commodity trades explain the growing inequalities between core and peripheral regions within underdeveloped countries.

One has to decide as to what really generates inequality internationally as well as interregionally. Is it inadequate market mechanisms or inequitable production and trade relations? Search for an answer again leads researchers, planners and administrators to another dilemma, that of welfare and efficiency (Todd, 1980). Todd holds that the very context of the growth centre approach is insufficiently addressed. The fundamental point is to identify the role of growth centre as being either an instrument of welfare or as a tool for promoting economic efficiency. He further contends that "...the basic stumbling block in the application of growth centre strategies stems from the mismatch between the stated goals of regional development and the structural plans which define what is actually permissible in growth centre operations".

However, it is possible from the neo-classical point of reasoning to show that the balanced growth for reducing regional disparities is an inefficient approach. This kind of reasoning may completely overlook social objective of capital accumulation (Saha and Srivastava, 1983). In line with Saha and Srivastava, I hold that the purpose of capital accumulation can only be justified in terms of equitable social welfare. Rejuvenation of production and distribution and, for that matter, the increased flows of goods and services, should be the purpose of accumulation. Any approach of regionalization, deliberately unbalancing or otherwise, is appropriate if the above social objective is assured and fulfilled. But as Saha and Srivastava hold, in a world of spatial resistance to migration and factor flows, spatial concentration of capital stock in one region is bound to mean increased participation in the process of production by the population of that region and inadequate utilization of the human and material resources of other regions. This is more true in a society which is conspicuously stratified into different classes. Hence, to share equity, it is necessary for the regions and different social classes to participate in a national production process and, in this context, jobs should be moved to workers and not the other way around.

The concept of efficiency in resource allocation cannot be made meaningful if that efficiency does not account for the greater society. Maximization of national product by investment concentration in particular advantageous regions and into the hands of privileged classes is bound to be at the expense of other less-advantaged regions and social classes and the depressed conditions shall be perpetuated in the peripheral depressed regions. To quote Saha and Srivastava: "...thus quite apart from any moral considerations of equity in welfare, the imperative for direct planning intervention in securing inter-regional balance in the levels of development seems to stem from an appropriately formulated efficiency criterion as well".

In relieving the dilemma at the government level of the choice between equity and efficiency, Todd proposes a 'two routes policy' as a pragmatic policy option. The first route is to initially emphasize the efficient functioning of activities in growth centres and indirectly foster welfare in adjacent deprived areas through external economies, while, in contrast, the second route involves direct public investment in the provision of social and economic facilities for tempering depressed communities. The major weakness of the conventional and neo-classical development theories is that these theories ignore the issues of social relations of production. The fact is that the benefits of economic growth are bound to accrue to the owners of the means of production, especially in a class-based society (Chilcote,1984; Sunkel,1970 and 1972; Furtado,1964 and 1973; Casanova, 1969). The natural polarization of resources into the hands of a few privileged elites leads to the pauperization of the majority of the masses, placing them into a vulnerable situation in the face of extreme natural, social and market phenomena (Goodman and Redclift, 1981). Failures of the Western approaches in alleviating distress conditions of poverty-stricken Third World countries led to the enquiry into the cognitive behavioural aspects of the people in the underdeveloped world to ascertain why certain people, or groups of people, adopt modern technology while others do not. This cognitive behavioural tool of study also ignores the conflict between the processes of innovations and the processes of exploitation.

To overlook the class factor as a barrier to equitable flow of results of growth, or the trickledown effects of growth, is to give a one-sided evaluation of the reality. Technology, as far as it is concerned with development, is class biased; it benefits the dominant classes. Dickson (1975) holds that technology is a political process and notes that:

> "...Social relations of production - the relationship between the different social groups or classes involved in the production process - become incorporated in the means of production and that technology and social patterns therefore reinforce each other in a dialectical fashion at both a material and an ideological level" (cited in Dewan, 1978: 17).

Any theoretical propositions that ignore the fact that technology is class-biased are destined to failure. It fails to enunciate the problems of development.and that technology helps owners of the means of production where class differentiation is conspicuous. And in the above context, development through technological innovations becomes a tool of exploitation and resource polarization in the underdeveloped countries. Simplistic development approaches did not take into consideration this reality whereby the poverty situation deteriorated rather than improved.

1.3.2 Mode of Production in Bangladesh Agriculture

In regards to the mode of production in the agriculture sector of Bangladesh, some researchers are explicit in characterizing the peasantry as semi-feudal (Alamgir, 1978; Arnes and van Buerden, 1977; Westergaard, 1985; Jansen, 1987). Their contentions are based on the reasoning that the labour force is bonded to a group of patrons who control the socio-political realm of the peasantry through economic and political power. The control over the peasantry is articulated through a vertical integration of the different socio-economic classes in a fashion of 'patron-client' relations. Such patron-client relations, for some social scientists, are cemented by the omnipotent power of kinship relations, where poverty stricken blood relatives are morally obliged to obey the rich and powerful kin, as well as to work for them. The relationship between the non-kin clients are maintained by

the advancement of economic or social 'favours', in exchange for which the client has to repay the patron by labour in the fields. As a result, the class conflict is mediated through this form of vertical integration of the society. Therefore, transition, or for that matter, revolution does not take place. This is a very simplistic attempt to characterize the condition necessary for revolution. If one has to believe the above contention, then one has also to believe that once the vertical social integration is removed, the transition or revolution will spring up immediately.

A few social scientists found no evidence to show that the peasants of India and Bangladesh ever indulged in any kind of revolutions (Jansen 1987; Moore, 1977). But history shows ample evidence of peasants resistence in India in general and in Bangladesh in particular from the colonial period to very recent time. Relating consciousness to revolutionary activities is also a misnomer in the sense that revolutions cannot be a daily routine job to prove one's social or political consciousness.[7] As Lenin said in his *Left-wing Communism , an Infantile Disorder* ,

> "...for a revolution to take place it is not enough for the exploited and oppressed classes to realise the impossibility of living in the old way, and demand changes; for a revolution to take place it is essential that the exploiters should not be able to live and rule in the old way. It is only when 'lower classes' do not want to live in the old way and the 'upper classes' cannot carry on in the old way that the revolution can triumph. This truth can be expressed in other words: revolution is impossible without a nation-wide crisis (affecting both the exploited and the exploiters). It follows that, for a revolution to take place, it is essential, first, that a majority of workers (or at least a majority of the class-conscious, thinking and politically active workers) should fully realise that a revolution is necessary, and that they should be prepared to die for it; second, that the ruling classes should be going through a governmental crisis which draws even the most backward masses into politics" (cited from Pomeroy, 1985).

Refering to the above quotation, Pomeroy (1985) holds that, "...by this definition many of the cases of armed or other sharp struggles in the 'Third World' countries have not

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[7]Even if one wants to see consciousness reflected in day-to-day resistances by the peasantry, one has to simply take the trouble of looking into the various fascinating records of such activities available in the police and judicial records which are available throughout the country. (For concepts of every day peasant resistance, see Turton (1986) and Scott (1986).

been, strictly speaking, revolutionary situations, but part of a process leading toward that point, which may not necessarily be reached" (emphasis added).

For a revolution to take place, therefore, it is a matter of necessary objective condition, not only of consciousness of the concerned class. The vital issue that needs to be investigated is whether a revolutionary situation exists or not. The peasants of Bangladesh are more class conscious than is being posed by their apparent docile behaviour. However, the criteria by which the peasantry is characterized as semi-feudal are very weak and insignificant in order of dominance, contrasting to what is found in the present study. However, this issue will be taken up in more details in a later chapter.

To recapitulate the two prominent schools of theories of development outlined above, the innovation-diffussion theorists demonstrate that the root cause of underdevelopment lies in the weaknesses in the social system in the Third World. The only way suggested to remedy the structural constraints is transfer of technology, capital, institution and modern concept of development from the developed countries to under- or undeveloped countries. The dependency theorists emphasize the elimination of the external constraints, such as capital and technology dependency on developed capitalist countries, since development is hindered by the domination of, and exploitation by, the foreign capital. From the study of the two conflicting schools of thought, it can be realized that underdevelopment of a Third World country is a function of factors both (1) internal, such as local class structure and elitist power structure; and (2) external, such as excessive economic dependence on world metropoles.

However, the external forces do operate in collaboration with the internal ruling class of elites, hence it is more important to draw serious attention to the internal constraints which are being posed by the local elites. With such an understanding, the focus of this study will be on internal colonizing processes (Chapter 3), the process of internalization of the external constraints (Chapter 4), and existing social relations of production in Bangladesh in general and in the study area in particular (Chapter 5 and 6).

1.3.3 Towards a Conceptual Frame

The problem of defining hazard is not as acute as it is to posit a theoretical basis to hazard adaptability and vulnerability of a given society. Hazard research is about 30 years old, but it has been realized recently that conventional wisdom of hazard causes and consequences is insufficient. A number of researchers have challenged the conventional wisdom (Hewitt, 1983; Copans, 1983; Waddel, 1983; Watts, 1983; Susman, 1983; O'Keefe, 1983; Wisner, 1983). Some of the earlier investigators are coming to terms with social relations of the phenomenon. For example Kates (1980: 135) holds that: "...to be poor is to be vulnerable to the harmful acts of men and the hazardous events of nature. It is only recently, however, that we could begin to specify the relative vulnerability of poor nations to natural disaster".

On locating links between disaster and development, Kates further notes that, "...every livelihood system, society, and nation has the capacity to absorb hazard, a capacity paradoxically endangered by development and change". Since development is a political issue, vulnerability of a society to natural hazard must be viewed in the light of society's economic and political development. In natural hazard studies, the economic and political causes were, until recently, frequently overlooked (Morren, 1983).

It may be argued that farmer's problems of adjustment to riverbank erosion and flood is related to their ability to cope. This ability, in turn, is a function of their socio-economic position in the social structure they are placed in. The peasantry in Bangladesh is vividly differentiated into classes. Therefore, the impact of flood and bank erosion is experienced differentially by different social classes. Man-environment relations are not discrete. Any perturbation in these relations is to be viewed as an extension of a condition already existing in both the systems (natural or social). Hence, a proper context of analysis should encompass social interaction in exploiting nature -- the resources through which a given society reproduces its material means of existence and thus advances. Any extreme natural event, such as flood hazard, for example, that perturbs this societal reproduction

and progress, can be viewed in terms of society's ability to cope with such events (Baird et al., 1975; Copans, 1983; Westgate and O'Keefe, 1976; Watts, 1983; Susman et al., 1983; Hewitt, 1983; Waddel, 1977, 1983; Morren, 1983). Hazard would not be a hazard, as White (1974) postulates, if there were no human involvement in that hazard. Man is bound to interact with nature and hence involve himself with all the natural events, normal or extreme. The issue is whether man or, for that matter, society, is prepared and capable of coping with any extreme events. To measure the ability of a society, investigators need to look into the characteristics of the society in question.

Social characteristics are best reflected in its process of production and reproduction. In resource exploitation and reproduction, society needs to enter into a form of social organization involving all its individual members, groups, and classes. Thereby society enacts a particular social relation of production and reproduction. Society acquires resources and wealth through exploitation of labour, expropriation and accumulation. A society that unbalances its condition through uneven distribution of accumulated resources weakens the forces of production. Therefore the forces of production become weak and vulnerable to any hazard-socio-economic, political, or natural. This understanding leads one to focus on the premises of the modes of production theory propounded by Marx. It is believed here that the Marxian tool of analysis of the social relations of production gives a clear understanding of the condition and processes of exploitation and expropriation of surplus value of labour by which an elite group of people dominate and control the poverty-stricken masses.

The structure of social relations of production moulds human response to natural hazards (Smith and O'Keefe, 1980). In order to understand impacts of, and adjustment strategies to natural hazards of a given society, it is first necessary to understand the social relations of production. In a more general perspective radical writers have analyzed the relations of production and exchange in the Third World countries. Their aim was more revolving around formulating theories of 'underdevelopment'. These theories are

popularly known as the 'theories of dependency', propounded first in the pioneering work of Baran (1957), and furthered by Frank, Sweezy, Immanuel, Wallerstein, Amin, Sunkel, Furtado, and Casanova. Despite a remarkable debate amongst the radicals in their theoretical contentions, there was a general agreement as to the integration of the Third World countries into the 'World Economic System' that underdevelops the Third World countries. The processes through which the 'underdevelopment' takes place in the Third World countries, are pinpointed in Frank-Baran's 'Metropole-Satellite', Amin's 'Centre-Periphery', and Immanuels 'Unequal Exchange' theories. Some of the radicals were more specific about the social class relations of production in a national as well as international level. Later day works by Amin, Sunkel, Furtado and Casanova are good examples. Marxian class analysis is a rich tool in analysis of the social realities and in seeing why development does not occur despite ceaseless efforts. According to Griffin and Gurley (1985), class analysis is a powerful tool to understanding political macro-dynamics and economic micro-issues.

1.3.4 Concept of Peasant Classes

The richness of class analysis has been exemplified by researchers. Chilcote (1984) reviewed a number of them mostly from Latin America. Griffin and Gurley (1985) also surveyed some prominent class analytical works such as that of Moore (1966), Alain de Janvry (1981) and Mitra (1977). Remarkable studies have also been done in the sub-continent of South Asia; prominent among them are the works by Rudra (1970 and 1978), Patnaik (1970 and 1976), Chattopadhaya (1972), Alavi (1975), Akhlaqur Rahman (1986), Atiur Rahman (1986), Wood (1981) and Gough (1955, 1978).[8] The concept of social class in Marxian literature is very important.

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[8] In understanding what is meant by 'class', first it is necessary to highlight some relevant concepts that help in grasping the Marxian concept of social class and class relations in a certain mode of production. The concepts of mode of production, forces of production, relations of production are some of the concepts relevant here.

According to Marx "...the owners of mere labour-power, the owners of capital, and the land owners, whose respective sources of income are wages, profit and rent of land, in other words, wage-labourers, capitalists, and land owners form the three great classes of modern society based on the capitalist mode of production". In The Eighteenth Brumaire of Louis Bonaparte (1852), Marx defined class: "...in-so-far as millions of families live under economic conditions of existence that separate their mode of life, their interests, and their cultural formation from those of the other classes and bring them into conflict with those classes, they form a class". From these definitions, it emerges that class is a relational concept and, as Wood (1981: 4) puts it, "...a class only exists in relation to another class either through struggle and opposition or through domination and bondage with it".

However, class in the rural areas of Bangladesh can be defined in terms of land ownership. In defining peasants classes in Bangladesh, Rahman (1986: 271) argued that, "...the size of landholding was still considered a rough proxy of class status in the context

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(a) The mode of production : A mode of production is a " ---complex structure, doubly articulated by the productive forces connexion and the relation of production connexion, and containing three elements: the labourer, the means of production (sub-divided into object of labour and instrument of labour), and non-labourer"(Althusser and Balibar, 1970: 317).

It is, therefore, the combination of forces of production and the relations of production in a given society. The mode of production is structured by the dominance of relations of production.

(b) Forces of Production: In a productive process there appears various productive units, such as the labour power, technology and resources. Hindess and Hirst (1975) pointed out that ' Forces of production refers to the mode of appropriation of nature, that is to the labour process in which a determinate raw material is transformed into a determinate produce.

"The determinate elementary factors of the labour process are (1) the personal activity of man, i.e., work itself, (2) the subject of that work, and (3) instruments" (Capital 1:178).

(c) Relations of Production: According to Marx (1967: 217), "...the essential difference between the various forms of society, between, for instance, a society based on slave-labour, and one based on wage-labour, lies only in the mode in which this surplus labour is in each case extracted from the actual producer, the labourer". Based on this Marxian concept Hindess and Hirst (1975: 9-10) outlined the concept of "relations of production" as the "specific mode of appropriation of surplus labour and the specific forms of social distribution of the means of production corresponding to that mode of appropriation of surplus labour".

Thus, it becomes clear that a given society necessarily divides itself into different forms (i.e., Class) through the relations of production it establishes within itself. Different classes are brought together in terms of a specific set of relations in the process of production. The relationships are determined by the ownership and control, and corresponding distribution of the means of production. Hence, it can be seen that production is a social process by which a society, with the labour process, gains material benefits.

of rural Bangladesh." Virtually there are two classes of peasants in Bangladesh, namely, class A and class B, depending on their viability as farmers. These classes can be further sub-divided into five groupings depending on the size of the operational holdings of farmland:

Class A:

(i) holdings of less than 0.50 acre (landless, those who own no land, or own only a nominal amount of land for homesteads);

(ii) holdings of between 0.51 - 2.00 acres (marginal peasants);

(iii) holdings of between 2.00 - 5.00 acres (small peasants);

Class B:

(iv) holdings of between 5.00 - 7.50 acres (middle peasants); and

(v) those with landholdings above 7.50 acres (large peasants).

These classes are based on a specified level of sustainability at the farm level which will be discussed in detail in Chapter 6.

Accessibility to land significantly determines social relations of production in rural Bangladesh. Hence, operational holding, which reflects control of agricultural land and size of farm operated, is considered to be an important variable in this study. Related to farm size are such variables as sharecropping, wage labour, and rural credit. These variables are often used, in conjunction with landownership, to determine the social relations of production in Bangladesh agriculture, and thus a critical attention was given to these variables. Variables related to flooding and bank erosion, such as impact of bank erosion (amount of land lost, loss of income, etc.) and local and national level mitigation efforts (rescue, relief, etc.) were evaluated in relation to respondents' conception of the problem, and their expectations and personal displacement experiences.

This study is therefore organized in the following manner. The research problem and its relevant theoretical propositions are identified and evaluated in this chapter, and specific problems of interest, and objectives of the present study, are pinpointed in the

section that follows. In Chapter 2, an attempt is made to review available literature to construct hypotheses, and to elaborate the methodology. Chapter 3 contains a critical review of the role of the state regarding socio-economic development. Chapter 4 focuses on government strategies regarding natural hazard mitigation. Chapter 5 enunciates the general condition and process of agrarian organization in Bangladesh., while chapter 6 contain concrete empirical analysis of the agrarian organization in the study areas. Peasants' knowledge, experience, and adjustment to natural hazard strategies are analyzed in Chapter 7. There are six individual life histories from case studies in Chapter 8. The study is summarized and concluded in Chapter 9.

1.4 SPECIFIC PROBLEMS AND OBJECTIVES OF THE STUDY

In the face of the general food and agricultural problems, the conditions of pervasive poverty and inequality in rural areas are exacerbated by natural hazards such as cyclones, droughts, floods, and riverbank erosion. Such natural hazards often trigger conspicuous famine conditions more at local levels and occasionally also at the national level. The major rivers in the country flood, erode, and redeposit much of the land every year. A major flood occurs every 3 to 4 years causing tremendous loss to the economy. They uproot people from their settlements and create unemployment, which, in turn, lead to a greater concentration of the poor and homeless in urban and rural squatter settlements. Currey (1979) points out that recurrent famine conditions in the country are accentuated by the displacement of population by flood and riverbank erosion. Such disruptions add to the ever-increasing crises in social, political and economic conditions in an already over-populated nation.

Despite the potential hazard risks in flood prone areas, the average density of population in these floodplains is higher (more than 2000 per sq. mile) than the national average (Elahi and Chowdhury, 1976). Therefore, it may be expected that the plight of peasants is intensified by the occurrence of natural hazards. But, one should also ask why

natural hazards such as flooding become a pivotal issue for which a hue and cry is frequently raised, while hundreds of thousands die of hunger and malnutrition each year. For example, "...in 1976, despite record harvests and massive food aid, 360,000 infants and young children died of malnutrition."[9] Why does a hurricane claim 200,000 lives in Bangladesh and only 10 in USA? (Charny, 1991:17). A recent Canadian media reported that in Bangladesh "...An infant dies every minute, usually from diarrhea or other easily preventable causes" (The Globe and Mail, April 4, 1992:A1). Hence, the pertinent questions that need to be asked are :

- how do people survive in the face of such precariousness?;
- what are the processes that make the people so vulnerable?; and
- what is the role of the state in alleviating the peoples' sufferings?

It is the general objective of this study to provide some answers to these questions. In the light of the situation stated in this chapter, the specific objectives of this study are:

- to evaluate the underlying processes that contribute to peasants' vulnerability in general, and in particular, at the times of crises caused by flooding and riverbank erosion;
- to analyze the condition and process of peasants adjustment to flooding and riverbank erosion; and,
- to focus on the links between hazard vulnerability and national development policy objectives.

The present study generally contends that peasants' response strategy to cope with natural hazard is a function of their capability .

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[9]Carty and Smith (1981:124) notes that "...of the 600,000 tons of international food aid shipped to Bangladesh that year, only 10% reached the destitute-orphans, widows, refugee camp residents and the rural unemployed. Fully 90% was pumped into the country's food ration system which gives first priority to the military, police and civil service".

1.5 JUSTIFICATION OF THE STUDY

Bangladesh is a land of many problems. Insufficient production in agriculture and natural hazards affecting agriculture are the major threats to this poverty stricken country which already depends heavily on foreign food supply and other aid. There are, of course, other equally important problems which contribute to the deterioration in the nation's ability to feed itself. The inquiry into the agricultural situation leads one on to a fascinating journey into the realm of social, cultural, behavioural, and political economic aspects of this agricultural society. It is interesting to see how these aspects are moulded, or, if one prefers not be deterministic, are adapted to chronic natural hazards. Bangladesh is also a land of rivers, it is a large delta created by three major rivers, the Ganga, the Brahmaputra and the Meghna. These major rivers, along with their numerous tributaries and distributaries, are the life-line of a large population of over 115 million living in a space of only 146,000 square km. National planning and development strategies are often incompatible with the processes of natural phenomena and of the society. It is necessary to take account of the processes through which the peasant society carves a living out of the precarious man-land ratio and other resource scarcities.

Until the 1960's, geographic records were nothing more than resource-inventories (Grigg, 1981, 1983; Schwartzberg, 1983). Interest in geographic synthesis of agriculture, and its spatial analysis in relation to socio-economic, cultural, political, and natural hazard setting is inadequate. It is worth while to explore the relationships between social class structure and the issue of agricultural development and peasants' adaptive strategies. The peasants' adjustment strategies to social differentiations and to natural hazards and environmental deterioration, and the human strategies of resource exploitation in Bangladesh, is a field providing scope for fascinating geographical as well as environmental studies.

CHAPTER II

STUDY FRAME AND RESEARCH METHOD

In light of the problem enunciated and the objectives set in Chapter 1, it is necessary to analyze the characteristics of and the relationships between the state and the peasants communities in Bangladesh. An evaluation of public policies and strategies regarding hazard mitigation and agricultural development is also undertaken. Chapter 3, 4 and 5 will be devoted to such analyses. The data used in these chapters were collected from secondary sources. Analysis of peasants' sustenance and capability to cope with natural hazards is based on primary data collected through field surveys. This chapter outlines the methods of study.

2.1 LITERATURE REVIEW

The knowledge and understanding of hazard problems are framed in the media as news items and occasionally in technical reports of damage control programmes of the state.[1] To date, little has been done to analytically study the impact of natural hazards, and adjustment strategies thereto, on the agriculturally dependent population in rural Bangladesh. The role of geographers in Bangladesh appears to be inadequate in attempting such a special study. Aspects of agriculture, such as its patterns, level of development, and socio-economic and environmental relationships have been studied mostly within the frame-work of general geography. The interest shown historically by geographers was primarily for the purpose of mercantile intelligence backed by the colonial or local state powers (see, for example, James Rennell's work of 1781, and the district gazetteers).

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[1] See for example, " Land of Hope or Despair?", *Bangladesh Today*, Vol. 1(1) : 16-28, March 1,1983; The New York Times (1987, June 21); Shamsur Rahman (1984); Matin and Talukder (1980); IBRD and IDA (1972); EPWAPDA (1968); Chowdhury and Siddiqui (1984) Brixton and Brixton (1972); and Tarafdar (1974).

Research and investment in cash crops frequently expressed the interests and preferences of the state and the merchant-interests (Etienne, 1983:1; Sopher, 1973: 111).

The occurrence of natural hazards in Bangladesh is long-standing, but research into hazard-impacts, and public and private responses to them, has begun only recently. The hazard event that first drew widespread attention from journalists, politicians and researchers in other disciplines, was the Bengal Famine of 1943. The incidence and cause of the great Bengal famine was vividly recorded and analyzed by Santhanam (1944), Ghosh (1944), Narayan (1944), Famine Inquiry Commission (1945a,1945b), Mukerji (1965), Srivastava (1968), Sen (1981), and Venkataramani (1973).

Evidence shows us that heavy floods or severe drought invariably precedes famine. Administrators and a few investigators, while recording and elaborating famines, accused natural events (drought or flood) as the cause of such famines. Yet others emphasized socio-economic and political conditions of the population concerned as more relevant causes of famines. This emphasis on socio-political causes of famine was, however, not a very recent focus. More than a century ago, Walford presented a paper to the Statistical Society of London (1879), elaborating on the "artificial causes" of famine (Walford, 1970: 107-293). The cause of famines is more related to social organization, rather than to natural hazards, and in Walford's own language,"...the occurrence of famines would appear to me to be likely to result rather from the failure of human means and foresight in many instances than otherwise" (Walford, 1970: 4). The Famine Inquiry Commission, interestingly, was also emphatic in its conviction of the "artificial causes" of the infamous Bengal Famine of 1943 (Famine Inquiry Commission, 1945).

The theoretical stance of recent investigations of hazard response in Bangladesh is based on recent behavioural approaches in geography (Islam, 1970, 1971, 1974, 1980; Islam and Kunreuther, 1973; Khan, 1973; Ralph, 1975; Paul, 1984; Rasid, 1987). These studies, though rigorous in data collection and analysis, are constrained by a misplaced context of the farmers' behaviour. Contextual misplacement leads investigators to come

up with inaccurate and simplistic statements regarding farmers' attitudes and behaviours. 'Traditionally fatalist', 'disinterested in employment opportunities', 'traditionally attached to land in the hazard area' and 'are reluctant to move'-- are all instances of such thinking.

For the last two and a half decades, agricultural geographers have been concerned with determinants of agricultural land-use patterns. Invariably they were investigating the influences of environmental determinants of agriculture. With the development of superior technology which gave farmers better control over environmental factors, the focus moved to market factors, in which farmers were treated as rational entrepreneurs (Symons, 1967; Coppock, 1971). The implicit attitudes and values that moulded farmers' decision-making behaviour in adapting themselves to the pervasive vagaries of the environment and the market were recently drawn to the forefront in studies of agricultural land-use patterns (Ilbery, 1985). At the same time, significant attention was also drawn to the human responses and adjustment strategies to natural hazards (Burton, 1962, 1979; Burton and Kates, 1964; Kates, 1962; Saarinen, 1966; White, 1974, 1964). These behavioural approaches treated farmers' attitudes and values as independent, with the result that decision-making behaviour in a given situation was taken as,

- deliberate problem-solving, and
- automatic decision behaviour (Ilbery, 1978).

However, no comparable work has been undertaken in Bangladesh. The existing behavioural approaches often fail to locate other important social, economic and political factors that influence and ultimately shape the behavioural complex of peasants.

Recently two Ph.D. dissertations on impacts of, and adjustments to, natural hazards in Bangladesh have been submitted to the University of Manitoba, Canada (Haque, 1988; and Zaman, 1988). These works need special mentioning here because the geographical location of the study population of these studies is same as that of the present study. The data used in Haque's study is also the same Riverbank Erosion Impact Study (REIS) data base used in the present study. Zaman's study population belongs to one of the REIS

study villages. The focus of Haque's thesis was "the examination of the characteristics of human response to natural hazard and the socio-economic and demographic impacts of natural hazard upon human habitat", while the major theme of Zaman's thesis was resettlement of population displaced by riverbank erosion. Both Haque and Zaman set their study problem on the historical background of the pioneering process of land colonization in the Bengal floodplains. They elaborated on the settlement process of the floodplain habitat of Bengal, narrating how the marginalized peasants (usually the labour force) were mobilized to colonize the marginalized land of hazard-prone areas in the pioneering phases of floodplain settlement.

Haque deserves credit for the analysis of the level of hazard perception among floodplain inhabitants which he found to be very high. He also found that, despite the high level of understanding of the hazard problem, the "...majority of them either accept hazard loss or reduce their loss through incidental and/or purposeful actions". He then arrived at the conclusion that "...human responses are significantly related to socio-economic entitlements among floodplain users and the available resources and opportunities".

Zaman made valuable observations in highlighting the conflict in rural land resource control, especially of char lands. His elaboration of class-based rural politics of power that control local land resource is vivid and thought-provoking. The merit of Zaman's work lies in his critical evaluation of the laws and regulations of land control and settlement in Bangladesh.

However, both of these works have conceptual limitations that need to be examined here. Haque and Zaman both characterize the agrarian relations in their study areas and, for that matter, in the whole of Bangladesh as semi-feudal. The arguments they put forward in favour of their contention are that the labour force is "bonded" and "market for free wage labor is non existent", and that 'the (semi-feudal) social relations function as a deterrent to both social and geographical mobility because of strong kinship and quasi-kinship ties' [especially between the "Talukders" and their poor relatives] (Zaman, 1988: 93; Haque,

1988: 179). They further argue that the labour bondage functions through "extra-economic and personalized sanctions" offered by the "local landlords or talukdars. Because these landlords and talukdars need these destitute people to provide political support, cheap labor or to work for them as sharecroppers" (emphasis added). Both authors claimed that complex labour relations exist in the study area, but their contention that the labour force is bonded has not been substantiated by any concrete evidence. Zaman (1988: 92) presented several kinds of labour relations in a table. These includes "Uthuli", "Kamla", "Bargadari", "Goal Bathan", "Khet Mojur", and "Chukani". These relations, according to Zaman, are the bases of the existence of feudalism.

It is misleading to define "Uthulis" (free users of land for homestead) as a separate category of labour. Most likely these "Uthulis" are the same people that constitute "Bargadari" (sharecropping), or "Khet Mojur" (agricultural wage labourer). In other words, the landless peasants who earn a living as wage labourers or sharecroppers, but do not own land for homestead, become "Uthulis" or free users of some one else's land for their homestead. The land owners in these cases are not necessarily all "talukders" or land-rich. Middle and small farmers are also seen to give homestead land to users locally known as "Uthuli", obviously for no political motivation or exploitation.

The "Bargadars" and "Khet Mojurs" within the domain of a particular Talukdar are not necessarily a part of the armed forces (Lathials) of the Talukder. All the "Lathials", on the other hand, are not necessarily his "Khet Mojurs" or "Bargadars" under bondage. Zaman himself noted that one Ahmed Talukder hired "Lathials" from distant places like Sirajganj and Tangail for his "famous" invasion of a char in 1982. The fact that the "Khet Mojurs" and "Bargadars" rise in favour of a particular Talukder is not because they are under some kind of 'obligatory bondages', but because they are very much aware of the fact that if the control of the land (char) in question is lost to another Talukder, their own source of livelihood will also be lost to other "Bargadars" and "Khet Mojurs" aligned to the invading talukdar. There is, perhaps, a limit to extra-economic and personalized sanctions

that can be extended for an unlimited period of time until the day when political maneuvering will be needed. To say that a few Talukders extend "extra-economic sanctions" in the form of renting out land only to maintain a huge clientele for political maneuvering is tantamount to saying that there would be no sharecropping in Bangladesh if there were no political involvements such as lathyal institutions. It should be understood that there are intriguing economics of sharecropping, as there are politics, in a country of too many peasants and too little land (see Cheung, 1969; Bardhan and Srinivasan, 1971; Hossain, 1978, on theory of sharecropping).

However, as has been mentioned in Chapter 1, the idea of semi-feudalism in agrarian relations in Bangladesh held by Haque and Zaman is shared by quite a number of social scientists. It is too simplistic to characterize agrarian relations in Bangladesh only on the basis of appearances of "kinship" and/or insignificant occurrence of "bonded" labour. The residuals of feudalism are so insignificant that characterizing agrarian relations on the basis of these residues is unjustified. Moreover, it remains to be seen how the wretched "kin" or the unfortunately "bonded" workers behave when the question of distribution of family properties arises. In fact, a major portion of land-related disputes, which often turn into violence, occur within kinship relations in rural Bangladesh.

Zaman's vivid narrative of land grabbing in the char areas may lead a reader to believe that land-grabbing, and therefore related violence, are phenomena only to be encountered in accreted charland. But, land-dispute related violences are no less significant in the so-called Mainland villages of Bangladesh either. Such land conflicts may exist between people of the same class. Perhaps the annual statistics, if collected, would surpass the char statistics by a very high margin. The keeping of an army of Lathyals by Zamindar or Talukdar was not necessarily always related to land-grabbing. In most cases, Lathyals were used to realize land rents which the overtaxed peasants often refused to pay (see Sen Gupta, 1974: 27).

Zaman's conceptualization of the habitat of char lands as "frontiers of sub-culture" is also misconstrued (Zaman, 1988:124). Perhaps geographical location, and therefore physical distance of the char from the mainland, led Zaman to assume the existence of a "choura sub-culture", an isolated culture distinct from the mainstream (Zaman,1988: 58-60). Unfortunately, Zaman focussed on the appearance only; he overlooked the profound underpinnings of the class-based social relations of production in the whole geographical limit of his study area. This is an analytical problem posed by vertical classification of the class relations in rural societies in Bangladesh. It is important to understand that "social interaction" between the mainland and the charland or, for that matter, anywhere in Bangladesh, runs along the horizontal class relations, not across classes.

The kind of social interactions Zaman expected, in fact, do not exist within the so-called mainland community itself. "Kamlas" in the Mainland are not expected to have any social interaction with "Talukders" of the same mainland. Despite common people's opinion about the "chouras", the charland talukders are very much socially interactive. Examples can be cited from Zaman's own work such as the powerful "choura" Rahim Chaklader, who has two wives in the mainland, and his nephew is seriously involved in mainland politics and businesses (Zaman, 1988: 120-121); Ali Hossain, the Chairman of Char Utter Tekani Union Council, is a close relative and ally of the Talukder and chairman of mainland union council of Shubhagachha (Ibid: 133). Surprisingly, Zaman himself elaborated, in a flow chart, this social interaction of the whole region including chars (Figure 8, Ibid: 119). Characterization of the powerful elites of the chars as "sarders of chor-dakats" by the common people, does not necessarily indicate the existence of an "isolated subculture" in the chars. Talukders of the mainland are not spared from such characterizations either (Ibid: 134). This is a common resentment expressed by the poorer peasants towards the rich and powerful class.

The point to be made here is that social isolation may not take place along the horizontal class relations as envisaged by Zaman. In fact, charland talukders are relatives

and allies of the mainland talukders. By extension, it can be said that there is social and cultural interaction amongst the poor classes of the two geographical areas. It should also be understood that in most cases the chars of today are the mainland of yesterday (for geomorphic process of char formation see Coleman, 1969; Haque, 1988). There is a probability that the inhabitants of the newly accreted chars are the section of the same population they left behind in the mainland due to erosion-related displacement, or in Zaman's own words, "Many social and political forces tie villagers both within the village and regionally" (Ibid: 27). Further, anyone with knowledge of Hat-Bazars in rural Bangladesh knows that the rural markets are not only a centre of exchange of agricultural produce, but also are centres of socio-cultural exchanges. These centres are traditional places of exchanging ideas, discussing family problems, settling disputes, or even of taking matrimonial decisions. Zaman pointed out that the people from charland regularly visit the rural markets in the mainland. In such cases, it is hard to believe that the "chouras" are not having any social interactions with the mainland inhabitants. In view of the above discussions, postulating a concept of "choura subculture" is confusing.

The above review of Zaman's work touches on the much debated characteristics of social structure in the study area. In general, this reflects on the process of social relations of production in Bangladesh. Peasants vulnerability to natural hazards in Bangladesh can be understood in the light of the existing social structure. The social structure in rural Bangladesh is characterized by widespread poverty and inequality. The inequality is manifest in highly unequal distribution of productive resources. The number of landless peasants is increasing at a rapid rate while land-rich farmers are accumulating productive and other income generating resources. Moreover, development activities in Bangladesh have placed millions of poor peasants to vulnerable situation. As Kates (1980:145) notes "...protective works ordered in Karachi [in Pakistan], designed in Holland, and financed in Washington D.C., encouraged hungry people to settle in highly hazardous areas". Indeed,

hungry people or for that matter, poor people are the most vulnerable ones to natural or social disaster.

In a condition of inequitable social organization, every class of peasants is not equally vulnerable to any disaster, natural or social. There exist different levels of vulnerability and, therefore, of coping capability to disasters. The differential vulnerability of rural people was conceptualized by Susman et. al., (1983) and Baird et. al., (1975). These authors linked differential vulnerability to the social process of marginalization of the peasantry. It is held in their contention that vulnerability to natural hazard differs between the exploiters and the exploited. The majority of the population become marginalized and hence vulnerable to disasters. Baird et al., (1975:29) notes that "...marginalization is the process which leaves the underdeveloped population more vulnerable than it was earlier to the vagaries of the environment". According to both Susman at el., (ibid) and Baird at el., marginalization stems from a condition of dependency of a society on internal dominant elites and external powers (see Amin, 1974). The condition of dependency creates a process of 'development of underdevelopment' (Frank, 1966) and, as Baird et al., (ibid:33) put it "...the process of underdevelopment is intimately linked with the control and exploitation of indigenous resources by the governing elites and outside interests".

Differential and increasing vulnerability of peasants in Bangladesh have also been highlighted by Rahman (1991). Rahman (1991:1) holds that "...the major concern in Bangladesh for the majority of its people is survival". This concern is commensurate with pervasive poverty inflicted upon the peasantry through a process of 'differentiation and polarization' in rural Bangladesh (Rahman, 1986). Rahman (1991:4) succinctly demonstrated that vulnerability is a function of poverty, and holds that "...in the context of Bangladesh the issue of vulnerability can be further redefined in terms of crises or contingencies which most people are forced to face every day by nature and society".

Vulnerability emanates from what Rahman (1991:7) puts as "...physical, social and motivational sources". Rahman clearly explained that landless and marginal peasants are

forced to face to live in vulnerable situations by the existing social process of differentiation. Public policies biased towards rich farmers have neglected the issue of increasing proneness of majority of peasants. As Rahman (1991:4) points that "...a lack of stable policy regime encouraging a departure from ad-hoc, personalized style of governance has further eroded the capacity of the the people to cope with rising contingencies".

Earlier, Kates (1980) postulated an interactive model of disaster vulnerability and coping capability of societies at different level of development. According to Kates (1980:147) "...differential vulnerability arises from the interactions of nature, society, and technology". He further held that the accumulation of people and wealth in a hazardous area increases their vulnerability. Interesting point in his argument is that a nation [industrial and post-industrial nations] which accumulate more resources becomes more vulnerable to natural disasters than least developed nations. The argument is 'who has less losses less', hence poor people or societies are less vulnerable to disaster. Kates argument appears reasonable when losses of property to a disaster is estimated in dollar value. For example, property damage due to a recent forest fire in California was estimated to have reached US$5 billion and only 24 human casualties (CNN Headline News, Channel 20, October 23, 1991). Would this event have occurred in Bangladesh, most likely the property loss would have cost a few millions of dollars or less and a large number of human lives. However, this comparison is spurious since market prices in these two countries are not comparable. For example, one kilogram of rice costs about a dollar in the US, while the cost of the same would be about 30 cents in Bangladesh.

According to Kates, adjustment strength of a society is related to the stages of its' techno-social development. He identified four types of adjustments and vulnerability corresponding to four stages of societal development, such as:

> (1) "...*absorption*, whereby human beings and societies develop so as to be able to absorb significant extremes of natural events with little or no harmful effects;
>
> (2) "...*acceptance*, whereby individuals and societies bear their losses of life and property when they (disaster) occur or some times share them with kith and kin";

(3) "...*reduction*, where the consequences of extreme natural events are reduced by means of adjustments designed to either modify or prevent the natural event or to diminish the damage potential"; and

(4) "...*change*, a radical coping mode that involves fundamental change either in livelihood systems, location, or both" (Kates, 1980: 148).

These coping modes are based on the techno-societal organization of a society, such as (1) folk society, (2) industrial state, (3) developing countries, and (4) post industrial society.

Modifications will be needed to Kates' model if it is to be applied in the case of Bangladesh where traditional adjustments are destroyed. In Bangladesh, traditional adjustment capacities have been destroyed through intricate process of modernization and development. The process of development has led the majority to a condition what Baird et. al., termed "underdeveloped response". Baird et al., (1975:36) note that "...a 'underdeveloped' response to hazard appears which has lost touch with folk adjustments but has not the capital or organizational resources to provide modern adjustment to more than a tiny minority". In a Third World situation such as Bangladesh, this tiny minority can adopt response mode of "reduction" or even "change" proposed by Kates.

A tiny minority of elites in Bangladesh control all productive resources available locally or procured from external sources. Bangladesh has a very low level of per capita income and agricultural land. The distribution of landholdings and incomes are skewed. In such a situation, a sudden crop damage or loss of employment due to natural hazard will very likely cause a disaster for marginal peasants and agricultural labourers who constitute the overwhelming majority in rural areas. Kates (1980:164) succinctly summarized this problem as "...disaster, by its' very nature, is inequitable, but it also magnifies and exaggerates inequalities within a society. Much of what is considered development also widens the gap in areas of wealth, education, class, and ethnicity". The ever increasing gap in resource distribution has placed Bangladesh's peasants in a severe condition of unequal access to disaster adjustment. In his study in Eastern Kenya, Wisner (1977, cited

in Kates, 1980:164) identified several factors of differential accessibility based on social class. Rahman (1991) highlighted several sources of vulnerability reflecting this unequal accessibility in Bangladesh.

However, integration of the social, economic, and political factors into the current theoretical framework is needed to better understand why peasants in Bangladesh behave/respond in a way which may appear to a casual observer as irrational. This issue of factor integration becomes more reasonable in conditions where peasants are becoming destitute and have very limited choices in adapting themselves to dislocations caused by market forces or natural hazards. Hence, a comprehensive framework showing the various relationships of social, economic and political factors affecting farmer's decision-making processes will be examined (Chapters 3, 4 and 5).

2.2 HYPOTHESES

Ever-increasing problems in terms of food shortages, agricultural stagnation, poverty, socio-economic inequalities and political crises all shape the agricultural landscape on this hazardous floodplain. This in turn determines the peasants' ability to cope with the hostility of drought, flood, and erosion. Therefore, it is necessary to investigate the root causes of peasants' inability to adopt strategies of adjustments to natural hazards in the face of an incompatible social structure. The inquiry into existing adjustment practices of the peasantry in an erosion affected area will create an information base for planning. The fact that natural hazards have a spatial dimension and affect diverse socio-economic classes differently merits a geographically oriented study. The study will attempt to establish the relationship between certain socio-economic and political variables within themselves, as well as with the farmers' responses to flood and riverbank erosion. In this perspective, the following set of hypotheses is proposed:

> Hypothesis 1: the peasants' ability to cope with riverbank erosion and flooding (RBEF) is moulded significantly by their socio-economic standing in society, and

that their response to RBEF vary directly with variations in their class positions, and

Hypothesis 2: public policy responses to the needs of rural agricultural development will seriously influence the peasants' adaptive strategies.

The basic assumption of the behavioural model is that social processes are conditioned unilineally by an individual's psychological make-up and hence their perception of, and successful response to a problem is a matter of alternative choices available. This does not apply in situations where peasants have to operate in a "no-choice" or "very-limited-choice" condition. As Romanowski (1986), among many others, points out "...Bangladesh is de facto a stratified society" and hence accessibility to the limited "alternatives" is constrained by the class relations of the peasantry. Therefore, the perception of objective conditions and reaction to those conditions may result in conflicting attitudes.

The contention in Hypothesis 1 is that agricultural adjustment strategies to RBEF will vary in relation to peasants' social class relations. Given their variable command over resources, marginal and landless peasants, middle class peasants, and rich peasants are expected to respond instantaneously or in a preplanned way. The rich peasants would have, within their capacity several alternative choices, while the poor may have to risk and lose, and thereby become further marginalized.

It is contended in Hypothesis 2 that public policy intervention in terms of damage reduction strategies and physical infrastructure building is expected to benefit the rich farmers since, as Romanowski (1986) points out, the "...government, by definition, reflects the power structure". Measures for protection of RBEF and agricultural development, therefore, may result in distorting the poor strata of the peasantry, forcing dislocations of agricultural practices, and reinforcing the viable farmers. Hence, three sub-hypotheses are also to be tested:

Sub-hypothesis 1: farm sizes in a hazard prone area will be determined by land-losing factors such as bank erosion;

Sub-hypothesis 2: due to devastating RBEF, and the resulting land loss, the agricultural practices will be characterized by excessive numbers of agricultural labourers and higher competition for tenancy farming;

Sub-hypothesis 3: while farming becomes relatively risky in the face of RBEF, the incidence of sharecropping will be determined by natural risk factors such as location of the parcel of land relative to risk factor, land loss, or crop damage.

2.3 METHODOLOGY

The focus of this research is on the peasants' accessibility to, and control of, the means of production, social class structure, perception and response to riverbank erosion and flood hazards. The following survey method was undertaken to study the impacts of riverbank erosion and floods, and the adjustment strategies adopted by peasants in the floodplain zone. The survey required the collection of data on farming practices and the socio-economic structure with which peasants are obliged to respond to specific hazards. Specific objectives of the survey are as follows:

- to generate a detailed information base on the demographic and socio-economic characteristics of the survey population;
- to determine the nature of agricultural adjustment of floodplain occupants to erosion and flood hazards;
- to assess land-use pattern and practices with regard to market forces; and
- to assess the perceptions and responses to river erosions and floods as future hazards.

Issues to be addressed are related to the target population of the study consisting of all occupants of two upazilas (sub-districts) in the Brahmaputra floodplains.

2.3.1 Selection of the Study Area

The research was undertaken in the context of the Brahmaputra flood plain. Previous investigations have identified several severe erosion and flood affected areas along the Brahmaputra river (Coleman, 1969; Currey, 1979; Kamaluddin, 1983; Hoque, 1983; Khan, 1985, and Hossain, 1984). Of these places, Chilmari, Sariakandi, Kazipur,

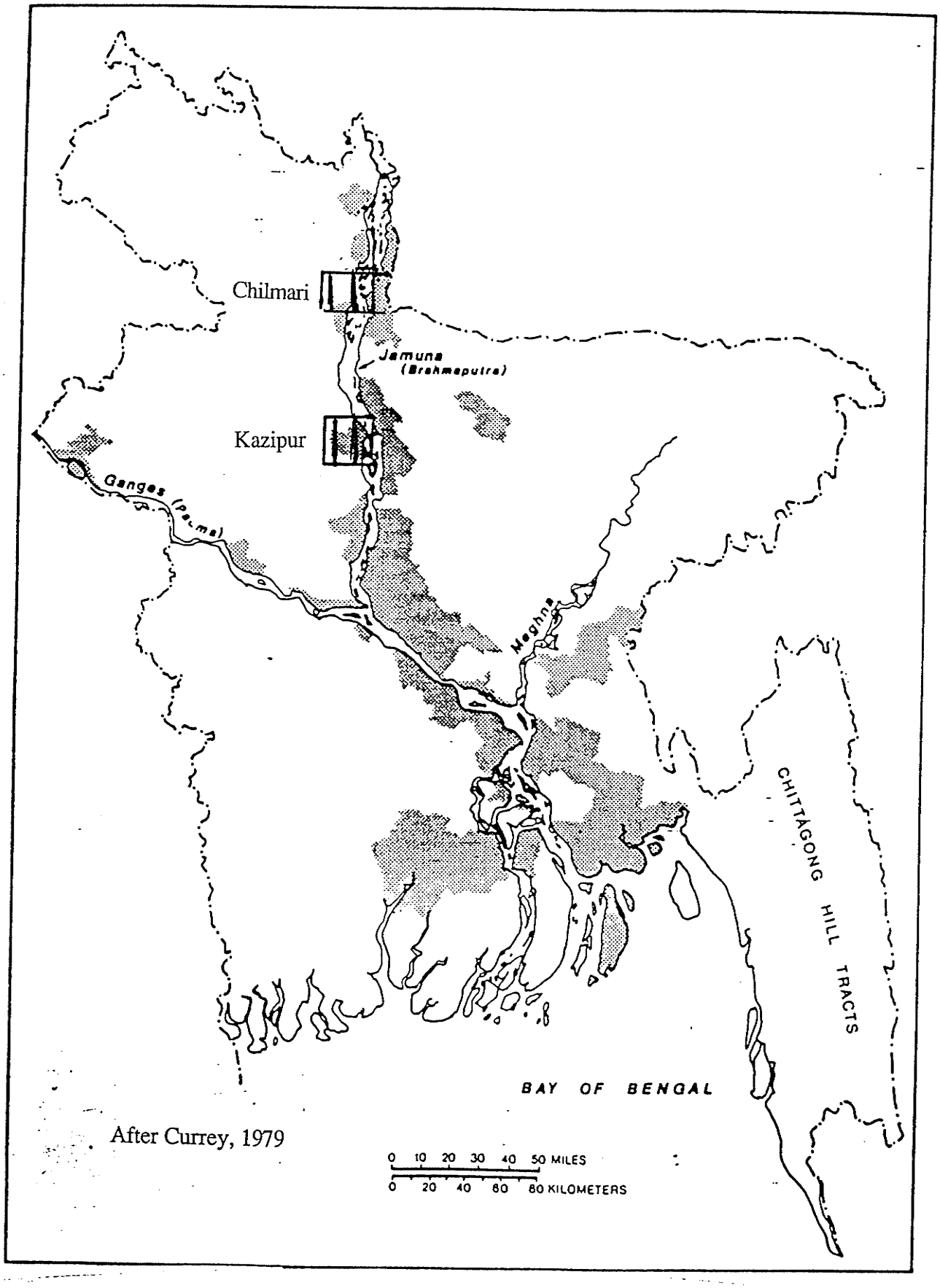

Figure 2.1: Areas Liable to Riverbank Erosion in Bangladesh and the Study Areas

Chouhali, and Belkuchi are the more notable. River erosion on the west bank of the Brahmaputra is significantly more frequent. About 150 miles (241.39 km) of bank line from Chilmari south to the Ganga-Brahmaputra confluence stand out in this respect (see Figure 2.1). These are rapid erosion zones where loss of life and property, including agricultural land, is high. One study has estimated that some 100 villages have been washed away between 1965 and 1985. Kazipur, a subdistrict in the district of Serajganj, has long been subjected to erosion problems, and experienced severe erosion and flooding in 1984 and 1985.

Two upazillas were selected purposively from the above-mentioned highly erosion and floodprone areas on the west bank of the Brahmaputra river (see Figure 2.2A and 2.2B). These case studies were a) Kazipur in the district of Sirajganj (formerly in the district of Pabna) and b) Chilmari in the district of Kurigram (formerly in the district of Rangpur). Prime determinants of selecting Kazipur and Chilmari for the present study are as follows:

- physiographically, Kazipur and Chilmari are true representations of typical floodplains of Bangladesh
- the two upazilas can be considered as a microcosm of the socio-economic characteristics of rural Bangladesh, as can be realized from the studies mentioned above; and
- public development strategies are more conspicuous in these two upazilas. The Brahmaputra Right Bank Flood Protection Embankment, a remarkable attempt of flood control and agricultural development runs through both these areas.

According to the Bangladesh Bureau of Statistics (BBS,1985), Kazipur occupies an area of 143 square miles (372 sq.km) (11 Unions, 118 Mouzas) and has a population of 213,885 (37,078 households). This represents a population density of 1496 persons per square miles. Chilmari occupies an area of 91 square miles (236.51 sqkm) (7 Unions, 58 Mouzas) and has a population of 89,102 (16,497 households), giving a density of 979 persons per square miles. The chronic conditions prevailing in Kazipur and Chilmari call for serious study.

KAZIPUR UPAZILLA
DISTRICT SIRAJGANJ

List of Sample Mouzas

Kachihara
Durgatiapara
Mohimapur
Jiol
Maizbari
Manikdiar
Chormara
Uttar Tekani

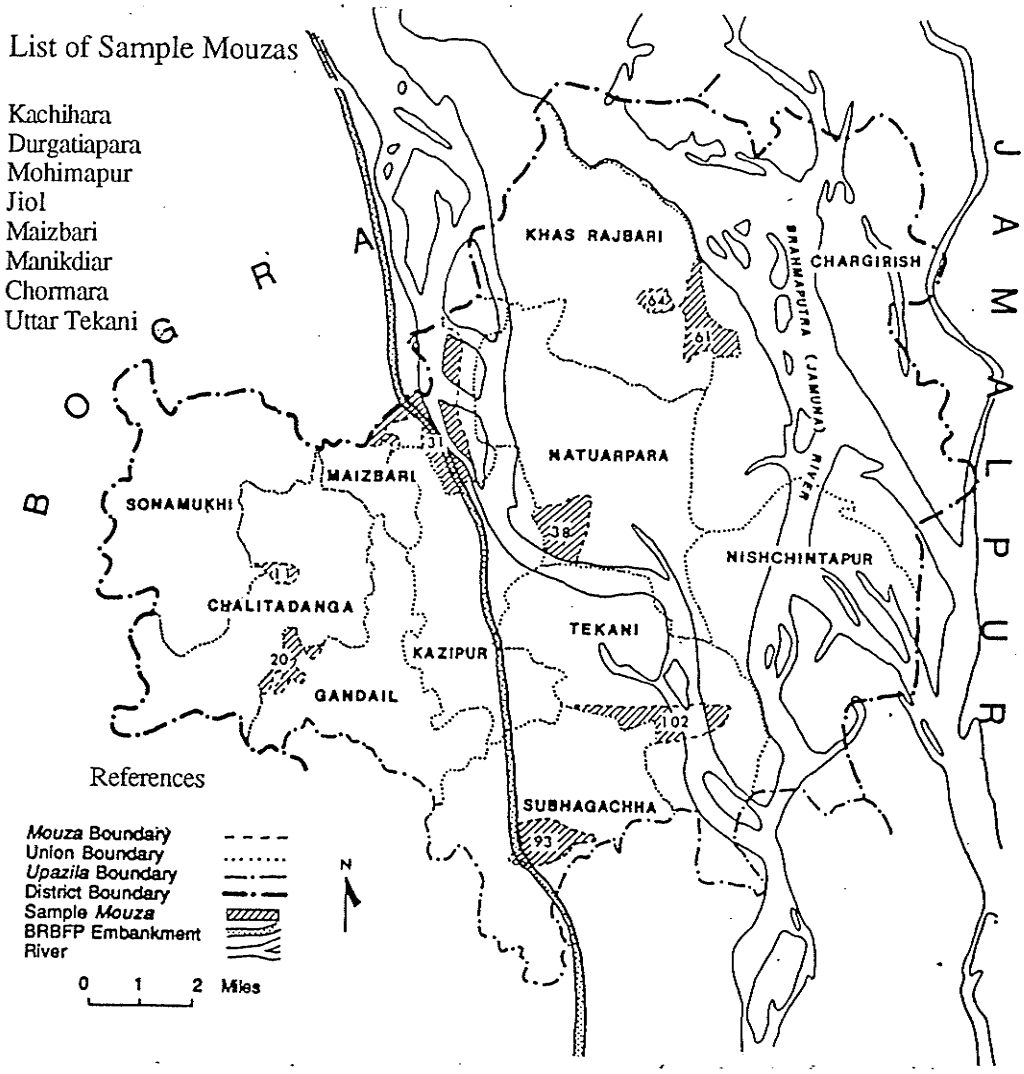

Figure 2.2A: Spatial Distribution of Sample Mouzas in Kazipur Upazilla

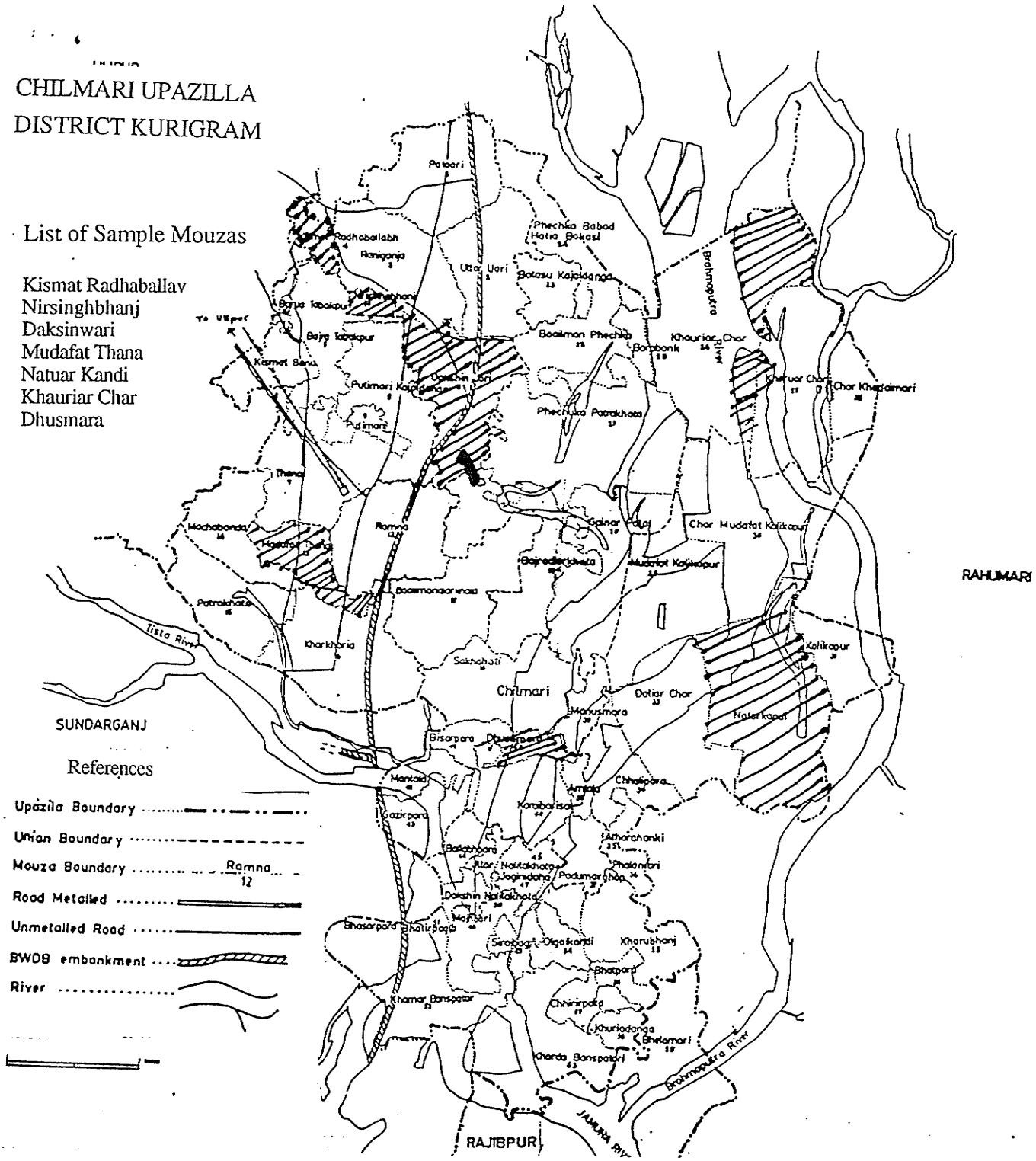

Figure 2.2B: Spatial Distribution of Sample Mouzas in Chilmari Upazilla

2.3.2 Sources of Primary Data

Primary data were collected through field surveys in the two subdistricts of Kazipur and Chilmar. A structured questionnaire was the principal research tool in the survey. This field survey was a part of the research conducted by the Riverbank Erosion Impact Study (REIS), a joint collaborative project between the University of Manitoba, Canada and Jahangirnagar University, Bangladesh and funded by International Development Research Centre (IDRC). The field survey was conducted in the months of April, and November, 1985. This writer was involved as one of the field supervisors in these surveys.

2.3.3 Sources of Secondary Data

There are a number of statistical reports at the district, sub-district and revenue unit levels, in addition to agricultural statistics published by the Government Bureau of Statistics. Sub-district level maps and topographic sheets of revenue units (Mouza) are also available for the study areas. A number of studies on the socio-economic aspects of the area are also available for a general overview and comparison.

The subject of this survey is the corollaries of differentiations in peasant agriculture, and hence attention was firstly drawn to all census data and statistics available at the national and local levels. The national level statistics were aptly analyzed by such researchers as Alamgir (1978) and Jannuzi and Peach (1978), while empirical case studies of Rahman (1986); de Vylder (1982); van Schendel (1981) and Westergaard (1985) are interestingly supplementary to the national picture. The Bangladesh Census of 1981: *Upazilla Statistics*, provides ample data on land ownership, operational holding, crop production, labour input, employment and occupational structures, etc.

2.3.4 Sampling Units

Two levels of sampling units were used for the surveys; namely Areal Units, and Primary Units.

- Areal Units:

  The areal sampling units involved administrative and revenue units, the Unions and Mouzas. The areal units were determined from the national census reports. A total of 8 sample Mouzas were selected randomly from a total of 117 mouzas in 11 unions of Kazipur and 7 mouzas from 43 mouzas in 10 unions of Chilmari.

- The Primary Sampling Units:

  The primary units involved individual households. In the process of selecting Primary Sampling Units (PSU), a census list of households in each of the selected Mouzas was prepared. A total of 1,203 households (619 from Kazipur, and 584 from Chilmari) were sampled randomly (using a random number table). Heads of selected households were interviewed using a structured questionnaire (see Appendix A). The REIS survey covered all possible land-owning classes and hence it is expected to be representative of the peasant classes in the study area.

2.3.5 The Case Studies

One of the limitations of all structured questionnaire survey is that on suddenly being asked to verbalize experience, respondents react with deluding or self-deceptive replies. As Douglas (1976: 93) points out,

> "...the self-deceptions are actually conscious feelings and ideas which are readily available, easily expressed, well verbalized, and advertised to the world: they are the verbal accounts, the self presentations, that the individual gives to the world about things which are vital and fearful to him; but which are in conflict with those deeper generally unconscious fears".

Hence, an attempt was undertaken to redress, at least partially, the constraints set by the questionnaire. The case studies in Chapter 8 are expected to focus on the relations and/or differences between the appearance and the essence of the informations gathered through structured questionnaires. The case studies entailed open-ended discussion on aspects of agricultural practices, responses to market forces, erosion and flood problems, and public development approaches. The purpose of these case studies was to raise issues on farming problems and affects of natural hazards on agriculture, and to allow peasants to express their opinions and ideas freely.

In this exercise, peasants were not subjected to predetermined sets of questions, and it is therefore expected to highlight their inner feelings about the problems they deal and live with. The sample for the case studies were selected randomly from the list of large farmers, middle farmers, small farmers, marginal farmers and the landless. One case from each of the land-owning/operating classes was selected for the life histories. Information gathered from these life histories will be presented in a descriptive manner. Life histories are personalized and vivid accounts of particular lifeways; as Mandelbaum (1973: 177) puts it, "...life history studies emphasize the experience and requirements of the individual--how the individual copes with and develops within society" (cited from Crane and Angrosino, 1974: 77). The case studies presented in Chapter 8 may not appear as proper life histories as defined by an ethnographer. What is actually aimed at here is to gain an insight into the life experiences in the socio-economic sphere of individual cases--only a portion of a life history.

2.3.6 Sampling Design

In the light of observations made by a number of researchers (Currey, 1979; Kamaluddin, 1983; Hossain, 1984) and during several reconnaissance surveys conducted

by the REIS Team,[2] it appeared realistic to take revenue units on the basis of their location relative to the bankline. Because of heterogeneity in the adjustment process of agricultural occupance in relation to location, social and economic structure, a multi-stage stratified sample design was undertaken for the REIS Survey.

The first stage involved the stratification of eleven Unions in Kazipur and ten unions in Chilmari. The unions were stratified according to the criteria mentioned earlier and categorized as: a) Char Unions; b) Unions with Bankline; and c) Unions without Bankline. The second stage involved selection of 8 Mouzas from Kazipur and seven mouzas from Chilmari using a simple random sampling procedure. This was based on a sample proportion of five percent of Mouza level population. Thus mouzas selected from these union-categories were four from the char unions, two from unions with bankline, and two from unions without bankline in Kazipur, and three from char Unions, two from bankline and two from interior Unions in Chilmari.

In the third stage, the primary sampling units (the households) were selected. There was considerable variation in the number of households in the mouzas and unions selected from three zones. In order to have a better representations of the population, the selection of the sample size was based on a Probability Proportional to (population) Size of the stratified zones.[3] Calculation of minimum sample proportion required resulted in taking every fifth household from the Unions without bankline, every ninth household from the Unions with bankline, and every second household from the Char Unions.

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[2]Fairly explicit knowledge of the study area in question expedite successful use of the questionnaire survey because, as Steward (1950) says, "....it makes it possible to frame questions that will be meaningful in terms of known culture and it helps establish local and class variations". The culture field (the study area) is very familiar to the researcher since it is a part of the greater Bengali culture the researcher hails from. Also see Crane and Angrosino (1974: 144).

[3] See Haque (1988:182-210) for details on the REIS sample design.

2.3.7 The Survey Instrument and its Design

The necessary general data, as has been mentioned earlier, was collected through a structured questionnaire. This questionnaire was divided into four sections:

(i) Demographic characteristics of the households- focusing on the household structure, level of education, employment structure, age, sex, and marital status,

(ii) Socio-economic characteristics- focusing on the social structure of the community, socio-economic structure of households in terms of landholding, owning or renting, income, use of input, land preparation, crop choices, harvesting and marketing; social structure, accessibility and use of infrastructural facilities, attitude to family size, availability of credit facilities and their use.

(iii) Hazard Perception; focuses on the farmer's understanding of and response to erosion and flood hazards; this section deals particularly with the peasants' perception of the impact, magnitude and causes of the hazards, and the precautionary measures being adopted.

(iv) Hazard Experience; focuses on the history of farmer's dislocations; loss of land, damage to crops and farmsteads, changes in livelihood and living standard, expectations of re-emergence of lost land, and accessibility to accreted land.

The aim of the questionnaire was to collect information on the peasants accessibility to, and the control of, the means of production, farm structure, land-use practices, and farmer's opinion on matters related to flood and erosion hazards and public and private strategies for containing those hazards. Of the four sctions of the questionnaire, the first two consist of 'factual questions', traditionally known as classification questions (household size, land-holding size). The other two sections in the questionnaire consist of 'opinion questions' for assessing respondent's perceptions of the natural hazards and public policy actions.[4]

A pre-test of the REIS questionnaire was run for 3 days with 30 questionnaires and resulted in the revision of several question. In particular, care had to be taken in the 'wording' of questions. Rural people are not used to formal types of discussions, hence words in the questionnaire had to be recast with a more specific, simple and clear meaning.

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[4] see Moser and Kalton, 1977: 311-316; Crane and Angrosino, 1974:144-150; Werner and Schoefle, 1987, vol.1:Ch. 11, for typology of questions.

It was found from the pre-testing that local terms were more useful for easy communication between interviewer and respondent. From the experience gained in pre-testing, a number of modifications were made to the final questionnaire. The interviews typically took about an hour and a half and were conducted during the months of March-April, 1985.

2.3.8 The Nature of Questions

To elicit the desired information from ones' respondents, it is a necessity to have an effective survey instrument. This involves more than simply listing necessary questions to which respondents are obliged to provide answers. Quality of informations that can be derived through a questionnaire depends on the quality of the instrument developed and used. It has been suggested that:

> "...One of the weakest links in the design and administration of sample surveys is the construction of questions and questionnaires themselves, frequently described as an art or craft. Only recently have survey methodologists attempted to inform this craft through systematic empirical inquiries into such phenomena as the effects of the placement of a question, or the tendency of respondents to recall events as happening more recently or more distantly than they actually occurred" (SSRC,1984-85: 22).

Therefore, certain techniques in the principal research tool (the questionnaire) had to be adopted so as to realize precise and correct answers. In the questionnaire, care was taken to ascertain the validity of answers each respondent put forward. Key questions, lead questions, and follow up questions were carefully chosen. Control questions were also set to ascertain the validity of replies, such as the question 'What are the sources through which you acquired land? Mention sources and amount of land acquired. Such a question was treated as control question to the lead question of 'how much land do you own?'

Usually the head of a household was interviewed. However, in a number of cases the selected head of household was not readily available for the interview as they were out of their home for marketing, visiting relations or working elsewhere. In such cases, any

other responsible (usually one who looks after the households in absence of the formal head) member of the selected household was considered as the respondent. The head of a household is defined as a person who plays the most significant role in the decision-making about the farming operation. A household is defined as a group of family members sharing a common source of income and expenditure, and using a common hearth. The household was the basic sampling unit irrespective of its size, structure and social and economic relations in the REIS questionnaires. In the analysis the peasants interviewed in the REIS survey were classified according to their control of resources, especially land.

Kazipur and Chilmari are basically agrarian and rural while at the same time flood and erosion prone. Therefore, the prime task was to study the way of life of rural peasant households in relation to natural hazards. It is assumed that while the broad patterns of rural life are being shaped by the overall national socio-economic, and political determinants, the micro-level differences will result from the adaptation of relations of production to different local socio-economic, political, and natural hazard environment. This very process of production ultimately will shape the social pattern and modes of life in terms of adaptation to floods and erosion. Indications of differentiation in the relations of production in terms of land tenure, land-use and other related phenomena are well documented in Bangladesh.[5] As has been stated earlier, The subject of this survey is the corollaries of differentiation in peasant agriculture, and hence attention was drawn to:

- land holding structure (owned land);
- operational holdings (that include all sorts of leased-in and mortgaged-in lands);
- tenancy relations;
- labour relations;
- pattern of consumption and marketing;
- household capital conditions;
- sources of capital; loan/credit facilities and indebtedness;

[5] see for example Alamgir (1978); Blair (1978); Jannuzi and Peach (1978); Jahangir (1979); Rahman (1986); de Vylder (1982); Van Schendel (1981); Westergaard (1985); and Wood (1981).

- occupation and income structure;
- labour use and nature of technology (including housing, agricultural implements, livestock).

Information on land-ownership, tenurial status and land-use was collected explicitly (see questions 11 to 45 in Appendix A) because the pattern of agriculture in Bangladesh is more or less a function of land-ownership patterns. Consciousness and attitudes towards bank erosion, public development approaches and adjustment strategies were reflected in the perception and hazard experience section of the questionnaire (section C and D in Appendix A). Case studies undertaken reflected more deeper feelings and consciousness of the prevailing socio-economic relations. Because this approach of study was more intimate and personalized compared to the straightforward questionnaire interviews, these cases help understand consciousness and attitude of one class to another, and the institutions they have to deal with.

2.4 LIMITATIONS OF THE DATA

The process of gathering information by questionnaires is based on usual face-value of a verbal reply to a question that is being deemed suitable and set by researchers. For example,

Question: 'What do you do when flood hits your homestead?'

Answer: 'Pray to God'.

Upon such reply, in every probability, the respondent will be imputed as being fatalist. Background to the replies are rarely probed, hardly compared with a different situation, with a different respondent. The replies on the surface are probably reflecting a frustration of real world experience. Does a respondent try to be modest and very polite in replying to structured questions, especially when asked by an 'educated investigator'? Is there any probability that the replies are based on more complex personal experiences and that, being suddenly asked to verbalize experience, replies are deluding or self-deceptive?

These are some of the questions not addressed in the survey instrument. Hence, it is possible that opinions and retrospective informations are flawed by respondent's current state of mind, contemporary experience of, and therefore, attitude towards life, social and natural environment. The Social Science Research Council reports that, "...the (respondents') memory process is basically reconstructive. And this reconstruction often involves the organization of past fragments of one's memory around current cognitive schema that bear only a faint resemblance to the past" (SSRC, 1987:46, emphasis is added). On such grounds, the amount of agricultural produce, and income figures of household members reported by the respondents, bear doubtful validity. Limitations in the survey can therefore be summarized as follows:

- perception variations in relation to seasonal changes, could not be ascertained, for lack of longitudinal coverage;

- rural folks are not used to maintaining accounts of their income, agricultural productions, and its disposals, and hence consistencies and accuracies can be doubted;

- respondent's perceptions of, and deliberations on, experience of natural hazards might have been influenced by the interviewers' rather than their own opinions.

CHAPTER III

ROOT OF UNDERDEVELOPMENT IN BANGLADESH

3.1 A CONCEPT OF INTERNAL COLONIALISM

Given the concepts highlighted in Chapter 1, it is possible to locate (and focus on how they are located) certain classes that dominate and exploit other classes in Bangladesh. Forty years is a long time since the British colonizers left and 20 years is not a trifle since the Pakistanis left, yet the country is steadily sinking into a cache of decadence and perpetual instability. Peasant agriculture has been neglected while the urban-industrial sector has been subjected to widespread looting. It can be contended that the reasons for underdevelopment and problems of stabilization rest not only with colonial exploitations, but also with the manner in which the country has been controlled. An attempt is made here to show how the characteristic manner of domination by certain groups of elite have brought the country to conditions similar to those associated with alien colonial exploitation. Analysis of the domestication of the classical colonial mode of exploitation by local elite groups explains the root cause of the present dilapidated condition of the country.[1] The relevance of the model of colonialism to Bangladesh condition will be evaluated through a slight modification of the original concept of internal colonialism postulated by Casanova (1969). In this chapter, an explanation of the concept of internal colonialism and its principal features and relations will be made. Then, an attempt is made to posit the 'hybrid elite group' of the lumpen bourgeoisie class in the role of colonizers, and finally, the condition of the domestication of the classical colonial mode of exploitation will be highlighted.

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[1] The country started with an absolute fall in GDP following independence in 1971. Per capita income fell by about 22 percent in 1971-72 relative to 1969-70 (at constant price of 1972-73). Compared to 1969-70 level, the output in industrial and agricultural sectors was lower by 25 percent and 13 percent respectively (Islam, 1978).

Colonialism, in its classical sense, is a system of invasion and domination of a foreign national territory by an economically and militarily superior nation. This classical phenomenon of colonialism is characterized by bringing about an economic, political and sometimes cultural control over the colonized nation. The rigorous control over the polity and the economy deliberately denies the participation of the colonized people in the economy, politics and social privileges. Economically the relationship is of pervasive exploitation, and politically and socially the relationship is of unequal parties between the colonizers and the colonized. This relationship continues until sense of nationalism takes root and a movement for liberation starts. Casanova (1969) holds that the international and internal structure of a nation does not necessarily change when it becomes independent of foreign colonial rule. Internal colonialism, according to him, resembles the relations of domination and exploitation that are typical of the original colonialism (see Chilcote, 1984). However, for Casanova, and for those who followed him, the domestic colonial relationship was characterized by the relationship of domination and subjugation between two differing cultures within the same country, e.g., native Indians, blacks in Mexico and the U.S.A. (Blauner, 1973), and Bengalis in Pakistan (Das, 1978).

3.1.1 Internal Colonialism in Bangladesh

It is reasonable to postulate a concept of colonialism within a country when the condition of domination and exploitation there resembles the classical colonial relations, even within the same culture groups. The dominant group of elites, though they belong to the broad realm of the general cultural identity, identifies itself separately and keeps itself segregated from the common people through their superiority of education, group interest, political and economic control in Bangladesh.[2] The western style of living, social contact,

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[2] It is interesting to note that while in 1973 only 7.9 percent of rural households owned more than 7.5 acres of land, 61.6 percent of the members of parliament (MP) owned landholdings of over 10.5 acres. Such MPs tend to pursue policies beneficial to the large farmer class to which they themselves belong.

personal values are all instrumental to a total alienation of this group of elites from the greater mass (see Bertocci, 1982; Jahan, 1976). The origin of this alienated group can be traced in different political organizations which are mostly dominated by comprador capitalists and other heterogeneous professionals such as petty businessmen, teachers, lawyers and journalists (see Rashiduzzaman,1972, for examples).

Blair holds that a definite class structure at the macro-level in Bangladesh, and the interests of the dominant strata, do in fact explain much of what has happened, and what will happen, in rural development (1978). Domination over the micro level is maintained through a power structure that always consists of the large, educated and influential farmers (Table 3.1).

Table 3.1. Economic Base and Educational Background of the Elites (Percentage of Participation)

A. Union Council Chairman

	1973	1976
1. Education		
1.1 Below secondary level	13.0	25.0
1.2 Higher Education	87.0	75.0
2. Occupation		
2.1 Land owner	20.0	12.5
2.2 Businessmen	26.7	50.0
2.3 Teachers	20.0	25.0
2.4 Other Professionals (Lawyers/Doctors)	26.7	12.5

B. Elite Leadership in Bangladesh Movement

1. Education		2. Occupation	
1.1 University Graduates	90.6	2.1 Teachers	12.5
1.2 Others	9.4	2.2 Businessmen	34.4
		2.3 Lawyers	28.1
		2.4 Others	25.1

Source: Rashiduzzaman (1972); Khan (1978).

This group of dominating elites reinforces its power in collaboration with the bureaucratic and military elites. The tripartite alliance of such a very small number of

military officers, bureaucrats and lumpen bourgeoisie control the state power.[3] The democratic rights of the people are being recurringly held hostage and honest participation in the democratic process is thus denied.

Conflicts of interests between competing groups of elites often results in transfer of power from one group to the other through violent tactics, as Sathyamurthy (1985) reports:

> "...the course of Bangladesh politics, over the last decade, seems to have jelled in the form of a cycle in which coup is followed by a series of invariably violent re-adjustments within the armed forces involving different groups contending for power, the emergence of a single leader whose capture of executive power of the state leads to the establishment of a base for the regime in the form of a new political party, the eventual alienation of the armed forces from the head of state which paves the way for another major coup aimed at a reassertion of the dominance of the military".

The recurring coups and countercoups, as noted by Sathyamurthy, are always masterminded by the earlier mentioned elites.[4] This they do when they find their interests at stake and need to reorganize their plundering of the national wealth. Hence it is no surprise to see staunch follower of Sheikh Mujib subsequently handling a ministry in General Zia's cabinet, nor for Zia's blue-print planners later working hard in organizing General Ershad's Janadal (people's party).

3.1.2. Internal Colonizers--the Ruling Class

Elitist self interest leads to creation of interest-group and hence factionalism within the major political parties in Bangladesh. The nation has witnessed many splits and defections in party politics over the last 20 years, leading to a stagnation in sound democratic process (Ahmed, 1983; Bertocci, 1985). A comprador capital is overtaking the formation of national capital leading to a weakening of national democratic interests in Bangladesh (Zawad and Bari, 1983). As Umar (1985) suggests "...a lumpen bourgeoisie

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[3] See editorial of "Probashi", a Bengali weekly, February 6, 1987, New York.

[4] See Zaman (1983) for an interesting account of coups and counter-coups reflecting interest-groups within the military. Also see Lifschultz (1979) and Bertocci (1982) for elaborate discussions on factionalism in the military.

grew and developed not through industrial production and labour exploitation but through all conceivable forms of plunder". The ruling hybrid group of elites does not represent any of the basic producing classes in Bangladesh and the political activists are comprised of non-productive segments of the population. On this consideration the nature of political control and economic exploitation that manifest the poverty and underdevelopment in Bangladesh needs to be addressed more deeply than simply being generalized as a class basis of rural production relations.

The current political set-up deliberately fosters a policy of resource concentration into the hands of a few (Table 3.2).

Table 3.2: Income Distribution: Percentage share of household income by percentile groups of households (1976-77)

Lowest 20 percent	2nd quintile	3rd quintile	4th quintile	Highest 20 percent
6.2	10.9	15.0	21.0	46.9

Source: World Development Report (WDR) 1986, Oxford University Press: New York.

While the per capita income of US$150 is one of the lowest in the world, the distribution of income in Bangladesh is very unequal. For example the lowest 40 percent of the population receives 17 percent of national income while the highest 20 percent receives 47 percent, and the middle 40 percent receives 36 percent. Again most of the income is concentrated in the top 10 percent of the population which receives 32 percent of the national income (WDR, 1986). Emajuddin (1979: 41) reports that, while there were an increase of 10 percent in average annual household income, the top 0.6 percent of the population gained the most with 32 percent increase in 1966-67 compared to 1963-64. This widening gap in income distribution continued in the Bangladesh of 1980s.

Moreover, low income results in low savings, and gross domestic savings actually fell by 50 percent, from 8 percent in 1965 to 4 percent in 1984 (WDR, 1986).

3.2 ALLIANCE OF DIFFERENT INTEREST GROUPS

The structural characters of the bourgeoisie needs to be highlighted to show which faction of the exploiters is holding controlling power of the state machinery and using it to enact a consumption behaviour to the detriment of local production. Bertocci (1982) made an attempt to conceptualize the condition in Bangladesh into a paradigm of 'intermediate regime' following Kalecki's theory of 'intermediate class'. In his theory, Kalecki holds that an intermediate class of middle-class professionals and educated groups (the petty bourgeoisie in Marxist analysis) tends to exercise the state power in the absence of a developed industrial capitalist class. Bertocci moved on to identify in Bangladesh 'an amalgam of three institutional groupings, namely,

- the civil bureaucracy,
- the military, and
- the civilian politicians and their parties.

Bertocci's is an interesting generalization of bourgeoisie middle class political structure in the early days of Bangladesh. But it is important to note that lately, through unscrupulous means, an elitist group has been lumped into a capitalist power out of Bertocci's intermediate middle class. It is interesting to see how this hybrid group of bourgeoisie create political parties with the help of so-called 'middle class' activists, and at times of necessity, defects and regroup in yet another political party. To posit the ruling hybrid group of elites that control Bangladesh in capacities similar to colonial relations, it is important to understand the origin and social structure of the Bengali elites. The British colonial power created a middle class of bourgeois collaborators to ensure easy exploitation and control while the subsequent Pakistani colonial power created a petty industrialist-trader-businessman class for the same purpose. In pre-independent India, the bourgeois

elites of what later was to become Pakistan were the people who felt outrun and deprived in the competition with the rising industrial and financial capital. They wanted a field of their own to play the game of exploitation and, therefore joined and financed the two state movements in British India which resulted in the creation of Pakistan (see Choudhury 1984). A rising petty-merchant bourgeois accomplice was also existing in the eastern part of Pakistan. They joined the movement with the hope of having a share in the 'pie' which the independent Pakistan was hopefully going to offer them.

3.2.1 The Origin, and the Characteristics of the Ruling Class

Following independence in 1947, Pakistan faced a power vacuum in the economic and administrative sphere. These spheres were immediately filled by a host of immigrant families of traders such as the Bohra, Khoja and Memons from Gujrat and Bombay; landlords from West Pakistan who transferred their resources to industrial investments; and the 'British trained bureaucracy' (see Sayeed, 1979; Ahmed, 1972 for details). There was also a vacuum in Bangladesh (East Pakistan) following the out-migration of the Hindu landed gentry. A petty bourgeoisie, consisting of small traders, shopkeeper, lawyers, teachers and other professionals, became the most important class (Ahmed, 1972). The contrast here between the two regions of Pakistan was that while West Pakistan inherited an admixture of a class consisting of 'feudal landlords, rich trading-cum-industrialists and the trained bureaucracy', in East Pakistan (Bangladesh), the elites consisted of a decaying muslim aristocracy which gave way to the middle-class petty bourgeoisie mentioned above.[5] This situation, for obvious reasons, brought Bangladesh into a colonial relations with the West Pakistani bourgeois elite. The Pakistani elites filled the power gap in Bangladesh through investments and occupying most higher administrative positions (eg.

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[5]Following the recommendations by Floud Commission (1939), the East Bengal Land Tenancy Act was enacted abolishing the Landlord (Zamindary) System in 1952. This act was one of the major causes of decay of the landed aristocracy in Bangladesh.

in the bureaucracy and the military). Because of the virtual absence of Bengali capitalists, feudal landlords, bureaucrats and senior military officers, the West Pakistani power structure became the national power structure as well, ruling the eastern half of the country with the collaboration of a dying muslim aristocracy and the upcoming petty bourgeoisie (Ahmed, 1972).

Within a decade and a half after 1947, a group of about two dozen families brought 66 percent of industrial assets, 70 percent of insurance funds and 80 percent of bank assets under their control (Sayeed, 1979). This growth of the bourgeoisie in Pakistan was geared to a deliberate policy of 'unequal development' between the two regions and between classes (Papanek, 1967: 45 and 242; see also Emajuddin, 1979; Hossain, 1979; Rahman, 1968; Ahmed, 1972; Alamgir, 1976; Sayeed, 1979; Burki, 1972). All major industries and services in East Pakistan were established through the penetration of West Pakistani capital with an aim of draining resources from the East to the industrial development of West Pakistan. Before 1947, the GDP of East Pakistan was higher than that of West Pakistan, but the emphatic industrialization of West Pakistan turned Bangladesh into a colony of West Pakistan and reversed the former economic advantage. State policies of resource allocation and import-export policies were the main instruments through which the Pakistani colonizers exploited Bangladesh. With the growing industrialization of West Pakistan, the Pakistani bourgeois turned Bangladesh into a market which was invariably in a condition of negative balance of payment. Bangladeshi merchants and contractors were, nevertheless, encouraged partially to join the growing Pakistani bourgeoisie class. Some Bengalis were given shares of some of the import permits and trading licenses to legitimize their own exploitation.

However, within a decade or so the Bangladeshi petit bourgeoisie sensed deprivation and alienation from political decision-making, resource accumulation and administrative power exercise. Even culturally they were neglected. The political elites were excluded from the decision-making, the nascent bureaucracy became subservient to

the West Pakistani bureaucracy and the emerging Bangali merchants faced tough competition from the Pakistani merchant-cum-industrialists with the help of the West Pakistan-controlled financial institutions. This sense of deprivation and alienation led them to a demand for a greater share in the state machine and the economy (Hossain, 1979; Rahman, 1968). Demand was placed more directly for regional autonomy and elimination of regional disparities (Khan, 1984). The move for regional autonomy, however, was based on claims of regional share in the national economy and policy making but not in terms of distribution of these to the greater mass. This conflict of interest resulted in the violent birth of a new independent Bangladesh. Following independence in 1971, the whole responsibility of the national economy and the political-administrative maneuvering suddenly came to rest with the then subservient political-bureaucratic-military elites. This brought in a euphoric sense of possession of vast, if not endless, resources followed by a feverish scramble for grabbing them. One may like to term this as a 'plunder' of a nation's wealth in a manner similar to primitive accumulation.

The small cluster of elites that became elite through unscrupulous means of accumulation are always in a condition of threats to their interest from competing forces of accumulative interests and from general populace. The sense of insecurity, and in some cases constraints to their ruthless plundering, leads the elite group to deny democracy and organize or reorganize their stand in collaboration with authoritarian forces. The single most authoritarian force is the military and the result of the collaboration, including the authoritarian-sister-force called bureaucracy, forms a 'golden triangle' of ruthless exploiters in a colonial abandon.

3.2.2 Expropriation and Accumulation of National Wealth

The part of the lumpen bourgeoisie addressed as the 'elite-group' is a creation of the movement for liberation from Pakistani colonialism. The nexus of creation of such a group lies with, and is facilitated by, a confused and bankrupt political ideology. It has been

pointed out earlier that this group of exploiters did not develop through a normal capitalistic mode of production, i.e., through production and exploitation of the working class.

One can precisely term the existing mode of production in Bangladesh a 'lumpen-bourgeois accumulation'. At least five ways and means of such accumulation can be identified in Bangladesh over the last twenty years of its existence. First, there was the enemy-properties; second, the endowed control of the nationalized industries; third, the governments contract jobs; fourth, the bank loans/credits; and the fifth was the licenses and special permits. Political allegiance was the only collateral for those who wanted loans and privileges.

The evidences of primitive accumulation are well documented (see Umar, 1985; Plommer, 1986; The Economist, 1986; Hossain, 1979). The primitive accumulation that started with the ruthless plundering of abandoned properties of the Pakistanis culminated in the purchases of those industries previously nationalized and with the establishment of number of private banks in the late 1980s. The Economist (1986: 24) reported that patronage had destroyed Bangladesh's credit system. Patronage, in a broader perspective, had not only destroyed the credit system, but had also induced stagnation in industrial development; bank loans worth more than $500 million which had been advanced to favoured persons were never recovered. Patronage also extended to licensing and special permits for local trading, as well for importing and exporting.

The loans advanced for starting industries came through the nationalized banks and through other government-owned financial institutions. Most of the money originated from the Asian Development Bank (ADB) and the World Development Bank (IDA). All these funds were invested in quick-return-ventures, because such investments did not have to wait for a long gestation period in order to reap returns, as the case with industries. Since her birth in 1971, Bangladesh has received about $ 25 billion from foreign sources such as the Paris Consortium, Asian Development Bank, World Bank, and various other relief and development agencies. This aid makes up 40 percent of government receipts, 50 percent of

its foreign exchange income, and, most importantly, 90 percent of its development budget. One need not be extra inquisitive to realize whither goes these billions of dollars (Dialogue, 1991:17). Twenty years is a long period for rejuvenating Bangladesh's dilapidated industries, not to speak of establishing any significant new industries; instead, a half dozen private banks and insurance companies have sprung up recently.

There was no significant change in industrial production, although the GDP rose to US$ 12,320 million in 1984 from US$ 4,380 million in 1965, while sectoral contribution to GDP in agriculture declined from 53 percent in 1965 to 48 percent in 1984; industry grew only to 12 percent in 1984 from 11 percent in 1965, and the service sector rose to 39 percent in 1984 from 36 percent in 1965 (Table 3.3). Significant changes occurred in the service sector throughout Third World Countries in general and in Bangladesh in particular. Such changes occurred without any concomitant growth in the industrial and manufacturing sectors. Trends in structural composition of the labour force gives a clear picture of change in the economic structure of Bangladesh (Table 3.4).

Table 3.3: Structure of Production (distribution of GDP) in Bangladesh.

	1965	1984
GDP (million US$)	4380	12320
Percentages of		
Agriculture	53	48
Industry	11	12
Services	36	39
Gross Domestic Investment	11	16
Gross Domestic Savings	8	4

Source: World Development Report,1986: 184.

Table 3.4: Comparative labour force structure by sector and World Regions and Bangladesh.

Regions	1960			1970/80		
	Ag.	Ind.	Serv.	Ag.	Ind.	Serv.
Bangladesh	86.4	5.5	8.2	79.0	4.9	16.1
UDC	70.7	11.5	17.8	60.6	14.8	24.6
Developed Countries	30.5	33.5	36.0	16.2	36.8	47.0
North America	7.3	36.3	56.4	3.7	31.3	65.0

Source: Adapted from Haque (1985: Table 5.1).

Change in the service sector labour force (doubling in two decades) indicates non-productive increase in services while industries show a negative change. Employment was created for people patronizing the party membership. Apart from the lack of industrialization that did not create jobs, capital-intensive investments also discourage employment, and, as McGee points out, that penetration of capital intensive economy into a bazaar-type economy holds back demand for labour in industrial sector. As McGee (1971: 27) suggests, "...a unique mode of production in Third World countries is thus created in place of an industrial capital development" .

3.2.3 Flight of Capital

The accumulation of funds was affected by many manipulative ways in Bangladesh. Often old or obsolete industrial machineries were imported through under-invoicing and over-invoicing; in the name of establishing new industries, funds allotted as loans were transfered out of the country. As a result, industries did not develop, or at best they developed in a half-hearted manner, making it a losing enterprise. The prime aim of the so-called entrepreneurs was to exploit quick-return avenues. These 'industrialists' live on cooperative patronages which they have been using very efficiently for last twenty years since independence. The result is that the industrial capital became subservient to trades and commerce. Refering to a Australian audit firm, a recent press report pointed out that 60 percent of the industrial ventures do not even exist in the country for which millions of Taka were given as loans (Bichitra, 1991:30).

Where did the capital thus accumulated end up? Pattern and extent of conspicuous consumption, flight of capital, investment in unproductive ventures and financing the party activities, and repressing public opinion through organized crimes all shows where this capital ends up. Of these channels, the most important are the flight of capital and the unproductive investments within the country. However, the lack of data is a constraint to

substantiating these contentions, although evidence shows that funds were moved out of the country for investment in overseas stock exchanges such as investment in the middle East and African countries (Anu Mohammed, 1984). Known safe deposits, apart from the secret ones, in foreign banks by Bangladeshi persons increased 450 percent from 1981 to 1986 (Table 3.5).

Table 3.5: Deposits by Bangladeshis in Foreign Banks.
(Millions of US Dollars)

Year	Millions US $	Percentage increase
1981	60	
1982	140	233.3
1983	160	266.7
1984	150	250.0
1985	250	416.0
mid-1986	270	450.0

Source: International Financial Statistics, Vol.40(1):1987.

The finance for investments in non-productive ventures and in banking came, as has been noted earlier, from foreign aid sources, privilege-loans from the nationalized banks and other government owned finance agencies like Shilpa Rin Sangstha (Industrial Credit Bank) which loans were never repaid.

3.3 CACHE OF FOREIGN AID AND RELIEF

The economic plans for Bangladesh, blue-printed in international institutions like the IMF and World Bank are not inward looking but are simple measures for easy and assured repayment of aid money. The volume of aid, and its 16 percent servicing, might appear less significant in comparison to the experience of some Latin American and African countries. But given the size of the economy and amount of Bangladesh's resources, the levels of aid and debt servicing are substantial. The most significant fact relating to this aid, is the manner of its procurement and use. It is not a simple 'generosity competition' amongst the donors (see Globe and Mail, April 4, 1992:A1). Whether Bangladesh receive any aid money depends on how it expresses allegiance to, and how effectively it responds

to the 'terms and conditions' of donors. It may be noted here that the US government stopped its food aid under PL-480 in 1974, a year of severe famine in Bangladesh, because Bangladesh entered into a trade relation with Cuba (see Bertocci,1982: 1005). A little elaboration of the aid issue can highlight the confusion of its need and utility. In the first half of the 1970s, Bangladesh received considerable amount of relief aid on humanitarian grounds from UN agencies like UNROD. During the later half of the decade, the volume of bilateral aid has doubled and is offered by about 30 countries and 12 multilateral agencies (see Ehrhardt, 1983). The aid during this period took the form of food aid, commodity aid and project aid (Table 3.6).

Table 3.6: Total aid and its form during 1971-80
(percentages of Million dollars for different items)

Year	Food 2282.8	Commodity 3152.4	Project 2295.8	Total 7730.8
71-72	5.7	4.4	0.2	3.5
72-73	8.0	9.1	3.5	7.1
73-74	10.0	3.3	5.4	5.9
74-75	16.8	11.9	6.3	11.7
75-76	13.7	11.7	5.4	10.4
76-77	5.3	7.9	6.5	6.7
77-78	7.8	11.9	11.7	10.6
78-79	7.8	15.3	16.2	13.4
79-80	16.4	12.0	20.5	15.8
80-81	8.5	12.5	24.4	14.8

Source: Adapted from Ehrhardt (1983: 27,Table 2.3).

It is interesting to note that while food aid moved falteringly and commodity aid changed slowly, project aid leap-frogged from an annual 0.15 percent (3.5 million) in 1971-72 to 24.40 percent (560.2 million) in 1980-81. However, both the donors and the recipients have their economic interests. Donors realize their interest through imposed "conditionalities" and the recipients realise theirs through unsupervised disbursement and uses. Aid funds are often abused in procurement (procurement of commodities and contracts for construction) in the donor countries and aid disbursement (distribution of

commodities and project construction) in recipient countries (see Loxley, 1985, Globe and Mail, April 4, 1992:A9). Wrong technology or non-compatible innovations and implementation are based on the patronage noted earlier. Governments led by a lumpen bourgeoisie class have their own interests and priorities, and for obvious reasons they long for food and commodity aid which can be manipulated in their group interests rather than the need of the country. Construction of roads and bridges, development of transport and communication, such as colour TV network, satellite communications, and power (including rural electrification) funded by project aid have questionable meaning to peasants at a time while the nation suffers from stagnant agriculture, malnutrition and starvation, poor education and health. The funding that goes to rural development or agricultural development usually enriches the rural power structure. Rural electrification and irrigation innovations emerge meaningless to the 80 percent of the rural mass that have neither land to irrigate nor proper homes to light up, and the green revolution was nothing but a failure in generating employment. The patronaged contractors and traders reap most of the benefits of project and commodity aid.

For the last three decades, Bangladesh has been drawing huge amount of financial aid and technical assistance (US$ 1.67 billion in 1988-89) from various international sources towards agricultural and rural development through mitigation of flood and erosion hazards (Rahman, 1991:1). All the measures of flood and erosion protection undertaken phase-wise since early 1960's were aimed at agricultural development and rural infrastructure building. The main focus was on the protection of towns and agricultural settlements through flood embankments, drainage, irrigation, channel diversion, and rural electrification and road construction. The implementation of the general flood and erosion control projects was affected through an instrument (Rural Public Works Programme) mostly funded by USAID and World Food Programme, along with other financial and technical support from IDA, CIDA, IBRD, ADB and UNDP (Alamgir, 1983; Cain and Liebermann, 1983; Rahman, 1984; The World Bank Report, 1987). Through these

ambitious flood control and irrigation projects, it was hoped that millions of acres of cultivable land could be protected and put to higher yields. Rahman (1984) reports that construction of the Brahmaputra Right Bank Embankment provided flood protection to 388,000 acres (157,021.50 hectares) of cultivable land resulting in 68 percent increase in crop production. The Small Scale Flood Control, Drainage and Irrigation (SSFCDI) Projects (first phase,1980-85) expected to improve production on about 140,000 hectare of agricultural land (World Bank, 1987). As can be seen in Chapter 4, the overall impact of these projects, or for that matter, of all the development projects, was not favorable for the majority of the rural people; rather, it has been alleged that public policies of rural and agricultural development, including flood control and bank erosion protection, were instrumental in impoverishment of the peasantry.

CHAPTER IV

NATURAL HAZARD MITIGATION, PUBLIC POLICY AND DEVELOPMENT STRATEGIES IN BANGLADESH

4.1 ROLE OF THE STATE IN HAZARD MITIGATION

In the absence of a powerful private sector, the state assumes the role of the omnipotent motivator of socio-economic imperatives in a Third World country like Bangladesh. The strength of the public sector can be ascertained from Table 4.1. It shows that the public sector has a superior edge over private sector. As is pointed out in Chapter III, the state machinery comes into power by itself and for itself, and therefore, political survival is the first priority for these governments.

Table 4.1: Relative Strength of Public Sector in Bangladesh.
(in percentages of total development expenditures)

Investment	FFYP (1973-78)	SFYP (1980-85)
Public	88.7	78.6
Private	11.3	21.4

Source: Statistical Year book,1983-84, Dhaka: BBS,1984;
SFYP,1980-85, Dhaka: Bangladesh Planning Commission, 1980.
FFYP: First Five Year Plan; SFYP: Second Five Year Plan

Alliance between contending groups is the first step in the direction of power consolidation, and secondly, attempts are made to bring within, or for that matter extend control to, the sensitive economic sectors. The rural-agricultural sector is the most sensitive sector in Bangladesh and this sensitivity is reflected in the abject poverty of the peasantry. The sector provides employment and livelihood for more than 85 percent of the population. The control over the rural sector is articulated through structuring and restructuring rural institutions and attaching thereupon the so-called development approaches aided and funded by international development agencies. This enables the state to organize a rural power-

base incorporating the rural elite. For relative instability and uncertainties in the office, the governments in Bangladesh are apt to concentrate on growth of a certain sector and for certain sections of the population who have higher accessibility to means of production.

Agricultural development needs to be organized around farmers who have land to farm on. Inevitably such concentration by-passes the longer term development needs of the greater poverty-stricken masses. Since more than 80 percent of the rural population are landless or nearly landless, inputs sent to the rural sector go to those who are land-rich. The purpose of investment in development is not to address the actual need of the land-poor peasantry. Since flooding and riverbank erosions are chronic, the negative impact is a recurring phenomenon causing heavy losses for the (land-rich) farmers in Bangladesh. It has been recognized that humanitarian relief can at best offer temporary measures towards impact aversion of such hazards. The long-term solution to this regularly occurring problem requires that natural hazard mitigation strategies be incorporated into the overall development plans of the economy in general and rural and agricultural development plans in particular.[1]

Indeed, for a long time various governments of Bangladesh have attempted to incorporate an array of development instruments into the national five year development plans . The main thrust has always been on food crop production because Bangladesh has had a deficit of about two million tons of foodgrain annually. Increase in foodgrain production towards self-sufficiency was the first priority in the first, second, and third five-year plans respectively. As was mentioned earlier, since the 1975-76, foodgrain production grew at a faster rate of about 3.2 percent compared to population growth of about 2.6 percent, while overall agricultural production grew by 2.8 percent. It has been recognized that in order to achieve self-sufficiency, or at least to fulfil the Third Five-Year

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[1] The realization and implementation of such a concept is reflected in the government's attempt to use 'relief-wheat' as an instrument for infrastructure-building towards flood control and drainage through the 'Food for Works Programmes' aided by the World Food Programme.

Plan target of 5.2 percent growth in agricultural production, it is necessary to emphasize removal, or at least reduction, of the physical constraints that substantially hinder growth. The country needs to protect its cultivable land from the vagaries of nature through compatible development planning for flood control, protection of bank erosion, and the expansion of irrigation. Efforts have been made to meet this need since the early 1960's through various large scale and small scale flood control and irrigation projects.[2] An impressive structural effort to control floods was the Brahmaputra Right Bank Flood Embankment (BRBFE), completed in 1967-68. It is reported that there was a significant decrease in overbank spill as a result of the construction of the embankment (Tarafder,1974:38). Flood protection for about 5,779,500 acres was created by this embankment, of which 388,000 acres were agricultural land within its immediate vicinity. This resulted in an increase of production by 131,856 tons, or more than 68 percent over the pre-project production of 192,650 tons (Rahman,1984:12).

The change in production was made possible by facilities created for the adoption of High Yielding Variety (HYV) rice replacing the long-stem local variety. In fact, all flood control, drainage, and irrigation measures undertaken so far have enabled farmers to shift from traditional local varieties of paddy to HYV paddy and wheat. The Ganges-Kobodak Project, covering 1.9 million acres in the districts of Kushtia, Jessore and Khulna, is a large scale water development project undertaken in the early 1950's with technical and financial assistance from FAO, Canada and the USA. This project was intended to provide irrigation facilities and drainage in an area of about 350,000 acres. However, the project was successful in providing irrigation to only 40,000 acres because of several technical and socio-economic problems (IBRD/IDA,1970:10). Two other major irrigation, drainage, and

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[2] Important flood control projects includes, a) Kurigram Embankment Project, b) Brahmaputra Right Flood Embankment Project, c) Brahmaputra Left Embankment, d) Old Brahmaputra Phase I and II, e) Belkuchi, Chalan Beel and Bogra Projects, f) Dhaleshwari and Bangshi Channel Improvement Projects, g) Ganga-Kaputakkhya Project, h) Faridpur-Barisal Project, and numerous other project including Southern Rajshahi, Dhaka Southwest, Chandpur, Gorai, Arial Khan, Boral, Haor schemes, Kushiyara, Meghna-Dhangoda, Titas, Gumti, Khowai, Mono and Matamohori etc (Tarafder, 1974).

flood control projects were the Northern Tube-well Project and the Chandpur Project, which provided irrigation potential to 71,000 and 127,000 acres of land respectively. Besides other infrastructure buildings, such as rural road construction, about 7 million acres of agricultural land have been protected from flood and the provision of irrigation was afforded to more than 5 million acres in Bangladesh. Given the financial constraints, such as timely procurement and allocation of funds, as well as political instability, the number of works so far completed under different Public Works Projects (PWP) such as Rural Works Programmes (RWP) and Food For Works Programmes (FFWP) are impressive (Appendix B and C.

Coping with natural hazards is a test of survival efficiency for peasants of Bangladesh. For centuries peasants have generally been successful in coping with periodic severe natural events, but in recent years, peasants are becoming less able to meet the challenge of such extreme events. The scale of economic losses, of out migration from affected areas, and of social dislocations, are such that it is no longer possible to maintain and revive their social and economic capability following a severe natural hazard. As a result, peasants are progressively engulfed in an abyss of extensive poverty, inequality and famine conditions. When the local 'fallback mechanisms' disappear, society at large (or the state) attempts to provide relief of the burden. However, when the state itself is incapable of mitigating the negative impact of natural hazards, international relief dependence increases greatly. For the last 30 years, Bangladesh has gained ample experience in undertaking flood and erosion control and the development of irrigation in association with overall rural and agricultural development. However, programmes of flood control, irrigation and drainage have not been easy and simple success stories and the strategies were not immune to severe critique (see Alamgir,1983; Sobhan,1968; Carruthers,1976; Waheeduzzaman, 1988). Proper identification of the real objectives of development plans is needed to assess actual successes and failures of the strategies undertaken so far.

It is necessary to identify, in the first place, the basic target of the development

policy objectives. It would be worthwhile to identify, and make distinctions between the central objectives and the objectives that are peripheral to the central objective in the development strategies, before any evaluation can be attempted. Although unfortunate, it is true that while all the planning documents emphasize 'grow more food' (i.e., the central objective) and organize all support services and infrastructure towards meeting that objective, peripheral objectives are highly publicized. Keeping the above perspective in mind, this chapter is set out to investigate the underpinnings of hazard mitigation strategies in Bangladesh. It is intended to place into perspective some of the relevant development policies aimed at mitigation of natural hazards in Bangladesh. In so doing, focus will be on the directions of attempted public policy programmes as these relate to natural hazard mitigation. An attempt will be made to identify the actual target groups and the beneficiaries of such strategies.

4.2 THE CENTRAL AND PERIPHERAL OBJECTIVES OF RURAL DEVELOPMENT AND HAZARD MITIGATION PROGRAMMES

The need to eliminate the constraints in agricultural development was translated into development strategies leading to construction of flood control and drainage structures, canal digging, rural roads construction, electrification, marketing and storage facilities. The central objective of all the rural development strategies is to boost foodgrain production. This becomes clear if five year plan documents of the last three decades are consulted. The disturbing issue of increasing poverty in the country as a whole, and in rural areas in particular, cannot simply be set aside, since the sheer size of landlessness, and therefore, unemployment, is gigantic. No strategy could be successful without taking this issue into account. Perhaps the nation is ill-equipped to take care of this problem directly. Public Works aimed at agricultural production can, though temporary, act as an indirect method of injecting some hope to the suffering millions. Hence, a peripheral objective (employment creation) is tagged with the central objective (infrastructure building

for food production). But rhetorically it is publicized that rural projects are undertaken to create employment for the poor peasants only.

Foodgrain production has been emphasized repeatedly by government, and core plans in the development plans were designed towards meeting that objective. The Mid-Term Food Production Plan (MTFPP), for example, is such a programme. Within this plan, the main thrust of government investment has been directed towards rural infrastructure buildings. In technical terms, projects implemented towards rural infrastructure building, had proved to be appropriate and efficient (Alamgir, 1983:27-29; Nishat and Chowdhury, 1983:109; Stevens, 1976:95-128; Raper, 1970; Thomas, 1968:45-51). Results of such projects are reflected in the impressive infrastructure created in the rural areas of the country. For example, an intensive rural road network has been developed in the country connecting every upazilla to the capital. Likewise, a sizeable area of agricultural land has been protected from common flooding and has been brought under irrigation. Rural electrification has reached many villages, and rural community centres and Upazilla administrative centres, as well as health centres, were constructed. However, these achievements in development programmes, together with innovations in agriculture such as HYV technology, have resulted only in benefits to the rural people who are land-rich. These achievements clearly shows the direction of public policies and brings out the actual target group concealed in the planning documents.

4.3 PERSPECTIVE ON THE WATER RESOURCE DEVELOPMENT

4.3.1 The Focus

So far as agricultural and rural development is concerned, the highest priority has always been given to the fulfillment of the objective of foodgrain production.[3] Ambitious targets were set in successive Five Year Plans. Like their predecessors in the Pakistani

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[3] See Mahabub Hossain, 1980:39-70, and Mahfuzul Huq, 1980:161-168

period, successive governments in Bangladesh have emphasized the all out efforts to increase foodgrain production. Targets of 6.4 and 7.2 percent growth per annum were set during the plan periods of 1973-78 and 1980-85 respectively, while an overall agricultural production growth of 5.2 percent per annum was planned in the period of 1986-90 (FFYP,1973:91; SFYP,1980:XII-6; The World Bank Report #6904-BD:1). Though these strategies afforded some commendable successes in increasing foodgrain production at a rate faster than population growth, the overall targets were never achieved for reasons beyond the control of the planning and implementing agencies.[4] The whole strategy of development has to be geared towards meeting the objective of self-sufficiency in food supply. Growth in food production, or for that matter agricultural growth, depends heavily on flood control, erosion control, drainage and irrigation development, as well as the necessary inputs and credit supplies to farmers in the floodplains of Bangladesh.

4.3.2 The Shift

The experiences of Bangladesh with flood and riverbank erosion control and overall rural development dates back to the early 1960's. These experiences can be divided into two major phases, a) the attempt to develop large-scale flood control and irrigation for a period of about 12 years since 1960, and b) the shift to small-scale flood control and irrigation development for a period of about 18 years since Independence in 1971.

It appears that natural hazards, especially devastating floods, have from time to time provided stimulus for governments to implement special projects for risk diffusion in the rural agricultural sector. For example, the severe flood of 1955 afforded incentive to the then government to seek the advice of a UN Technical Mission (Krug Mission of 1956-57) for suggesting a strategy for flood control in Bangladesh. As a result of the Krug Mission's advice, a project planning, implementing, and monitoring agency was created in

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[4] Such as financial constraints, timely procurement and allocation of funds, extreme natural hazards, and political instability are perhaps some of the apparent causes.

1959 that came to be known as East Pakistan Water and Power Development Authority (EPWAPDA). And on the basis of Krug Mission's advice, the massive construction work of riverbank and coastal embankment was initiated.[5] The flood of 1962 stimulated formulation of a special programme known as Rural Works Programme (RWP). Wheat was provided as flood relief under PL-480 to execute the Krug Mission proposal of embankment construction. The 1974 flood created yet another incentive for a food for development works programme known as Food For Works Programme (FFWP). Under this programme, a substantial amount of embankment construction and reconstruction, as well as canal digging and rural road construction, was facilitated by converting relief-wheat (received as flood relief materials) into wages. This manipulation of relief into wage was a commendable attempt.

The first Five Year Plan Document reports that embankment construction had so far provided flood protection to about 3 millions acres of land along the coastal areas and and floodplains. These works included the construction of more than 2,000 miles of coastal embankment repelling saline water intrusion and about 200 miles of riverbank embankment controlling overbank spills. Irrigation related 'physical works include a total of over 1000 miles of main, secondary, and tertiary irrigation canals, some 4,600 sluices and regulators, 3 major and 85 minor pumping stations' (FFYP,1973:143). The rationale of large scale development schemes is rooted in the concept of "trickle-down" of benefits to the less fortunate section of the population. Ruttan points out that,

> "...there are several reasons for the large scale infrastructure investments during this (1950's and 1960's) period. A major economic rationale was that public benefits exceed private benefits by such a wide margin that only the public sector could afford to undertake them. Spillover or secondary development impacts were

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5 EPWAPDA hired an American consulting firm (International Engineering Company) which formulated a 20-year Master Plan of 3 barrages and 51 major water resources development projects. Through subsequent supportive consultations with the president of Mississippi River Commission, John Hardin in 1963 and J. Thijsse (Netherlands) in 1964, the Krug Mission's proposals were put to work in the early 1960's. In 1970, an ad-hoc consultancy group was formed to recommend a line of action on the "Action Program" forwarded by IBRD/IDA in the same year. This group consisted of J. Pegg (Mississippi River Commission); R. Rangelay (Alexander Gibbs and Partners); D. Simons (Colorado State University); and F. Snyder, UNESCO/WHO Consultant.

believed to substantially exceed the benefits that could be captured in the form of price or user charges (Ruttan, 1986: 39).

Lately, it has been realized that the proportion of costs to benefits in large scale projects is higher. Maintenance becomes a huge uncontrolable task, and rent realization from major irrigation projects is slow and even unsuccessful. Moreover, while the gestation period is longer for such projects, the trickle-down effects were much less significant. This realization has brought about a change in the flood control and irrigation strategies in the second phase. In the early 1970's, World Bank review studies (see IBRD/IDA,1970 and 1972) of the land and water sector of the country recommended changes in the strategy which led the government to shift to small scale, low-cost, and quick-return projects in the flood control, drainage, and irrigation development. The strategic changes in the country's water resources development, though based on self experiences, does not appear to be self motivated on the part of the government alone. It is a game played amongst the different interested international funding agencies.[6] Since the large scale projects do not fit to the goal of quick agricultural development which is urgently needed to meet the food requirement of the country, ways and means have to be found to that end. Without this, returns on the foreign political and financial investments cannot be realized.

This interest is apt to downplay natural hazards as the sole problem. Emphasis is laid upon agricultural production and the problem of natural hazard is only considered as far as it concerns this production objective. These emphatic strategic approaches are intensified with other vital policy planning for the economy as a whole. For strengthening of the supply-side of the economy, the plan documents have formulated policies towards

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[6] It may be noted here that a host of foreign governments, international financial and development agencies are involved in Bangladesh's rural, agricultural development or for that matter flood control, drainage and irrigation development since 1950's, such as Australia, Canada, W. Germany, The Netherlands, Sweden, U.K and the USA, and FAO, Ford Foundation, Harvard Advisory Group, IBRD/IDA, ILO, UNDP, and WFP. They are involved in different capacities such as policy planning, project needs and feasibility studies, financing, logistic supply, project implementation, monitoring and consultation, maintenance and training etc. It is understood that every aspect of economic development including strategic approaches like RWP and creation of training academies, is centred around direction of agencies involved in the country since the late 1950's. (see for detail information of such involvement, Robert, et al. eds. (1976); and Raper (1970)).

privatization of input supplies and strengthening of the private sector investment. This policy includes such steps as

- elimination of subsidies on agricultural development inputs,
- privatization of irrigation equipments and supply of fertilizers and pesticides, and
- provision of higher institutional credit to farmers (World Bank, 1987: 2; Second Five Year Plan,1980)

4.4 INITIATIVES AND INTERESTS IN WATER RESOURCES MANAGEMENT

It was mentioned earlier in this chapter that the special development projects for flood control, drainage, and irrigation are undertaken specifically at the time of natural hazard occurrence in Bangladesh. However, there is deeper conjecture of political events surrounding the initiation of such projects in Third World countries in general and in Bangladesh in particular. This is perhaps because poverty and, therefore, development has meaningful political connotations. A World Bank working paper focussed on the possible relationships between existing political unrest, ensuing national elections, and undertaking of certain works programmes in a number of developing countries including Bangladesh (World Bank, 1976). One study has identified specific relationships of initiating development projects such as RWP and government's intention to spread control over rural electorate, in the case of Bangladesh (Sobhan, 1968).

It is enlightening to ask and seek answer as to why development projects are undertaken at such conjunctures, not in others, while the issue of poverty, underdevelopment, and agriculture's vulnerability to natural hazards are long standing? The decision to undertake rural works programs as one study notes (World Bank, 1976: 56) '...depends on group interest as they relate to the problem and the proposed solutions; and most importantly, the regime's sensitivity to group interests. In the case of Bangladesh, and perhaps also in many other developing countries, the regime's sensitivity to the interests of different groups involves: 1) international agencies, who provide

consultancy and funds; 2) rural elites who are a vital link between the rural society and the state; and 3) the unemployed and underemployed rural poor who are comparatively more vulnerable to social and natural hazards in Bangladesh.

1) International Agencies: As has been discussed in Chapter 3, 90 percent of the development budget of the government of Bangladesh is mobilized from international sources. The international funding agencies often dictate the type of programmes to be undertaken in developing countries. Since there is no apparent cost to the governments in Bangladesh in taking up such projects, and since a substantial amount of 'easy-money' can be used in political manipulations and other gains, the stake of foreign aid and relief is lucrative to the regimes. The amount of wheat aid from various sources for funding the Public Work Projects is substantial. It is about one-fifth of the annual food import and foodgrain import fluctuated considerably, while import of wheat for FFW projects increased steadily over the period of 1975-83 (see Asaduzzaman and Huddleston, 1983: Table 1).

Policy planning of all important development projects emanated from the recommendations of agencies and consultancies originating in the US during the First and Second Five Year Plan periods of Pakistan (1956-65). During this period, Ford Foundation, USAID, Harvard Advisory Group, and Michigan State University, were all involved in national economic planning, and in the setting up of development strategies such as rural roads construction and flood control, drainage, and irrigation. The Ford Foundation-funded Village-AID programme (1953-61) culminated with the creation of Bangladesh Academy for Rural Development (BARD) in 1961. At about the same time the concept of 'Basic Democracy' was fielded as a vehicle with which to impose control over the rural areas. At the end of 1960's, there came a shift in position when US involvement became less direct and gave way to several other western countries and to a number of international agencies. The period of the late 1960's and early 1970's saw an increasing involvement of international agencies such as IBRD/IDA, FAO, CIDA, and SIDA in

national policy making endeavors. Involvement of these agencies is manifest in the formulation and reformulation of short-term, mid-term, and long-term policy options and development strategies (see Chaudhury and Siddiqi, 1984; and The World Bank Report no. 6904-BD, 1987).

The government only complies with the formulation and reformulation of economic and physical development policies and strategies proposed by international funding agencies. Recently, a Canadian national news paper noted that "...Entire governments, such as power and family planning, are financed and directed by foreign donors (emphasis added, see Globe and Mail, Apri 4, 1992:A9). The logic is simple: he who pays, decides.[7] Analogous to such a concept is the famous Brandt Commission recommendation "...of developing and expanding mechanisms for transferring capital from the North, at the discretion of the North, and under the substantial control of the North, to the South" (cited in Carty and Smith,1981:3). It is very clear that capital transfer is not a simple act of charity for development in the Third World, as Carty and Smith (1981: 5) notes that

> "...promoters of the new wave in aid, like their predecessors, find that renewed development assistance efforts can conveniently meet their national, self-defined objectives while continuing to ignore the basic causes of Third World Development. They see the new aid as (1) providing short-term relief for Third World financial crises; (2) silencing some of the Third World demands for structural reforms by offering instead more aid and only minor adjustments to international institutions; (3) building a new net work of political alliance to support the West in its' renewed conflict with the East (indicates The East European Countries); (4) helping northern economies export their way out of the economic slump".

2) Rural Elites: The rural elites are the most important links between the policy makers and the rural society. Attempts were made to bring these elites into the forefront of policy implementation of the state. Historically these attempts are made since the 19th century, for example, the creation of union boards and district boards in Bengal. Until the

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[7] The purpose, need and priorities of the parties involved in development (the government, the donor agencies, the rural elites, and the target population) often appear conflicting in many underdeveloped countries (for an interesting account, see Leonard Frank, The Development Game, Granta). For interesting discussions of the perspectives and political and economic purposes and manipulations of foreign aid to Third World countries, see Carty and Smith (1981); Clarke and Swift (1982); Faaland (1981), and Loxley (1986).

1960's, these village level and district level boards were a sort of lose organizations focusing their attention to local affairs only. It was Field Marshall Ayub Khan, who, for the first time, successfully attempted to bring the rural society into the forefront of national politics through creation of a system called Basic Democracy. The union and district boards were renamed to union council and district council. Thana Councils were formed, and more political and economic power was allotted to the these elite-controlled local governments. These institutions became vital for the implementation of the policy objectives, and controlling the countryside. Hence, subsequent governments enthusiastically restructured these rural institutions to fit into their own modus operandi. Formation of Gram Sarker (Village Government) in the later half of the 1970's, and restructuring of thana council into upazilla (Sub-district) in the early 1980's, are some of the examples of such attempts to reach or bring the rural society closer to the city-centred politics of the country. The rural elite which control these local institutions originate from the rich farmer-trader section of the villages of Bangladesh. These people, as MPs and Chairmen of union councils, decide projects and manage constructions and operations of government rural development programmes (see Blair, 1978, 1985; Rahman, 1988; Sobhan, 1968; Wood, 1981). As Carty and Smith (1981:125) succinctly noted "...society as whole cannot benefit in countries where wealth and power are tightly held. In these cases, food-for-work ends up building infrastructures to benefit rural elites while the administration of such programs also lines the pockets of the wealthy who use the scheme for corruption and patronage".

3) The unemployed and underemployed rural poor: Despite rhetorical emphasis posited in the development plan documents, and other political deliberations, this group is the most neglected one. Though the objectives are fervently set to create employment, eliminate poverty and provide support to the rural poor, the innovations and incentives are all deliberately directed towards the higher stratum of the society. It has been noted that rural works projects do not solve poor peasants problem because "...such projects provide

income to rural workers for a specified period, but do nothing generally to change the fundamental economic conditions that produced unemployment in the first place. ...such projects tend to provide long-term benefits to landlords" (Junnuzi and Peach,1977, cited in Carty and Smith, 1981:125; also see Sobhan, 1968; Alamgir, 1983; Rahman, 1988).

Within this brief socio-political setting, some of the rural development strategies formulated and implemented to alleviate the problems in the agriculture sector may be evaluated here so as to see for whom these are actually fielded and whose purposes these strategies do serve.

4.5 TWO DECADES OF PUBLIC WORKS PROGRAMMES

Emphasis laid upon the types of works undertaken in the rural areas reflects on the sole purpose of public works programmes in Bangladesh. There are various types of projects undertaken within the general frame of Rural Public Works initiatives that can be summarized into:

- directly benefiting agricultural production projects, such as flood control, drainage and irrigation; and,
- indirect socio-economic benefit projects, such as road construction, bridges and culverts, rural market developments, rural health centres, community centres, etc.

It has been noted earlier that achievements in PWP are impressive. Two of PWPs are discussed here, namely, a) Rural Works Programmes (RWP) in the 1960's, and b) Food For Works Programmes (FFWP) in the 1970's and 1980's. These two programmes are basically the same public works tactics, which in recent years have been adopted under various titles.[8] However, it can be seen that the emphasis on types of infrastructure development is excessively biased to the 'Indirect socio-economic benefit projects' (Table 4.2).

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[8] At least six PWPs are in action in the rural areas, such as 1. Special Public Works Programme; 2. Intensive Rural Works Programme; 3. Early Implementation Programme; 4. Zilla Road Maintenance Programme; 5. Normal Rural Works Programme; and 6. Food For Works Programme. Public Works in rural areas are also undertaken in a programme called RD-1, financed by World Bank.

Figures 4.1 reflects this trend in emphasis clearly. In these figures it can be seen that rural road construction and reconstruction has been given highest priority. Achievements in construction and re-construction of rural roads, though declined during the late 1960s, gradually increased during Bangladesh period. During the period of 1974-84, emphasis on construction and reconstruction of riverbank and coastal embankments has increased steadily along with drainage and irrigation works. After 1980-81, however, drainage, canal and irrigation works were slowed down (Figure 4.1 B).

Table 4.2 Project Priorities and Labour Intensity in Rural Works Programs in Bangladesh, 1962-73.

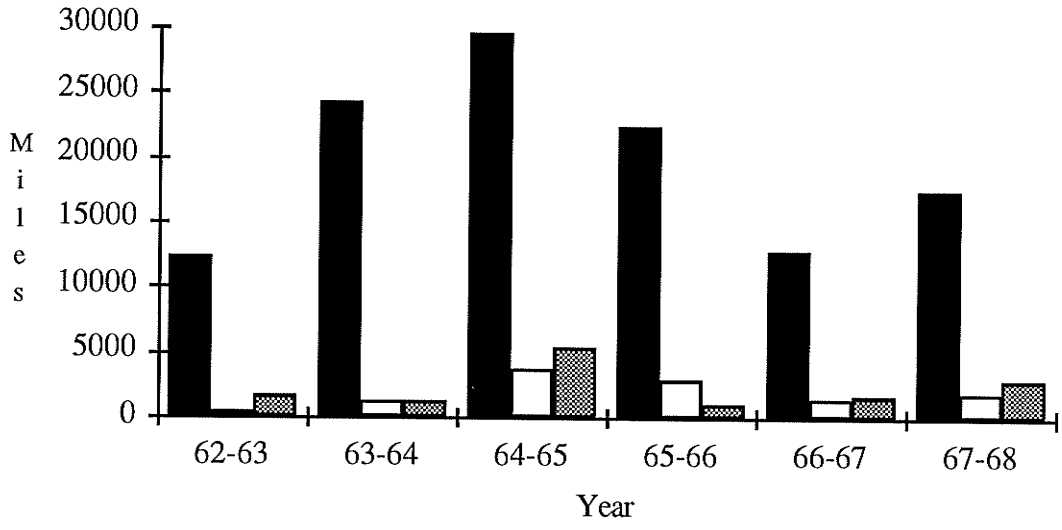
A. Project priorities Type of Projects	1963-72 (percentage of Total Fund)	B. Labour Intensities Year	percentages of labour cost to total programme cost
1. Irrigation, Drainage etc.	7.2	1962-63	68
		1963-64	60
2. Road Construction, Culverts		1964-65	59
& Bridges, Flood Control, Rural		1965-66	54
Market development	76.6	1966-67	54
		1969	27
3. Construction of Schools,		1973	16
Clinics & Community Centres etc.	16.2		

Source: World Bank, 1976: Table III.5 & VI.3.

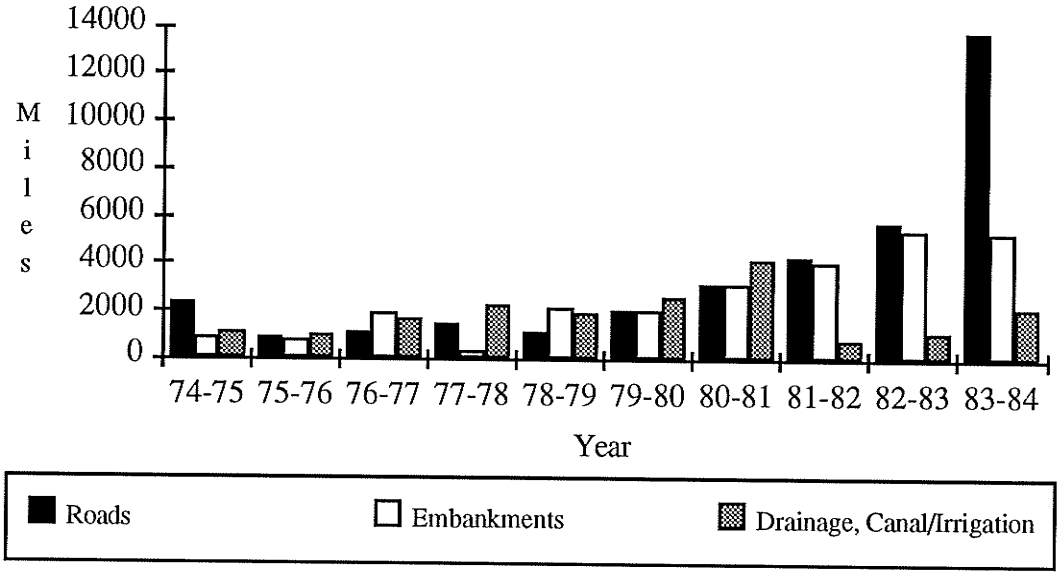
It can be realized that the infrastructures built for indirect socio-economic benefit do not provide any sustainable income benefits to those who have no means of production. Roads construction, market development, and building of other social infrastructures can be beneficial only to those who own or have easy accesse to the means of production. In fact, these types of infrastructure building along with direct production increasing projects, directly or indirectly benefit the rich farmers in the rural areas. One study reports that direct benefit accrued by the land rich farmers is in the ratio of 5:1 to that of the poor in Bangladesh (World Bank, 1976; Alamgir, 1983).

In terms of employment creation, these projects are a very temporary solution. Employment opportunities are created for a very short period of time in a given year at the

Figure 4.1 (A): Achievements in Rural Works Programs, 1962-67.



(B): Achievements in Food For Works Projects, 1974-84.



Source: (A) Alamgir, 1983: Table III, (B) Statistical Pocket Book, 1985, Dhaka: BBS

construction period of the projects. Thereafter, once these projects are launched, the facilities created, and their income effects are hardly felt by the so-called 'target groups' designated in the planning documents, i.e., the landless and the marginal peasants. Moreover, the labour intensity, in terms of labour costs to programme costs, declines sharply over the peak construction stage and the completion stage of the important projects (Table 4.2, part B). Another point of interest in PWP is that labour was the highest consumer of RWP expenditures in the early 1960's, representing about 68 percent of the total programme costs in the early 1960's. During 1962-63 and early 1970's, the RWP expenditures, compared to the total development expenditures, declined dramatically from 14 percent in 1964 to less than 3 percent in 1976 (Figure 4.2).

If this can be seen as a hint, it can be said that development expenditures must have been diverted from 'employment creation' projects to tangible infrastructure buildings, such as community centres, health centres, and upazilla (sub-district) administrative centres. In this case, programme costs heavily accounts for cost of building materials. Moreover, the tempo of employment creation, in terms of man-days of work, fluctuates rhythmically with wheat availability from the donor agencies (Figure 4.3) and not with the need itself of employment creation.

It is possible to argue that credible strategies were set to work in an incredible situation, in the sense that the rural society itself is not homogeneous in terms of resource distribution. Homostatic strategies are bound to work well for one section of the population at the cost of the others. In this regard, the strategies set so far are well suited for the increase of agricultural production. But the issue of increasing poverty baffles both protagonists and antagonists of rural development in Bangladesh. The dilemma created by the need for food production and increasing unemployment and poverty brings about a realization of the fact that overall development in the countryside is not a simple technical

problem. As Ruttan (1986) notes, "...the dynamic interrelationship between technical and institutional change" is a prerequisite. This need for institutional change seems to be

Figure 4.2: Rural Works Programs Expenditure as percentage of Development Expenditures.

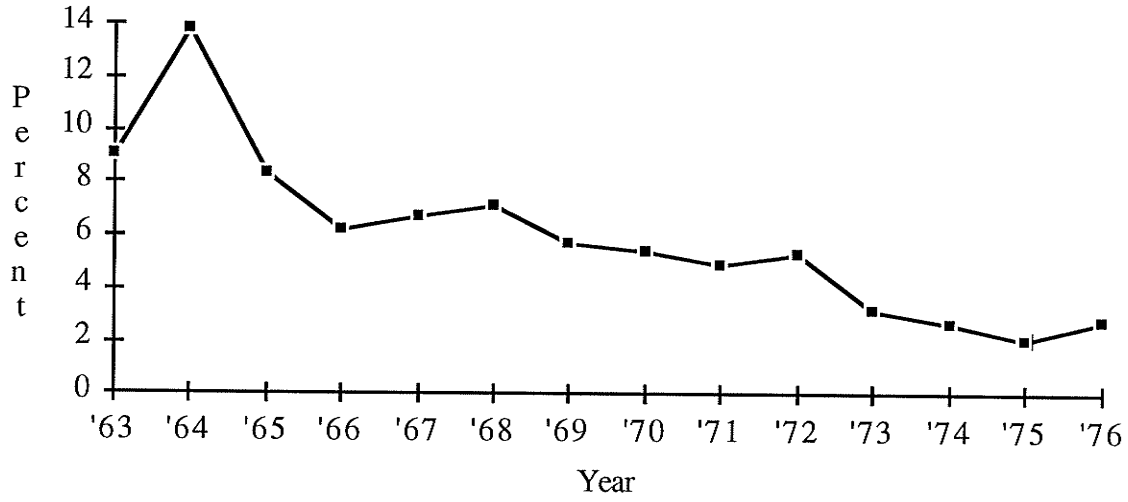
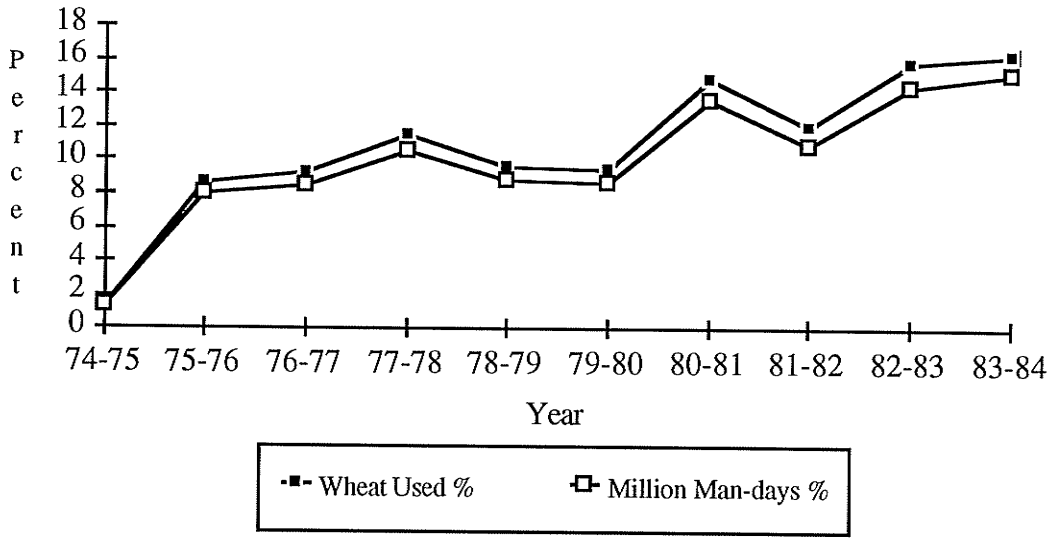


Figure 4.3: Relation between amount of Wheat used and work created in Food For Works, 1974-84.



reiterated in the 1980s, which is reflected in the building of social infrastructures in Bangladesh (see SFYP, 1980-85 and TFYP, 1985-90; also see Rahman, 1988; Hossain, 1987 cited in Rahman, 1988).

To understand the need for a viable social reform, it is necessary to analyze the existing social organization in its historical perspective. Needs and priorities should be drawn according to the weaknesses and strengths of the social organization, without which efforts may result in continual underdevelopment. The next chapter focuses on the character of the existing social relations of production in rural Bangladesh, and the direction that ought to be followed for a viable social reform.

CHAPTER V

AGRARIAN STRUCTURE IN BANGLADESH: A HISTORICAL CONTEXT

Most social scientists are in agreement on the question of the existing mode of production in rural Bangladesh. As discussed in Chapter 1, with few exceptions,[1] the agrarian relations in Bangladesh are almost unanimously characterized as 'semi-feudal'. Perhaps the complexities in agrarian organization in Bangladesh leads to such characterization. The proponents of the theory of semi-feudalism concentrate their attention basically on three aspects of agrarian relations, viz.:

- land-tenancy relations,
- labour relations, and
- credit relations.

It is said that the existing agrarian social structure of Bangladesh has the legacy of the Land and Tenancy Reforms of the British colonial administration in Bengal and hence the existing labour, tenancy and credit relations still reflect the traditional feudal characteristics. It may be argued here that substantial transformations have taken place in Bangladesh agriculture since the end of British colonial rule, and the direction of the change is clear and points to something other than feudalism or semi-feudalism. The residuals of feudalism are so insignificant, however, that characterizing agrarian relations on the basis of these residues is unjustified.

Before attempting to elaborate on the agrarian relations of production in the colonial period, it is necessary to clarify some of the relevant terms for better understanding. 'Zamindar', 'Talukdar', and 'Jotedar' are terms found ubiquitously in any study on

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[1] There exists a few feeble voices that recognize the existence of capitalism in agrarian relations in Bangladesh (see Akhlaqur Rahman, 1986; Akash, 1986). A few others contemplate the rising trend as capitalistic (see Jahangir, 1986, 1979; Atiur Rahman, 1986).

agrarian relations in British Bengal and concurrent Bangladesh. They are invariably portrayed as the most vital part of social relations of production in agriculture. In such literature, however, it appears that the term 'Jotedar' is very confusing in both a literal or practical sense. The Bangla word 'Jote' means any cultivable land, while 'dar' means holder. Thus, 'Jotedar' is one who holds land irrespective of its size. One recent study notes that a 'jote' may be a unit varying from one paying a rent of Rs. 50,000 to one holding a few bighas[2] (Bose, 1986:13). Quoting several settlement reports, Bose further noted that "any one in east Bengal with a piece of land subject to payment of rent was a Jotedar" (ibid: 23).

In fact, Jotedars, Talukdars and Zamindars with their descending hierarchy of 'chakladar', 'patnidar', 'darpatnidar', or 'chukanidar', were used to designate various grades of tax collectors in the Mughal, as well as the British period. In the Bengal of recent times (Bangladesh and West Bengal) the term 'Jotedar' became popular to mean any one with a substantial amount of land flexing omnipotent power and control over the decaying peasantry. Abundant evidence is found in literature on agrarian relations portraying the jotedars as feudal exploiters. In political circles, the 'Jotedar' is identified as a class enemy. Hence, the very common political slogan of Jotedar Khotom Koro, Samajtantra Kayem Koro (eliminate the jotedars, establish socialism) is widely used among underground leftist parties. For the present purpose the word 'Zamindar' (with all the rent receiving Talukdars, Jotedars, Patnidars, etc.) will be used to mean 'rent collectors'. However, it is necessary to highlight the historical context of the peasants' agrarian social structures, in order to see whether there are similarities with colonial times and what transformations have taken place since the British left. Since the study areas are located in present day North Bengal (Kazipur being in old Pabna and Chilmari in old Rangpur), agrarian relations in the districts of Rangpur and Pabna will be discussed occasionally.

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[2] One bigha = 0.33 decimal of land; 100 decimal = 1 acre

5.1 LAND CONTROL VERSUS RENT CONTROL IN THE BRITISH COLONIAL PERIOD

5.1.1 "Rent Offensive" and the Period of High Feudalism

After seizing power following the battle of Plassey in 1757, the agents of East India Company (EIC) cast their attention on land tax -- the financial backbone of Bengal. They annexed the most important Ministry of Revenue (Dewani) of Bengal in 1765 from the Mughals. In pursuit of a secure and steady system of tax collection, the EIC made several attempts at land reforms during the decades that followed and finally promulgated a permanently fixed rent settlement regulation in 1793. As part of this regulation, the imperial Mughal rent collectors - Zamindars - were given the right to collect permanently fixed rents on behalf of the EIC. The number of such rent collectors increased tremendously following the Permanent Settlement, reaching a total of 150,000 and included 533 large estates of more than 20,000 acres; 15,747 estates of 500-20,000 acres; and 137,920 estates of less than 500 acres (Omar, 1974: 31).

The important point that must be noted here is that the term 'permanent' in the Permanent Settlement of 1793 was directed to mean the 'permanency of the amount fixed as rent for a given estate'. In other words, the amount of rent to be paid by a Zamindar was permanently fixed. The stability of a Zamindary invariably depended on its ability to regularly pay the fixed tax established on a permanent basis between it and the EIC. It has been reported that within the first two decades of the Permanent Settlement, one-third to one half of the Zamindarys of Bengal changed hands for failing to regularly make their tax payment (Sinha, 1967:102-104). This transfer of rent collecting rights from a traditional rent collector was effected through auction sales (when the traditional collectors failed to collect rent from the tenants the colonial administrators transferred the right of rent collection to one who was able to pay the outstanding dues and who was able to assert rent collection effectively). Likewise, within a few years of the Permanent Settlement, the traditional estates of Natore Zamindary were sold for arrears in rent. Rich merchants and traders of Pabna, Dhaka and Calcutta purchased the rent receiving interests of Natore

Zamindary. The district of Pabna contained most of the Natore estates. Some of the Amlahs (a petit bureaucracy of the landlords) of the Natore estate became the rent receivers for the most of the agricultural land of Pabna district. Some parcels of rent-collection rights were also allotted to certain Amlahs as tokens of gratitude for services to the superior rent collectors (the Zamindars).

The new rent-collectors asserted their roles very vigorously. For example, in Pabna district, and especially in Sirajganj sub-division, the parcels of Natore Estate were taken over by families such as the Tagores of Calcutta, Banerjees of Dhaka, Sannyals of Salop, Pakrasis of Sthalbasantapur (Sen Gupta, 1974). These new rent collectors rack-rented their purchased rent-right to ryats. The types of the rent-receiving interests in Pabna appeared to consist mainly of (1) superior collectors called Zamindars, (2) a few dependant and independent Talukdars, and (3) Patnidars. The size of these rent-receiving interests were not very large compared to those found in the northern-most districts of Dinajpur, Rangpur and Jalpaiguri. In the district of Pabna, there were only six moderate estates with about 20,000 acres of rent-interests and paying not more than Rs. 50,000 as rent to the EIC in the mid-19th century (Sen Gupta, 1974). Besides these six estates, there were 187 medium and 674 small rent-receiving interests controlling between 500 to 20,000 acres and less than 500 acres respectively. Unlike the Mughal approach, the EIC's rigid demand for rent put the landlords of Bengal into an intense feudalism which Sen Gupta (1974) termed as "high landlordism" and which reigned supreme until the middle of the 19th century.

Bose (1986) termed the consequence of the regulation of 1793 manifest through the first six decades as the "rent offensive". This rent offensive brought about significant changes in the political and social relations of production during the British colonial period. In the first half of 18th century the traditional Zamindary system had been pushed to an unstable position (see Calkins, 1976; Bose, 1986). Merchant capital and other competing interests in land took advantage of Zamindar's weakness in rent collection and became the new Zamindars. In a defensive bid some of the superior rent collectors allotted large tracts

of land to Jotedars and Talukdars (rent collectors for the Zamindars). These substantial Jotedars and Talukdars in turn rented parts of their land to persons variously known as Chukanidar, Darchukanidar, Dardarchukanidar, Patnitalukdar, Darpatnidar, and Dardarpatnidar (deputies of the deputy rent collectors). By the middle of the 19th century this rent-offensive led to widespread discontent amongst the peasantry in Bengal. The resultant Revenue and Tenancy Acts of 1859 and 1885 offered strong leverages to the peasants.[3]

Backed by legal rights and increasing penetration of agricultural credit, the market for land intensified. Land started changing hands through various channels, such as direct sales, distress sales, and mortgages. Evidence shows that the intensification of the land market gained momentum following the Tenancy Act VIII of 1885. Omar (1974:40) noted that the number of deeds of land transfer reached 1.5 millions by 1913, compared to only 43,000 in 1884. This situation was encouraged by the gradual and steady integration of the local commodity market with the international market (see Bose, 1986: 58-69).

5.1.2 Peasants Access to Land

With the settlement of rent fixed at a low rate, and the open discretionary right to levy tax on the ryats, made possession of a Zamindary a lucrative enterprise for many. Competition between individual Zamindars, between Zamindars and Talukdars, and the entry of merchant capital into the competition together increased the value of land by the early 19th century. This was the time when many traditional zamindars lost their Zamindary (see Calkins, 1976; Hoque, 1975:78). The high landlordism of the Zamindars reached a breaking point in the middle of the 19th century. History witnessed serious

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[3] The Rent Act X of 1859 had been imposed to settle disputes between the rent collectors and the peasants. This Act provided that any ryat cultivating a certain portion of land continuously for 12 years and regularly paying rent can neither be evicted nor have their rent increased unless under certain conditions. The Tenancy Act VIII of 1885 was a modification of the earlier Rent Act of 1857. This modification provided the settled ryat with important rights such as a) to acquire occupancy status in all land held by him, b) to transfer his holding, and c) consolidate occupancy on land held for more than three years.

peasants' revolts (e.g., the Blue Mutiny of the 1850s and the Peasants' Revolts in the 1870s and 1880s) against the oppressive Zamindars and their excessive demand for (often illegal) taxes. The result of these revolts was the reiteration of peasants right laid out in the Permanent Settlement of 1793 (enactment of Rent and Tenancy Regulations X of 1857 and VIII of 1885). By the end of the century, the competition for land started precipitating into lower strata of the peasantry.

This competition was fueled by the growth of population particularly in Bangladesh (East Bengal).[4] The relatively young floodplains of East Bengal were very fertile and capable of producing a number of agricultural crops, especially jute, paddy, sugarcane, pulses, oil-seeds, wheat, and tobacco. By the early 20th century, Bangladesh had become the principal supplier of jute to the international market. Steady increase in demand for jute on the international market stimulated the peasants of Bangladesh to intensive cultivation while at the same time subjecting them to the vagaries of a market economy. These agricultural opportunities generated a steady rise in the population, especially through migration (see Haque, 1988; Zaman, 1988; Bose, 1986). As a result, the value of land was rising and the land-man ratio was deteriorating. Scarcity of land was caused by diminishing farm sizes due to fragmentation of households resulting from the laws of inheritance. The Land Revenue Commission (LRC) found that in 1938, about 56 percent of the peasant households owned less than 2 acres of land, and about 26 percent owned 2 - 5 acres in East Bengal (The LRC Report). This commission considered a minimum of 5 acres of fertile land in East Bengal as an economic holding capable of providing a subsistence for a household of five. Thus, this means that by the late 1930s, about 82

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[4] Citing several sources Bose noted that between 1881 and 1931, the population rose by 88, 60, and 26 percent in Chittagong, Dhaka, and Rajshahi divisions respectively. Densities of population in some districts were as follows: Dhaka 1265, Comilla 1197, Noakhali 1124, Faridpur 1003, Barisal 834, Mymensigh 823, Pabna 795, and Rangpur 742. While East Bengal was experiencing rapid population growth during this period, West Bengal was going through a decline in population and agricultural production resulting from famine, epidemic, and drastic change in the floodplain ecology due to shifting of rivers to the east (see Haque, 1988; Bose, 1986; Islam, 1975:57; Mukherji, 1938).

percent of peasants were living below the subsistence level, a condition hardly changed in contemporary Bangladesh.

Apart from the rent-receiving interests in Pabna, the peasantry was divided into several categories. The most prominent were the Jotedars who held permanent tenures and they themselves cultivated the lands, and paid no more than Rs.100 rent directly to the EIC. The other categories of peasants were the ryats, who held small parcels of land on rent levied by the rent receiving interests. The ryats were further divided into two types namely, a) occupancy ryats, and b) non-occupancy ryats. The occupancy ryats were those who obtained permanent occupancy of the tenure they held through Rent Act X of 1859 and Tenancy Act VIII of 1885. Non-occupancy ryats, on the other hand, were those who did not have any permanent occupancy rights on their holdings and were thus subject to rent-increment and were often evicted at a rent collector's will.

It may be pointed out here that the rent collectors of Pabna were not large enough to afford to sublet their rent-receiving interests to a number of sub-feudal interests, as was the case elsewhere, such as in the southern districts of Bakerganj and Khulna, and the northern districts of Dinajpur, Jalpaiguri and Rangpur. The rent collectors were to deal with the peasants directly for rent realization with the help of their petite bureaucracies (the Amlahs). Following the promulgation of the Rent Act of 1859, more than 50 percent of the ryats in Pabna became permanent tenure holders (occupancy ryats), which increased significantly following the Bengal Tenancy Act of 1885.

Table 5.1: Household distribution by farm sizes: Pabna and Bengal (1938).

Area	Average farm size	<2 acres	2-5 acres	5+acres
Bengal	3.07 acres	55.9	25.70	14.9
Pabna	2.39 acres	64.1	19.10	9.5

Source: Compiled from Bose, 1986:24; table 1.1).

An important change had taken place by the end of the 19th century Bengal in general, and in Bangladesh in particular, namely, the widespread increase of smallholding

peasant farms. Increasing population pressure resulted in decreasing farm sizes. In the early 20th century, the average farm size among peasants in Pabna was about 1.5 acres (Sen Gupta, 1974). Such small farm sizes signify the dominance of smallholdings in the district. Almost all were subsistence smallholdings. By the first half of the present century, more than 85 percent of the land was held by the ryats. Quoting the Land Revenue Commission of 1938, Bose (1986:23) notes that,"...in the districts of East Bengal roughly 84 percent of agriculturist families held less than 5 acres, 11 percent between 5-10 acres, and mere 5 percent over 10 acres" (Table 5.1). Before the onset of the second half of the 19th century, there were virtually no landless peasants in India. From the middle of the century, the landlessness started to appear in increasing number, and by the third decade of the present century the proportion of landless peasants had reached 30 percent (1931 Census, cited in Omar, 1974: 39).

5.1.3 Tenancy: An Alternative Access to Land

Following the revision of the Permanent Settlement of 1793 (Rent Act of 1859 and the Tenancy Act of 1885), smallholder farming became a dominant feature throughout East Bengal. Demographic pressure played a key role in the rapid decrease in farm size at the peasant household level. Need for supplementing household income encouraged sharecropping. Renting land on cash or kind was common for a labour surplus peasant household. In 1911, the Dacca settlement officer reported that:

> "...it is the ordinary raiyat who adds to his profits by the cultivation of (Jotedar's) khamar land. I doubt whether in a single instance any (Jotedar) family gains from its barga lands more grain than is sufficient to support itself; only in a few instances where jute is grown on barga lands is there any monetary gain and for that an extra share is given to the bargadar either in money or in kind", (Dacca Settlement Report, app.XI, xxvii-xxviii, cited from Bose, 1986:27).

The scenario in Rangpur district was completely different from that prevailing in the southern districts of North Bengal[5] and in East and Central Bengal. In the northern

districts such as Rangpur, Dinajpur, and Jalpaiguri, as Bose (1986:12) puts it, "...ecological factors had an important bearing on this particular form of agrarian organization. Large tracts of land were assigned to substantial man of capital at low fixed rents and with permanent and transferable rights to facilitate organization of large scale reclamation from jungle". The reclamation work was carried out with the help of tribal people. The Jotedars, however, managed to cultivate the major portion of their holdings on adhiari basis (sharecropping). The ryats held very small holdings in their control. To supplement their income they often rented lands from the Jotedars on a sharecropping basis.

There existed a large number of landless peasants in the districts of North Bengal. These landless peasants (known as pure adhiars) were originally the tribal labourers mobilized by the Jotedars for bringing into cultivation of the huge holdings rented from the Zamindars. Once these lands were cleared and cultivated, the labourers remained to cultivate the land as share-croppers (adhiars) but had no occupancy rights on the lands they share-cropped. Thus the Jotedars became a key element in the agrarian social structure of North Bengal through extending credits to the small-holders and the adhiars. In North Bengal, the Jotedars as landowners, creditors, and buyers of agricultural produces, controlled the poor peasants, putting them to near-serf conditions. The Jotedars even dictated what was to be grown on the sharecropped lands. This was in sharp contrast to what was found in the districts of East Bengal. The 'Jotedar-Adhiar relations' model that was found in the frontier districts of British Bengal, has been used in recent studies to explain the production relations in present Bangladesh.

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5 During the British period, North Bengal consisted of the districts of Rangpur, Dinajpur, Jalpaiguri under Cooch Bihar Raj, whereas the present north Bengal includes Rangpur, Dinajpur, Pabna, Bogra and Rajshahi districts.

5.1.4 Agricultural Labour Relations

Demand for agricultural workers had been increasing across the predominantly smallholder peasant farms in Bangladesh since the second half of the 19th century.[6] Marginal and small peasants supplied this demand for labour. Being unable to secure enough subsistence for their households from the meagre farm sizes, the peasants looked for supplementary income through selling their labour. In the case of medium sized peasant holdings, family members were forced to work for wages in the event of natural disaster losses. The engagement of hired and some tied labourers (also termed as bonded labourers) occured mostly in North and West Bengal not only on the substantial farms of the Jotedars and Talukdars, but also on smaller holdings. Such labourers originated mostly from among tribal people. In East Bengal, the relatively small peasants supplied labour in the first place but the growing population of landless peasants gradually took over an increasing share of the labour market. At the peak of the harvest and sowing seasons, family members of marginal peasants formed a sort of informal 'cooperative labour pool' (locally known as Bodlee) to work on neighbours field on a reciprocal basis.

Despite the fact that Pabna had become a densely populated district in the later half of the 19th century (in 1872, the density was 616 persons per sq mile), demand for agricultural labour was met by temporary migration from other parts of Bengal. Sen Gupta (1974) noted that "...these immigrants were attracted to Pabna because the rate of wages in the district (4 annas a day for unskilled labour) was fairly high as compared with that in other districts of Bengal". This seasonal demand for agricultural labour in present day North Bengal, and the related labour migration from the eastern part of Bangladesh, is still

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[6] Omar (1974:39) notes that there were 7.5 million landless peasants in India in 1872, compared to none in 1842. Quoting several sources, especially of J. C. Jack, a settlement officer of Faridpur in 1916, Bose (1986:28-30) says that landless labourers were virtually nonexistent in east Bengal in the early 20th century. But according to the Census of 1931, proportion of landless labourers in Bangladesh was 30 percent. It is natural to expect the rise of wage labour in an intensified agriculture. The existence of wage labour in the 19th century was noted by Sen Gupta (1974). Huque (1939) recorded an estimate of per acre labour cost of three major crops in 1929-30 (at that time per acre cost of labour was Rs.61.50 for jute, Rs. 29.25 for Aus Paddy, and Rs. 24.25 for Aman Paddy).

significant. In such situations, the contentions that landlords exploited labour and appropriated labour surpluses through 'bondages' have doubtful validity.

An important aspect of the rural labour market that is often overlooked is the existence of non-agricultural labour. Though precise statistics are not available for the Mughal and the British periods, the existence of a separate workforce that provided goods and services to the peasantry in Bengal villages is well known. Fishing, oil-pressing (Ghanni), weaving, boat making and repairing, river boat ferrying, manufacturing of agricultural implements, house repairing, earth cutting, and other various artisanry must have involved a significant number of hired workers. With the increasing emphasis on rural infrastructure development, a non-agricultural employment sector doubtlessly has increased in recent times in Bangladesh. One rural study recently reported that about 24 percent of the rural work force sells its labour mostly to the rural non-agricultural sector (Rahman and Islam, 1987). The same study noted that more than 28 percent of landless labourers are involved in non-agricultural wage employment. Analytical accounts of this work-force in rural areas may portray a different picture from the one presented by the proponents of 'landlord-bonded labour' theory.

5.1.5 Rural Credit Relations

By the end of 19th century, the era of Zamindars' extracting peasants' surpluses in the form of taxes started to wane. The Rent Act and the Tenancy Act of 1857 and 1885, respectively, sowed the seeds for the destruction of high landlordism over the following decades (see Islam,1975:60, Sen Gupta, 1974). At this point, history witnessed the rise and strengthening of the most damaging villains in the agrarian relations of Bengal, and one that overshadowed the waning 'rent offensive' of the Zamindars, namely, the rise of the

money lenders.[7] The early 20th century saw a proliferation of a rural credit system controlled by merchants, moneylenders, and Jotedars. In an effort to control the reign of creditors, the government intervened with a number of regulations, such as Usurious Loans Act, 1918; Bengal Money Lenders Act, 1934, revised in 1940; and Bengal Agricultural Debtors Act, 1936, revised in 1942.

The credit system that entered the rural agricultural commodity markets had a far reaching effect on the agrarian relations of production in Bangladesh. With the gradual intensification of agriculture, especially with cash crops such as jute, the peasantry entered into a phase of disintegration and differentiation in rural Bengal. By the end of 19th century, the peasantry was universally encouraged to produce jute which brought it into the realm of the international market. Because of the relatively higher return from jute, production of it became important in offseting the insufficient food supply produced on small farms. The jute market was controlled and financed by a long chain of middlemen,[8] while the poor peasants had to act individually as sellers. The small peasants had no capital to invest in the production of jute and there were no marketing cooperatives for the peasants. The result was that they could not produce without credit and were thus compelled to sell immediately after harvesting when prices were at their lowest. The need to sell their crops immediately after harvest was firstly, because they had to repay their loans; secondly, because they could not afford sufficient transportation and storage facility; and thirdly, because of their inability to bargain on the commodity market for better price.

According to Lenin (1964), usury will have a moderating effect on the differentiation of the peasantry (the credit system kept the peasant family alive and helped to reproduce the small peasant economy), therefore, will hinder development of capitalism in

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[7] It is not to be assumed that the incidence of money lending and peasants' indebtedness was a phenomenon which came to exist only in the British colonial period. It has been reported that peasants' indebtedness was widespread even in Mughal India (see Habib, 1969:43).

[8] The amount of imported funds needed to mobilize and finance the jute markets of Bengal was very significant (see Tomlinson, 1979).

agriculture. Early 20th century Bangladesh presents convincing evidence of the above argument. At that time, the majority of the actual producers were tenants under the Zamindary system in the northern part of the country, and in East Bengal, small peasant holdings were forced to produce cash crops for the world market. The traders, money-lenders, and landlord-moneylenders became a nexus in agrarian production and reproduction, and appropriated the surpluses produced by the peasants through various types of loans. In present day Bangladesh, the relationships between landowner/money lenders and the tenants/small peasants are not as pronounced as they were in the first half of the present century. If the existing credit relations are analyzed in a contemporary context, the argument that rural informal credit is an instrument of feudalistic exploitation, proposed by contemporary theorists, appears to be weak. In fact there is evidence of different kinds of credit behaviour in rural Bangladesh. Atiqur Rahman (1979) convincingly argued that landlords' credit relations with their tenants are not significant, and the usury is not a major source of their income. He notes an important aspect of credit relations in his study area was that "...a significant part of credit from non-institutional source is provided for production purposes without interest and without any apparent motive for appropriation of collateral" (Atiqur Rahman,1979:41, emphasis added).

5.2 CHANGING PERSPECTIVE AT THE END OF THE BRITISH RULE AND CONTEMPORARY BANGLADESH

Due to continued socio-political pressure during the 1930s and 1940s, the so-called Permanent Settlement came to an end through the enactment of the East Bengal State Acquisition and Tenancy Act (EBSATA) in 1950. This act finally eliminated the rent-collecting interests and brought the peasantry directly under state control. But the already impoverished peasantry could not recover from its vulnerability conditions. During the first half of the 20th century, the peasants' inability to pay taxes and rents and their inability of providing subsistence for their households, forced them into the money market. They

were compelled to produce commercial crops to raise cash and, in so doing, they had to borrow cash. Their inability to repay loans force them borrow even more, or to sell their assets or a portion of their meagre land holdings. In the face of market uncertainties and natural hazard risks, the poorest peasants were the most vulnerable victims, and this led to steady disintegration of the whole peasantry. A chilling portrait of this highly vulnerable peasantry was drawn by the Bengal Land Revenue Commission (BLRC) in 1940. According to this commission, 75 percent of total households surveyed were below the minimum subsistence level, which the BLRC considered as a minimum of five acres. The majority (46 percent) of these peasants owned less than two acres of land. According to another village survey in 1946, six years after the BLRC report, 85 percent lived below the subsistence level as defined by the BLRC (see Hossain, 1981, and Ishaque, 1946 cited in Rahman, 1983:5).

The most frequently quoted data on land distribution in Bangladesh is that of Land Occupancy Survey 1977 and 1978. Investigators used this source differently in categorizing landholding sizes in rural Bangladesh (see, Jannuzi and Peach, 1979, 1980; Devylder, 1983; Westergaard, 1985; Rahman, 1983; Wood, 1981). Despite variations in farm size definition, the common picture that emerges is that of the continuous disintegration of small peasant farms. Average farm size has decreased from 3.5 acres in 1960 to 2.8 acres in 1974 and to 2.00 acres in 1977 (Alamgir, 1978; 94-95, Wood, 1981:11). There was a continuous decline in tenure-sizes from 1960 onwards. The owner-tenant size registered more than 30 percent decline, while tenant farms declined 37.5 percent in acreage. Elaborating on the structural changes in tenure size, Wood noted that there was a 'dramatic decline in the number of holdings in the middle sized farms while the big farms (above 12 acre) remained more or less unchanged' (Wood,1981:12).

The proportion of landless households in the rural area progressively increased from 14 percent in 1951, to 18 percent in 1961, to 38 percent in 1973-74, and to about 50 percent in 1977 (Alamgir, 1978:101 and Land Occupancy Survey, 1977). If the size

category of below half acre, as defined by the Land Occupancy Survey, is extended to cover farm size below 1.00 acre, the proportion of landless household rises to about 62 percent. This figure jumps to 77 percent when farms below two acres are considered as functionally landless. Moreover, most peasant holdings below two acres are frequently forced to make distress sales (i.e., of crops, assets, land) or to mortgage their land. A World Bank report (1983) estimates that the land-owning strata in Bangladesh is:- (a) six percent rural household with landholding more than five acres controlling 45 percent of cultivable land, (b) 16 percent household with farm size between 2.5 and 5 acres controlling about 34 percent of the land, (c) 30 percent household controlling about 20 percent of the land in farm size between 0.5 and 2 acres and (d) those about 50 percent household controlling about 3 percent of cultivable land in size category of 0 to 0.5 acres of land. If a farm size of six acres can be considered as a viable farm, as will be suggested in Chapter 6, the data from the World Bank report suggests that 94 percent of the agricultural population is living below subsistence level.

As has been noted above, the usual condition in the northern part of British Bengal was that a Talukdar would have controlled a very large tract of land, and the adhiars would be tenant-cultivators on a share-cropping basis. In such cases, the Talukdar often made decisions about production. In contrast, in present day Bangladesh, land-owning peasants are also involved in share-cropping. The context in which share-cropping continues in contemporary Bangladesh is different from the one in the British colonial period. While share-cropping in some part of the British Bengal may be termed as a feudal instrument of exploitation, this is not true in contemporary Bangladesh.

Despite the drastic change brought about by EBSATA, the vulnerability conditions of peasants in contemporary Bangladesh has not changed, rather, it has been intensified. What EBSATA did was to eliminate the intermediate rent-collectors (Zamindars and Talukdars). In fact, no land regulation can change or, for that matter, turn the already fragmented and ever decreasing sizes of holdings to viable farm sizes for all the concerned

peasants. This is quite impossible given that the country has too many peasants and too little land. Obviously, a practical reform would be to relieve agriculture from bearing the burden of having to support the whole peasantry. The agricultural labour force would serve agriculture better by creating a real demand for agricultural production, were it to be turned into an industrial labour force at a feasible scale of industrialization.

As can be seen from the above discussion, farm sizes are becoming smaller with a consequent increase in landlessness. In terms of production, most of the peasant farms are quite incapable of maintaining a bare subsistence and thus lacking the power of persistence in the face of any socio-economic or natural hazards. As a means of production, the possession of an insignificant amount of land is meaningless for the majority of the peasants in Bangladesh. This meagre ownership of land does not put smallholding peasants qualitatively away from landless labourers. The ownership of insignificant amount of land (means of production) does not put a peasant into the same level of owners of substantial means of production, where a farm is capable of producing surplus or, at least, subsistence. Here, separation of producers from the means of production is qualitative and it is useless to identify the impoverished peasantry as owners of means of production. This ownership has no practical implications in the agrarian relations of production, except itself being exploited.

The traditional control of rural power is distinctly in transition. Traditionally the political power was land based in the rural areas. Village headman and local Talukdars were usually the people who appeared prominently in the political scene at the union council/board or village level Panchayat. In contemporary Bangladesh, rural power is no more singularly land-based but significantly originates from diversified professions. It is very common to find school teachers, political activists, traders, rice mill owners, upazilla contractors, leaders of the Association of the Landless competing and holding office in the local level political institutions. Under such conditions, it would be very blunt to define relations of production as emanating from landownership alone, where the perpetrators are

seen as subjugators of the labourers and marginal peasants for political interests through so-called 'Patron-Client' relations. However, the issue of share-cropping, labour and credit relations in contemporary Bangladesh will be taken up in Chapter 6 in more detail.

Increasing resource polarization and differentiation process as shown, among others, by Rahman (1986) demonstrate that a trend in capitalist development has already been set in Bangladesh. This contention may appear speculative in the absence of concrete evidence, but in light of demonstrated public policies and strategies of agricultural development, existing free rural wage labour (see Chapter 6), recently privatized input market, and increasing technological innovations it can be proposed that capitalistic development in Bangladesh agriculture has taken a firm root. It can be argued that capitalism in Bangladesh is in an earlier stage of development process. One may define it as a nascent capitalism. However, more investigations are needed to examine the stage of capitalistic development Bangladesh is presently going through.

CHAPTER VI

IMPACT OF RIVERBANK EROSION AND SOCIAL AND ECONOMIC CONTEXT OF IMPOVERISHMENT IN THE STUDY AREA

To understand peasants' adjustment strategies to natural hazard, it is necessary to place the study-population into its proper economic and social context. Once the socio-economic context in which the peasants operate is properly outlined and analyzed, it becomes significantly simpler to understand their perception of natural hazard, behaviour, and strategies of the inhabitants in hazard-prone areas. In this respect this chapter will deal with the following aspects:

- household sustenance;
- access to, and command over means of production;
- alternative access to land;
- labour and credit relations; and
- impact of natural hazards on agrarian organization.

The two districts containing the study areas vary in their socio-economic conditions. The district of Rangpur is one of the most impoverished districts in Bangladesh, while the district of Pabna is slightly better off. It is interesting to note that whenever a natural hazard or famine hits the country, Rangpur often looms large as a hard hit area. In the British colonial period, the district showed its peculiarity in matters of agricultural social relations. For example, in the 1870s and 1880s Rangpur remained very peaceful while the peasants' revolt swept through almost the whole of east and central Bengal.[1] However, while most of East Bengal remained silent in the 1940s, the district of Rangpur, along with a few other northern districts, was swept with a violent movement of the sharecroppers known as Tebhaga Sangram.

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[1] In fact, the great Peasants' Revolt of 1870s and 1880s had been started by a sort of agrarian league formed by the Occupancy Ryats of Sirajganj Sub-division of Pabna District (for details see Sen Gupta (1974).

The contemporary relationships between peasants and the land in the study area has become simpler than in the British period. It is a relationship between direct owners and non-owners. Given the small size of the average holdings, it appears that there exists a homogeneity in land ownership. But among these small peasant farms, their viability is solely determined by the amount of land a household operates. In this respect it is worthwhile to note what it means for a farmer to own and operate a holding of between 1-2 acres in size. It is also necessary to analyze what the significance is of different farm-sizes to different peasant groups. In doing so, it is necessary to first determine how much land a peasant household needs to survive and reproduce.

6.1 CONCEPT OF VIABILITY OF FARMING

In order to survive and reproduce, a household needs a minimum standard of living (MSL). The concept of a minimum standard of living is arbitrary, perhaps because of the variable nature of social objectives, preferences, and availability of goods and services to different groups. However, to survive a household requires a minimum of food, clothing, shelter, and medicine. These basic needs are what Harriss (1982) called "biological" needs. According to Harriss the "...final definition of livelihood is biological". He further notes that "...in practice livelihood is socially defined and different groups and individuals have different ideas as to what constitutes a minimum acceptable standard". One report defined MSL for a family as 'adequate food, shelter, clothing, and certain household equipment and furniture; and safe drinking water, sanitation, public transportation, and health and educational facilities' (ILO, 1977). Streeten and Burki (1978) hold that,

> "...at the lowest level, basic needs are those that have to be met for bare survival.- at the next level, basic needs may be defined as those that have to be met for continued survival and comprise a minimum of food and water, protection from fatal diseases and adequate shelter. At the third level, the satisfaction of basic needs covers continued productive survival and in addition protection from debilitating diseases, more food and some education".

However, in order to continue on farming, peasant households not only need the "biological" basics, but also need to reproduce and cushion themselves against destabilizing effects of nature, the society, and the economy. A workable definition of a viable farm may be put forward here. Once this is done, any peasant household may be scaled against such a definition to see the position it occupies in the agrarian social structure of the study area. A peasant household basically needs to produce a certain amount of agricultural output for:

- maintaining a minimum standard of living (MSL),
- continuing in the occupation (ability to reproduce), and
- cushioning against destabilizing effects of socio-economic and natural hazards.

Those farms which can afford to maintain the above conditions at a given level may be termed as viable farms. Estimates can be made of what constitutes a "viable farm" in the study area from the basic nutritional requirements of a household and the basic requirements to cover the reproduction aspects and a possible amount of insurance against emergencies.

Since rice is the principle agricultural produce, the strength of a farm household is measured in terms of the amount of rice it produces in a given season. Hence, a rice equivalent of a 'viable farm' may be calculated from the paddy production statistics of the study area. First, on the biological aspect, it has been estimated by FAO that an average person requires 2,150 calories per day, while the Nutritional Survey of Rural Bangladesh (NSRB) estimated in 1975-76 that the average per capita calorie requirement is 2,248 for all ages and both sexes (Huq, 1984: 63).

According to NSRB figure, an average farm household of six members would need 13,488 calorie per day to fulfil the basic biological requirements. The rice equivalent of this amount of calorie is about 35.5 mounds of milled rice per year[2]. This amount of rice

[2] A mound is equal to 40 seers and a seer equals approximately a kilogram.

requires about 54 mounds of paddy. However, rice alone cannot provide all the nutritional needs of a human being. Moreover, usually rice is not eaten alone; it requires some kind of curry to go with it. It may appear arbitrary to put forward any estimate of additional nutritional requirements of a rural household, but as a working hypothesis, a minimum level of such estimate and its rice equivalent is proposed here. The additional requirements (curry) is based on discussions with the local people about their food habits. Based on local food practices and market prices, it is estimated that an average household would need about 2 mounds 10 seers of Dal (Lentils) per year at the rate of one fourth seer of Dal per day. This amount of Dal would cost the household about Tk. 1,100 per year, which is equivalent to the cost of 7.3 mds of paddy at the rate of Tk. 150 per mds (1985 local price). The barest minimum amount of fish would cost Tk.5 per day, which is Tk.1,825 per year. This is equivalent to the cost of about 12.2 mds of paddy.

6.2 VIABILITY OF OPERATIONAL HOLDINGS

From the above estimates, it can be seen that a peasant household in the study area would need to produce about 75 mds of paddy per year in order to maintain a nutritional requirement at an adequate level. In terms of other basic needs, only clothing for the household is considered here. The approximate cost of clothes that a household needs throughout a year is estimated to be Tk. 1,780, which is equivalent of about 12 mds of paddy[3]. This brings the total amount of paddy that needs to be produced to about 86 mds (3.20 tons at the rate of 27 mds a ton). In order to be able to produce this amount of paddy on a year to year basis, a peasant household needs to procure some means of production as well. The amount of investment, or for that matter the amount of paddy that can generate the investment, depends upon the size of the farm, types and pattern of cropping, draughts

[3] Annual cost of clothes for a peasant household has been estimated on the basis of 1985 market prices as follows: (1) for a male household head, Tk, 210 for 3 lungi at the rate of Tk. 70 each, Tk. 180 for 3 shirts at the rate of Tk. 60 each, Tk. 60 for 3 ganji at the rate of Tk. 20 each, Tk. 80 for winter clothes (Chadder), (2) for a housewife, Tk. 300 for 3 sarees at the rate of Tk. 100 each, Tk.90 for 3 blouses at the rate of Tk. 30 each, Tk. 180 for 3 petty coats at the rate of Tk. 60 each, Tk. 80 for a winter clothes (Chadder), (3) approximately Tk. 600 for childrens clothes for 4.

animal, seeds, fertilizer and pesticides, and labour. Estimates of production costs of paddy were made by Hossain for the year 1984-85 (1989: Table 21:53). His estimates show that the cash cost of cultivating an acre of traditional paddy would be Tk.799, or Tk. 1,226 per metric ton. In estimating cash cost, Hossain included the cost of seed, fertilizer, manure, irrigation, pesticides, and hired labour. He also estimated total cost by imputing value of family and animal labour (Tk.2,425 per acre and Tk.3,720 per metric ton of paddy; Hossain, 1989:52). However, if only the cash cost of traditional variety is considered, a farmer would need Tk.3,923 to produce 86 mds (3.2 tons), which is equal to the price of 26 mds (about a ton) of paddy. Altogether, a farmer would need to produce 112 mds (or 4.15 tons) of paddy to survive and to reproduce.

Given the average paddy productivity in Bangladesh of 0.65 tons per acre,[4] which is about 18 mds, a farmer would need more than 6 acres of cultivable land to be considered as a viable farm.

Table 6.1: Distribution of Operational holdings according to size categories (in Acres).

1. Kazipur				2. Chilmari		
Operational Holding	% of HH	Mean amount land	% of land	% of HH	Mean amount land	% of land
0-0.50	49.92	0.14	5.84	56.85	0.10	2.95
o.51-2.00	30.05	1.08	26.87	19.58	1.12	11.47
2.01-5.00	15.67	2.96	38.36	14.73	3.12	24.10
5.01-7.50	2.58	5.94	12.68	3.64	6.16	11.75
7.51+	1.78	11.06	16.24	5.20	18.24	49.73
	n=619 n=748.80 mean farm size=1.21			n=577 n=1100.34 mean farm size=1.91		

[4] Hossain cites both Government statistics and BIDS/IFPRI survey results to show the average of all seasons (Aus, Aman, and Boro) of paddy production to be 0.65 tons per acre (Hossain, Mahabub, 1989).

The picture appears very gloomy if the data in Table 6.1 of the distribution of operational holdings are examined. The table shows that a little more than 4 percent and about 9 percent of farms in Kazipur and Chilmari, respectively, qualify as viable farms. However, this is not surprising in a situation where more than 85 percent of the people live below the poverty level. This definition of a viable farm, moreover, is a modest one. To be more realistic in defining a viable farm, one should not overlook the importance of education, health care, housing, transport, recreation, and social obligations for reciprocity in the rural areas (see Wolf 1966: 7-10). Wolf described the reproductive and other basic need requirements as "replacement fund", and necessary surpluses peasants need to produce as "social fund", and "funds for rents" The cost of these items will certainly increase the size of a viable farm. But for lack of information on the cost of these items, they were not considered in the present study.

If six acres is considered as an indication of a viable farm, it can be seen that about 96 percent of the farms in Kazipur and 91 percent of the farms in Chilmari fall drastically short of being viable (Table 6.1). The greater majority of farms operate at a very marginal condition. The reason why this population clings to farming is simple, namely, there are few, if any, alternative opportunities available for peasants. However, peasants do adopt various informal sector activities to supplement their income. Thus, they turn to sharecropping, mortgaging property, off-farm activities such as rickshaw peddling, selling labour in temporary and low-paid non-agricultural works, and indebtedness. Or they simply starve. Starvation is not an uncommon consequence of the condition prevailing for the most marginal group of peasants.

6.3 LANDOWNERSHIP AND IMPACT OF RIVERBANK EROSION

Table 6.2 shows the substantial difference in landownership in Kazipur and Chilmari. The distribution is highly skewed in Chilmari, where 7.2 percent of the households with more than 5 acres own about 66 percent of the total land. Average land

ownership per household is also substantially higher in Chilmari compared to Kazipur. In Kazipur 37 percent of the household with farm sizes between 0.51 and 5.99 acres own 63 percent of the total land.

Table 6.2: Distribution of Land-Ownership (acres)*

(1) Kazipur

Landownership category(acres)	% of HH	% of Land	Mean land/HH	%of HH	mean amount of land lost
landless	38.45	0.00	0.00	158	1.95
0.1-0.50	21.49	5.58	0.25	61	1.42
0.51-2.00	26.65	31.09	1.14	85	2.88
2.01-5.00	10.18	31.54	3.03	34	5.38
5.01-7.50	1.62	10.34	6.26	3	27.28
7.51+	1.62	21.45	13.00	9	33.27
	n=619	n=605.75	n=352		

mean farm size = 0.98
mean farm size = 1.59 (excluding landless) rs = 0.46

(2) Chilmari

Landownership category(acres)	% of HH	% of Land	Mean land/HH	%of HH	mean amount of land lost
landless	57.20	0.00	0.00	173	7.27
0.1-0.50	9.07	1.62	0.27	17	5.50
0.51-2.00	16.44	11.61	1.06	38	5.96
2.01-5.00	10.10	21.09	3.13	32	10.55
5.01-7.50	3.60	15.69	6.54	13	8.83
7.51+	3.60	49.99	20.83	16	14.17
	n=584	n=875.10		n=289	

mean farm size = 1.50
mean farm size = 3.50 (excluding landless) rs = 0.17

* Landownership calculations are based on amount of land owned and used, plus the amount of land owned but leased and/or sharecropped out.

In order to see if land lost due to riverbank erosion is a prime determinant of farm size, a simple bivariate analysis was undertaken (Spearman's coefficient of correlation). It was found that the impact of RBE is moderate in determining farm size in Kazipur (rs= 0.46). This relationship is more random in Chilmari (rs = 0.17). This is also supported by a regression calculation as follows (Figures in parentheses are T values):

Kazipur FS= 204.67+0.64ST+0.10EL $R^2 = 0.84$
(3.57) (2.65)

Chilmari FS= -331.34+7.50ST+0.22EL $R^2 = 0.75$
(2.88) (1.91)

FS = Landownership in legal rights
ST = Amount of land rented-out on Sharecropping.
EL = Land lost due to riverbank erosion

Keeping in mind the fact that the relationship expressed by the regression analysis is not causal, rather it is functional, it can be said that the larger landowning farms are the greater losers of land. The relationship appears statistically significant in Kazipur at 0.1 percent probability of error, but it is not significant in Chilmari. This is congruent to the previous argument that impact of RBE on land ownership is random in Chilmari.

6.4 ALTERNATIVE ACCESS TO LAND: SHARE CROPPING AND LEASING

Renting land for sharecropping is one way to access land. Both renting-in and renting-out land are survival strategies for most people, especially for those who own farms below a viable size. Those who rent-in land do so to supplement their income. Those who rent-in land for sharecropping are usually the land-poor, and those who rent-out their land are land rich. One study points out that it is a normal practice for a land-poor farmer to rent-in land and for a rich farmer to rent-out (Hossain, 1986:28). Hossain noted that those who have farm sizes of less than 5 acres tend to take land as sharecropping and those who are richer (having more than 5 acres) usually rent-out a portion of their land.

But it was also found that land poor peasants also rent-out some portion of their land because they themselves cannot afford to cultivate it for lack of necessary inputs.

Table 6.3: Sharecropping and mortgages in the study Area (Land ownership in decimals)

A.Sharecropping-out	Kazipur			Chilmari		
Landownership Category	% HH	Mean Land	% Land	% HH	Mean Land	% Land
1-50	22.92	0.22	3.01	18.75	0.25	3.95
51-200	27.08	0.62	10.00	31.25	0.52	13.77
201-500	29.16	0.90	15.75	0.00	0.00	0.00
501-750	6.25	2.13	7.98	25.00	1.22	25.75
751+	14.58	7.25	63.26	25.00	2.68	56.52
	n=48 7.75%		n=80.18 acres	n=16 2.74%		n=18.95 acres

B. Mortgaged-out	Kazipur			Chilmari		
Landownership Category	% HH	Mean Land	% Land	% HH	Mean Land	% Land
1-50	19.94	15	5.72	21.87	21	8.31
51-200	51.85	37	38.19	43.75	39	30.91
201-500	21.29	79	33.54	20.31	80	29.17
501-750	5.55	165	18.24	9.37	52	8.75
751+	1.85	117	4.29	4.69	272	22.85
	n=108 17.45%		n=54.33 acres	n=64 10.96%		n=35.75acres

With the introduction of modern High Yielding Variety (HYV) paddy, a phenomenon of reverse renting is also found in rural areas (Wood, 1981). In this situation rich farmers rent-in land for cultivation of more profitable HYV. The cost of production being too high, a poor or middle farmer often cannot cultivate HYV. It is more profitable to get a share of the high yielding paddy without investing anything by renting-out. Hossain (1986: 27-28) noted a declining trend in renting-out land in rich farm households due to HYV innovation in agriculture.

However, it is important to note that the overall proportion of those renting-out land in the study area is very insignificant. Only about 8 percent of all households surveyed in Kazipur and about 3 percent in Chilmari are found to let out land on a sharecropping basis (Table 6.3). The figures for those who take land on sharecropping is comparatively higher in both Kazipur and Chilmari. Table 6.4 shows that the proportion of those who take-in sharecropping land is about 21 percent of all households surveyed. The proportion of those who rent land for sharecropping are concentrated in the categories below 5 acres (97 percent renting-in about 95 percent of the available land). It was found that rich farmers also rent-in land in both Kazipur (3 percent farmers renting-in 4.3 percent land) and Chilmari (7 percent renting-in 4.7 percent land). It appears that the mean amount of land available for sharecropping in Chilmari is higher than Kazipur. The mean amount of land rented-in per household is also higher in Chilmari.

It is interesting to note from Tables 6.3 and 6.4 that the proportion of both sharecropping-in and -out are concentrated within the farm sizes of 5 acres or less. In Kazipur, only about 21 percent of the households with more than 5 acres of land let-out land on sharecrop basis. The corresponding figure for Chilmari is higher, accounting for 50 percent. The proportion of land let-out by these categories of landowners is significantly higher. About 21 percent of households with more than 5 acres let-out about 71 percent of the total sharecropped land in Kazipur. The corresponding figures for Chilmari is 50 percent and 82 percent. Significant proportion of households in the less than 5 acres categories let out an insignificant amount of land. Table 6.3 shows that 71 percent of households let-out about 29 percent of total sharecropped land in Kazipur, while in Chilmari the proportion is 50 and 18 respectively.

The amount of land available in the mortgaged market is offered in higher proportion by those who own less than a viable farm. About 77 percent of mortgaged land is mortgaged-out by 93 percent of those who have less than 5 acres in Kazipur, while in

Table 6.4: Accessing Land through Sharecropping and Mortgaging (Kot-in)
(Land ownership in decimals)

A. Sharecropping-in

	(1) Kazipur			(2) Chilmari		
ownership Category	% HH	Mean Land	% Land	% HH	Mean Land	% Land
0	20.93	0.67	24.47	35.54	1.18	31.41
1-50	30.23	0.39	20.66	18.18	0.70	9.48
51-200	32.56	0.55	31.42	27.27	2.15	43.85
201-500	13.18	0.83	19.13	12.39	1.14	10.59
501-750	1.55	0.59	1.60	4.13	0.97	3.00
751+	1.55	1.00	2.72	2.48	0.91	1.69
	n=129 20.84%	n=73.56acres		n=121 20.72%	n=161.88acres	

B. Mortgage

	(1) Kazipur			(2) Chilmari		
ownership Category	% HH	Mean Land	% Land	% HH	Mean Land	% Land
0	21.12	59	16.06	29.55	52	19.90
1-50	23.60	60	18.21	9.10	65	7.65
51-200	37.27	74	35.52	29.55	38	14.27
201-500	14.28	104	19.18	11.36	171	25.12
501-750	2.48	284	9.14	9.10	83	9.88
751+	1.24	117	1.88	11.36	158	23.18
	n=161 26%	n=124.15 acres		n=44 7.53%	n=34.12 acres	

Chilmari the figures are about 68 percent and about 86 percent respectively (Table 6.3). The highest concentration of those who mortgaged-out their land is found within 0.51-2.00 and 2.01-5.00 acres categories. Combined households within these groups amounts to 73.1 percent in Kazipur and 64.1 percent in Chilmari (Table 6.3). It is interesting to note that 7.4 percent and 14.1 percent of households within 5.0 to 7.5 and over 7.51 acre sizes mortgaged about 22.5 percent and 31.6 percent of the total mortgaged land in Kazipur and Chilmari respectively. The reasons why both groups mortgage-out land are different and often opposite. One group does so as a helpless survival strategy and the other to improve on their present condition. Wood (1981:12-13) found that rich farmers sometimes mortgage land only to generate cash flow for the purpose of more gainful investment. It may be mentioned here that the richer farmers find it more profitable to invest in non-agricultural ventures such as rice mills, buying and selling of agricultural commodities, and various other forms of trading. The reason for mortgaging-out land for the other category (those with less than 5 acres) may be considered as a survival strategy. Invariably, the cash generated through mortgaging is used to buy daily necessities, agricultural inputs, house repairs, and medical services.

Despite the fact that the proportion of sharecroppers in the study area is comparable to the national average (about 21 percent in both Kazipur and Chilmari), the proportion of those who let-out land on a sharecropping basis is insignificant both in Kazipur (7.8 percent) and Chilmari (2.7 percent). However, the proportion of land that is let-out is significantly higher with those who own more than 5 acres; the proportion being 71.2 percent in Kazipur and 82.3 percent in Chilmari (Table 6.3). The amount of land that is let-out on a sharecropping basis is significantly higher in Kazipur (80.2 acres) compared to Chilmari (18.9 acres). Corresponding figures of mortgages are also significant.

An important aspect of peasant farming is that holdings are fragmented and scattered in smaller parcels all over and beyond a village. This fragmentation of peasants' holdings is one of the reason for putting land into sharecropping. It is often impossible to

operate scattered parcels of a farm with only one or two working members of a household. Placing these parcels into sharecropping is a viable option for a peasant because operating costs for these parcels are higher. However, the apparent distinction between land-ownerships and other controls over land described above does not really explain the social process of production by which agrarian classes may be distinguished.

6.5 CONCEPTS AND EMPIRICAL ANALYSIS OF TENANCY

What is the theoretical basis of the incidence of share tenancy? Is share tenancy and mortgage an instrument of feudal or semi-feudal exploitation? Do natural hazards such as riverbank erosion effect the incidence of tenancy? In recent years a number of conceptual postulations were put forward in order to explain the incidence of tenancy. Cheung (1969) studied agriculture tenancy contracts in Taiwan, and found that tenancy is determined by the level of natural risk involved. A farmer would shift his risks entirely by putting land on fixed rent and partially by letting-out land on a crop-sharing basis. Bardhan and Srinivasan (1971) incorporated wage rate and technological innovations to explain tenancy. They noted a positive association between wage-rates and the incidence of share tenancy in West Bengal. In a Bangladesh study, Hossain (1978) notes that none of these factors play a significant role in determining tenancy. He found that land and labour available in a farming household is more important in determining the incidence of share tenancy.

An attempt is made in the present study to observe the relationships between natural hazard risk and incidence of land-renting. From a behavioural perspective, a farmer would avert risk by shifting it to a tenant if he apprehends loss of crop or even of land due to a natural hazard such as riverbank erosion. If this is the case, then it can be expected that the more of one's land that is exposed to riverbank erosion, the higher will be the incidence of renting-out (leasing-out and crop-sharing). An ordinary leastsquare method of regression analysis has been used to analyze the relationship between natural hazard risk and the amount of land that is rented out either on a crop-sharing or lease-out (Kot) basis. In this

regard a positive relationship is expected between the risk variable and land rented-out. However, the incidence of tenancy and land leasing cannot be only a function of natural risk. A number of other variables relating to the agrarian structure may influence the incidence. Hence, structural variables such as farm size, family labour, land fragmentations were incorporated into the following model:

$$T= b_0+b_1R+b_2F+b_3W+b_4P+u$$

- where, T is the incidence of land rented-out;
- R is the natural risk factor, measured in terms of amount of land on the riverbank and hence the potential erosion and flooding risk;
- F is the farm size, determined on the basis of the amount of land owned and used, and the amount that is rented-out;
- W is the number of family workers contributing to household income.
- P is the number of fragmented land parcels, and
- u is the stochastic disturbance term.

It may be stated that the higher the amount of land in the potential risk zone the higher will be the amount rented-out. Similarly, for Hossain's argument to hold, the higher the farm size the higher will be the amount rented-out. This is because the larger farms induce higher cost of supervision and need a higher number of working hands.

For the same reason, the number of family workers available in the household will influence the amount of land rented. Farms are invariably fragmented into several parcels in the rural areas. It may be expected that an ever increasing number of parcels will cause a problem of cultivation and supervision. Therefore, a farmer will tend to rent-out at least those parcels which are located away from the farmsteads. Location of parcels in terms of distance from the farmstead would have been a better indicator in this case but such information is not available in the present data base. Instead, a number of fragments were used as an alternative. In this regard, it is expected that the greater the number of parcels, the higher will be the amount of land rented-out.

For the above arguments to hold true, the regression coefficients must be positive for the independent variables R, F, and P , and negative for W.

Results of regression estimates:

Kazipur: T= 255.24-0.21R+0.70F-67.82W-8.95P R^2=0.94
(-2.04) (6.55) (-6.22) (-6.20)

Figures in the parentheses are T values.

In this calculation for Kazipur, it appears that the relationship between tenancy (T) and natural risk (R) is negative, while there is a positive relationship with farm size. As expected, the relationship between tenancy and family workers is inverse, implying that renting out increases with the decrease in number of family workers. Contrary to what has been expected, the value of the coefficient for land fragmentation is negative. All of these values are statistically significant at 1 percent probability of error, except for the natural risk factor (R). The regression coefficient for R is negative, implying inverse relationship, but this value is not significant at even 5 percent probability of error indicated by the T value (in parenthesis). Response for the risk variable was not sufficient in the case of Chilmari, hence coefficients for the concerned variables could not be calculated. Instead, an alternative variable, amount of land lost due to the RBE (D), was used to compare the condition in Chilmari. The regression estimates resulted as follows:

1. Kazipur T=230.23+0.02D+0.99F-90.67W-12.54P R^2=0.90
(0.50) (5.80) (-4.18) (-2.39)
2. Chilmari T=9.09-0.04D-0.22F+41.81W+7.95P R^2=0.96
(-3.17) (-1.39) (+2.12) (0.88)

The results in the second calculation for Kazipur reflects the first one for farm size, family workers and land fragmentation. Although natural risk (D) appears positive here, the coefficient is very close to 0, which is not significant at even 5 percent probability of error. This suggests that probably the relationship is not profound enough to have any influence in reality. The negative relationship between tenancy and land fragmentation is

perhaps due to the soil condition that precludes intensive cultivation in Chilmari, that causes tenants less interest on renting land. However, this relationship needs further investigation. In Chilmari, the average number of parcels is higher than Kazipur and the results of the regression estimates for Chilmari are rather interesting. Here, the risk component (D) and farm size (F) shows inverse relations to tenancy, while family workers (W) and land fragmentations (P) are positively related to tenancy. But none of the variations expressed here are significant at 5 percent probability of error. Hence it may not be much out of the way to conclude that the situation in Chilmari is similar to Kazipur. It is safe to conclude, however, that the incidence of tenancy is more influenced by landownership size and family workers as reflected in the following estimates (figures in parentheses are T values):

Kazipur	T=70.31+0.86F-55.04W (13.37) (-3.43)	R^2=0.82
Chilmari	T=33.01+0.23F-16.52W (9.34) (-2.13)	R^2=0.88

These estimates are statistically significant at 1 percent probability of error, except for (W) in Chilmari, where it is significant at 5 percent probability of error. These findings are congruent to what Hossain (1978) argued.

6.6 LABOUR RELATIONS

It is expected that those farmers who are considered viable will employ hired labour to operate their farms. It may also be expected that they will employ the highest number of landless labourers. At particular stages of cultivation, every farmer needs extra hands to work on the farm. Important studies (for example, Hossain, 1986:12) have shown that the smaller farms are intensive and efficient in their labour use, and basically for this reason, there exists an inverse relationship between farm size and productivity. Small farms mostly

use family labour and the opportunity cost of family labour is lower compared to hired labour used in richer farms.

In the present study, it is found that the proportions of both households and family labourers are highest in the farm-size category of less than 2 acres. About 80 percent of the households with less than 2 acres of land use 74.2 percent of the family labourers in Kazipur and about 76 percent households uses about 67 percent of family labourers in Chilmari (Table 6.5). However, the mean number of family workers is higher in the richer farm categories. This is consistent with the fact that the richer the farm in terms of land ownership, the larger is the household size (see Table 6.6).

The other type of farm labourers in the study area consists of casual or daily wage labourers, and permanently hired labourers. The permanently hired labourers are employed on a yearly basis and usually reside and take food in the concerned household. Their jobs are more varied than those of the casual labourers. A permanent labourer performs a variety of jobs besides working in the fields with casual labourers. Their responsibilities extend from household chores to harvesting, carrying paddy to storage, tending cattle, etc. An important segment of the agricultural labour force is casual labour, which is usually hired to perform specific work on the farm such as tilling, transplanting, weeding, harvesting, threshing, etc. Casual labourers are employed on a daily wage basis.

The distribution pattern of households hiring labourers in the study area is shown in Table 6.7. It is interesting to note that 79.3 percent of those who reported hiring casual labour are those who operate farms between 0.51-2.00 and 2.01-5.00 acres in Kazipur, and the corresponding proportion in Chilmari is 68.5 percent. Considering the percentages of all categories of households, it appears that the proportion of those hiring wage labour increases with the increase of operational holding size in both Kazipur and Chilmari. While most of the rich farmers hire wage labour, the proportion drops to 50 percent with farm size of 0.51-2.00 acres, and to about 7.5 and 4 percent for farms in the 0-0.5 acre category in Kazipur and Chilmari respectively (Table 6.7). Table 6.7 also shows that the mean

annual number of wage labourers hired also increases dramatically with the increase in the size of operational holdings.

Table 6.5: Distribution of Family Labour and Households Sizes.

A: Family members working for the households (unpaid workers)

	(1) Kazipur			(2) Chilmari		
operational holding	% of HH	Mean # worker	% of worker	% of HH	Mean # worker	% of worker
0-50	49.51	1.86	43.68	56.25	1.75	46.98
51-200	30.29	2.13	30.51	19.64	2.14	19.96
201-500	15.79	2.45	18.34	15.18	2.66	19.12
501-750	2.61	2.94	3.62	3.57	3.10	5.27
751+	1.79	4.54	3.85	5.36	3.40	8.66
	n=614		n=1298	n=560		n=1177

Table 6.6: Distribution of Household Sizes

	(1) Kazipur			(2) Chilmari		
Landowning category	% of HH	Mean HH size	% of HH members	% of HH	Mean HH size	% of HH members
0	38.45	5.00	33.42	57.19	4.77	46.69
1-50	21.48	5.03	18.78	9.07	5.51	8.58
51-200	26.67	6.28	29.08	16.44	5.95	16.78
201-500	10.18	7.57	13.39	10.10	8.24	14.28
501-750	1.62	8.30	2.23	3.60	10.33	6.38
751+	1.62	10.70	3.00	3.60	11.81	7.29
	n=619	X=5.75	n=3562	n=584	X=5.83	n=3403

Table 6.7: Distribution of Households Hiring Permanent and Casual Labourers.

A: Casual Labourers

(1) Kazipur			(2) Chilmari	
Operational holding category	% of HH	Mean # of labourer	% of HH	Mean # of labourer
0-50	10.36	14.91	6.70	5.00
51-200	41.89	33.65	29.38	25.72
201-500	37.39	62.67	39.17	77.80
501-750	5.40	165.83	10.31	146.25
751+	4.95	243.18	14.43	281.78
	n=222 35.86% of 619		n=194 33.22% of 584	

B: Permanent Labourers

Operational holding category	% of HH	Mean # of labourers	% of HH	Mean # of labourers
0-50	6.12	1.00	0.00	0.00
51-200	20.41	1.10	4.35	1.00
201-500	49.00	1.25	39.13	1.61
501-750	14.28	1.14	19.56	1.11
751+	10.20	2.20	36.95	2.12
	n=49 7.92% of 619		n=46 7.88% of 584	

C: Wages Paid

Operational Holding category	% of HH	% of Total HH	Mean yearly wages	% of wages	% of HH	% of total HH	Mean yearly wages	% of wages
0-50	10.76	7.44	335.87	3.16	6.70	3.88	93.69	0.44
51-200	41.70	50.00	737.95	26.91	29.38	50.44	432.11	8.98
201-500	37.22	85.60	1435.28	46.70	39.18	89.41	1292.83	35.82
501-750	5.38	75.00	1745.83	8.21	10.31	95.24	1931.25	14.08
751+	4.93	100.00	3482.73	15.02	14.43	93.33	3983.93	40.67
	n=223 36.03% of 619			n=194 33.22% of 584				

However, an important point that should be mentioned here is that only about a third of all households in the study areas hire wage labour. In other words, 64 percent of the total households in Kazipur and 67 percent in Chilmari do not employ any wage labourers. It is often reported that agricultural labour in Bangladesh works in a state of bonded labour and that this bonded labour relationship makes Bangladesh a semi-feudal society (Zaman 1988: 87-93).

These reports are usually based on an hypothesis of 'patron-client' relationship between labourers and their employers (Abdullah,et al.,1976: 211; Alamgir,1978: 102-112; Hossain,1986:35-36; Jahangir,1979: 135; Rahman,1986: 164-166). According to this hypothesis, sharecropping is also based on a dependent relationship between the land owner and the person renting it as a sharecropper. It is held in these contentions that the labour and sharecroppers are bound to become obedient clientele to those who offer patronage through employment and access to land. It is contended here that the problem propounded in the concept of 'patron-client' relations is more apparent than real.

The issue of patron-client relations in the sphere of sharecropping is not important in terms of its' significance of incidence. First, the amount of land involved in such an arrangement is not significant enough to warrant such special characterization (Table 6.3 and 6.4). It is also noted that land-rich people also rent-in land as sharecroppers. A significant proportion of sharecroppers are not landless, but are middle range farmers. In an upazilla or a village, there would be one or two persons who may be involved in local or national politics who may need a clientele to support their political endeavors. However, not all rich people need or demand a clientele through patronages. If there exists a demand for a clientele by the few rich people involved in politics, then it becomes pertinent to ask how much land and employment they can offer as 'patronage' to the huge number of existing clients.

It can be seen that a very insignificant number of permanently hired labourers (the so-called bonded labourers) are actually involved with a very negligible number of

households in both Kazipur and Chilmari (Table 6.7). The usual practice of hiring a permanent worker is on a year to year basis. In most cases, these labourers are minors below the age of 15 years. They may continue year after year with the same households, not so much because they are bonded by reason of obligations, but rather because this is the only employment they can find. The situation might be different if there was scope for alternative employment. Furthermore, it is not only the rich who hire permanent labourers. Table 6.7B shows that although rich households have more permanent labourers compared to relatively land-poor households, permanent labourers are found in all operational holding categories. Other studies have also noted similar distribution elsewhere (Rahman, 1986; Hossain 1989: 97).

It was found through personal discussions with farmers and labourers that while some agricultural labourers cannot find work on farms, farmers often cannot find "good" workers for farm work. To quote one rich farmer in one of the study villages ". . .*Kamlara ajkal jatey uthichey, mathey kaj kum kortey chaey na. Deen kal bodley gachey, Shaheb*" (time has changed, gentlemen, labourers have gained status. They don't want to work in the field anymore). In fact, such an allegation is not indicative of conditions of dependence or bondage. Of course, it is not true that labourers have gained social status and are reluctant to work in the fields. The reluctance of a labourer to work on a farm is related to some significantly related aspects of rural works. First, it is important for a farmer to look for <u>good</u> workers. In other words, farmers are more interested in hiring an <u>efficient</u> worker than an obedient one who is not efficient. Efficient workers, on the other hand, have the choice of deciding for whom they should work. This is especially true when there is an excessive demand for labourers in peak seasons. Sometimes, demand for labourer coincides with demand for rural public works such as earth cutting for embankments or rural road constructions. Such works programmes are more lucrative and draw a significant number of rural workers. Also, rural workers would rather pull a rickshaw or

become porters for traders in rural markets, since such work is more rewarding than farm work.

The point here is that wage labourers are not as dependent or bonded as is often claimed by researchers. In the peak seasons, it is common to experience labour shortages in the agriculture sector. The poor farmers, who constitute the agricultural labour pool, also get busy in their own fields during peak seasons. However, in a slack season they seek employment elsewhere. This seasonality of agricultural work opens up an opportunity for 'migrant' labourers from neighbouring districts, especially from east-central Bangladesh. Obviously, these migrant labourers cannot be used for political support, or for that matter, as 'patron-client' contracts. Instead, it is the wage that determines for whom a migrant worker will work. However, for small or marginal farmers, the situation is different. These groups of peasant farmers are usually accustomed to a kind of 'work-cooperative', as has been mentioned earlier, where they reciprocate work in each other's field in peak seasons free of any charges. They do this as a group pooled to work in turn on each other's farm. The cost of labour is an important expenditure on the part of any substantial farm, especially at the time of preparing land, transplanting, weeding, and harvesting, when a considerable number of workers are required. The average daily wage for an agricultural labourer in the study area was Taka 10 plus three meals. A daily wage without food is on an average Taka 20.

It appears that a higher proportion of farmers in the categories between 0.51-2.00 and 2.01-5.00 acres, pay the higher proportion of wages, while the richer farmers pay the highest average amount in wages (Table 6.7C). It is clear that small or marginal farmers are apt to substitute labour for capital because they do not have to spend much on wages and they have a higher supply of unpaid family workers. They can also pool community cooperation for working hands. On the other hand, the richer farmers are required to depend more on capital.

6.7 DEMAND FUNCTION FOR WAGE LABOUR

The market for wage labour is found to be small compared to the size of the family work force in both Kazipur and Chilmari. The casuality of labour employment is significant because of its irregularity. The casuality depends not only on the seasonality of cultivation, but also on the time a farmer is ready and able to hire labourers. Cultivation of fields may be delayed despite the onset of agricultural season due to many other relevant factors such as lack of the right amount of soil moisture or unavailability of required amounts of seed and fertilizers. These uncertainties may result in late sowing and, therefore, in late harvesting. Such late crops resulting from delayed cultivation are locally known as Laimla Fosol.

Regular or permanent employment in farming is very insignificant and mostly involves minors, as has been mentioned earlier, who look after household chores and tend livestock. According to Hossain (1989: 97) "...such employment is often determined by the level of poverty in a village rather than by the demand for regular workers by an employer".

It has been noted that although households with operational holdings between 0.51 to 5.00 acres hire the largest number of casual workers, the larger the farm size the higher the number of workers hired. In order to reflect on what else determine the demand for casual workers, besides farm size; the following demand function was calculated:

Kazipur

$$DWL = -33.42 + 15.04F + 0.41T - 3.23W + 0.01Wg + 0.01Tech \qquad R^2 = 0.59$$
$$(2.07)\quad (4.78)\quad (-0.97)\quad (2.72)\quad (2.43)$$

Chilmari

$$DWL = -33.03 + 11.83F - 0.004T + 2.34W + 0.04Wg + 0.04Tech \qquad R^2 = 0.76$$
$$(2.73)\quad (-0.56)\quad (1.12)\quad (6.25)\quad (4.54)$$

DWL = Demand for Wage Labourers
F = Operational holdings in acres
T = Amount of land rented-in on sharecropping basis
W = Number of family workers
Wg = Wages paid to labourers
Tech = Cost of fertilizers, as a proxy to technology used.

All of the above variables in Kazipur are positively related to the demand for labour, except family workers. These coefficients suggest that larger farm size, higher wages, technological innovations, and limited working hands within the households enhances demand for casual workers. Except for family workers (W), the variations suggested are all significant at 1 and 5 percent probability of error. The relationship is, as expected, inverse between the family workers and demand for labourers, indicating that less working hands in the household may influence greater demand of hired labourers. But the variation suggested is not significant statistically at 5 percent probability of error.

An alternative explanation may be put forward for this phenomenon. Perhaps the earning members of the family are engaged in non-agricultural works. This argument is plausible in the case of Chilmari. Here the coefficient for family workers is positive, implying that higher the family workers, the higher is the demand for hired workers. However, none of these variations are significant as indicated by the T values (in parentheses). On the other hand, the effect of wages and technological innovation are positive and statistically significant at 5 percent and 1 percent probability of error in Kazipur and Chilmari, respectively. But the coefficients suggest a very small unit change in these variables would effect a very small change in the dependent variable (DWL). Tenancy appears to increase demand for labour in Kazipur, but in Chilmari it may have nothing to do with change in labour demand. The negative coefficient does not suggest much since the result is very close to 0.

6.8 CREDIT RELATIONS

Lack of capital forbids the land-poor section of the peasantry to approach any non-farm economic ventures. Need for cash is often met through various ways, such as selling or mortgaging property, selling produce that is actually needed for consumption, and incurring loans. Basically, poor peasants incur loans for consumption purposes. It is not surprising to find a peasant producing less than what is needed for family consumption,

selling a portion of that produce to meet the cash needs. This is often termed as 'distress sales'.

Distress sales often involve the sale of a portion of the meagre amount of land they own, or mortgaging it with the very little possibility of regaining it. The need for cash compels a peasant to borrow. The usual sources are money lenders, friends, and relatives. Lack of collateral often restricts their accessibility to institutional sources of credits. Money lenders in the rural areas extend loans to economically weak peasants in the hope of ultimately acquiring their land. The high interest rates make it difficult for the loanees to repay even the interest, let alone the principal. In fact, the money lenders want their land or labour. This condition is what Harriss (1982:191) termed "...a formal model which explains the common observation that money is advanced in order to secure the labour power or the products of the borrowers". This "formal model" has been put forward by a number of social scientists in Bangladesh. The basic arguments in such a model are that, first, the usury capital diverts capital from productive investments. Return from usurious investment is higher than from investment in agriculture. Secondly, the usury investment enables rich farmers and money lenders to subjugate poor peasants and landless labourers. This second argument is viewed as an important point of feudal or semi-feudal appropriation of surplus produced by peasants and labourers.

Unfortunately, detailed information on credit relations were not collected in the present survey. However, the distribution pattern of incidence of credit in the present study does not support the proponents of the formal model. Table 6.8 reflects an increasing involvement of the richer farmers as debtor in the credit market. The pattern appearing in this table is rather interesting. It shows that the highest proportion of households incurring loans belong to small farm-size categories (0.51-2.00 acres) in both Kazipur and Chilmari. An exception appears in operational holding category in Chilmari. Here, the marginal category (0-0.5 acre) appears to be the highest borrowers (28.9 percent). A similar pattern is also discernible in the proportion of total loan amounts. The

small peasant households, both in terms of owned land and operational holdings, are seen to share the highest proportion of total loans incurred (40.6 percent and 32.3 percent in Kazipur and 25.6 percent in Chilmari). Again, exception appears in the operational holdings in Chilmari. Here, the middle peasants (2.01-5.00 acres) appear to be the recipients of the highest proportion of loan money. The mean amount of loans increases steadily with increase in farm sizes, either in owned-land or operational category, with a slight fall in operational category of 7.5 and above in Kazipur (mean Taka 7142.9).

The relationship between these farming categories and the incurrence of loans, though positive, is insignificant in Kazipur compared to Chilmari. The coefficient of correlation (**r**s) is 0.36 and 0.50 for owned-land category in Kazipur and Chilmari respectively, and 0.38 and 0.55 for operational holdings. The picture posed in part C of Table 6.8 is very interesting. Here, the situation has changed dramatically from the one exposed in part A and B of the table. When the distribution of loanees are placed in relation to total income categories, the richer households (with income above Tk. 24,000) accounted for the highest proportion incurring loans and the highest proportion of total loan money. Relationships between income and incurrence of loans is significant (**r**s being 0.54 for Kazipur and 0.58 for Chilmari).

However, only 35.7 and 24.8 percent of total households in Kazipur and Chilmari respectively appeared to be indebted. The present survey was not broad enough to cover information on important credit relations such as specific sources of credits, actual use of loan money, interest rates and terms of loans, and process of repayment. Information on these matters would have given a more realistic picture of credit relations in the study area. The picture reflected in Table 6.8 calls attention to the involvement of rich farmers in credit market and the use of such funds. The pattern of distribution of loan money, as shown in the table, is indicative of the changing context of credit relations in rural areas. The loans incurred by the higher income group of the peasantry is most likely related to gainful investment in farms and off-farms. This contradicts the condition where small and

Table 6.8: Distribution of Households Indebtedness by Different Categories.

A: By landownership category

	(1) Kazipur			(2) Chilmari		
Land ownership Category	% of HH	mean loan (Taka)	% of Taka loan	% of HH	mean loan Taka	% of Taka loan
0	25.3	1650.0	14.0	31.0	1494.2	13.7
1-50	16.7	1777.8	9.9	9.7	1217.9	3.5
51-200	38.9	3122.4	40.6	26.2	3307.9	25.6
201-500	14.0	4945.2	23.2	17.9	4514.0	23.9
501-750	2.7	8666.7	7.9	6.9	5920.0	12.0
751+	2.3	6000.0	4.5	8.3	8758.3	23.4
	n=221 35.70% of 619		n=662,010.0	n=145		n=491,655.0 24.83% of 584

B: By operational holding category:

0-50	30.8	1771.2	18.2	29.0	1370.8	11.7
51-200	37.6	2573.9	32.3	26.9	2598.9	20.6
201-500	24.9	3870.9	32.2	26.9	4159.4	33.0
501-750	3.6	8087.5	9.8	6.2	5500.0	10.1
751+	3.2	7142.9	7.6	11.0	7562.5	24.6
	n=221 35.70% of 619		n=662,010.0	n=145 24.83% of 584		n=491,655.0

C: by Total Income Category.

< 6000	22.2	1576.5	11.7	26.9	1919.5	15.2
6001-12000	0.9	2275.0	0.7	0.7	1000.0	0.2
12001-24000	0.0	0.0	0.0	1.4	2300.0	0.9
24000+	76.9	3413.0	87.6	71.0	3992.6	83.6
	n=221 35.70% of 619		n=662,010.0	n=145 24.83% of 584		n=491,655.0

marginal peasants were severely caught up with debt bondages, and, therefore, a loss of land in earlier days.

However, analysis of indebtedness in relation to farming categories is not sufficient to reach a final conclusion. The incurrence of loans could be affected by a number of other variables as well. Level of household consumption in relation to its resource base determines whether a household will be indebted or not. In such a situation, if a household consists of more consumers than earners, it may be compelled to borrow. A household that is involved in non-agricultural economic activities, such as trading or petty business, may incur loans to finance such ventures. Purchase of agricultural inputs also lands a farmer in debt. Depending on how viable a farm is in terms of its size, and in absence of alternative employment opportunity, a household may enter into debt bondage for simple consumption purpose. A reflection of the determinants of indebtedness can be seen from the following regression model:

Kazipur

$$L = -75.17 + 0.36F + 273.70H - 0.17Nag + 0.18C + 0.29Agx - 0.12AgI + 1.59D \qquad R^2 = 0.35$$
$$(0.10)\quad (1.51)\quad (-1.65)\quad (1.76)\quad (1.97)\quad (-1.38)\quad (2.51)$$

Chilmari

$$L = 1109.94 - 1.84F + 348.66H + 0.15Nag - 0.39C - 0.02Agx + 0.06AgI + 0.50D \qquad R^2 = 0.77$$
$$(-0.88)\quad (1.93)\quad (1.43)\quad (-2.09)\quad (-0.36)\quad (5.81)\quad (1.02)$$

The coefficients for land ownership appears to be positive for Kazipur and negative for Chilmari, but the variations estimated are not significant at even 10 percent probability of error. Apparently, there is no clear-cut relationship between landsize and indebtedness. The household size is seen to be positively affecting indebtedness. The variations are not precise, as the estimate for Chilmari is significant at 10 percent probability of error and is not significant for Kazipur. Although the signs of the coefficients for non-agricultural income in Kazipur and Chilmari tell different stories, the variation explained for Kazipur is

statistically significant at 10 percent probability of error, while it is not significant for Chilmari. What is being indicated for Kazipur is also true for Chilmari. The implication of this negative sign is that the lower the non-agricultural income the higher is the loan incurred. In other words, the loans appear to be related more to agricultural expenses, and consumption level. The coefficient for agricultural expenses, which is statistically significant for Kazipur but not for Chilmari, suggest that farmers incur loans to purchase inputs. The negative coefficient for Chilmari is meaningless since it is not significant, and the coefficient is not far from zero. The coefficient for consumption level (C) is rather interestingly contrasting in the two situations. The variations suggested here are statistically significant, Kazipur at 10 percent and Chilmari at 5 percent probability of error. What is suggested is that the higher the consumption level, the higher the loans in Kazipur. This situation appears to be just opposite in Chilmari.

So far it has been noticed that there are important differences in several parametric characteristics between Kazipur and Chilmari. The explanation for these differences pertains to the overall organization of the agrarian economy of the two areas, which was discussed in Chapter 3. In brief, land ownership in Chilmari is highly concentrated and the number of viable farms is more than double the size of viable farms in Kazipur. The incidence of landlessness is also higher in Chilmari compared to Kazipur. Income conditions of the study population are measured in the next section in order to see what these relations of production so far explained actually mean. This measurement gives a clear understanding of a farmer's position on a viability scale.

6.9 DIFFERENTIATION IN SUSTAINABILITY AND STANDARD OF LIVING

A statement of household income and expenditures can help in providing an insight of peasants' ability to survive, and particularly, of their capability to adjust to natural hazards. However, it is not easy to calculate income and expenditures for the majority of peasant households. It is difficult to define what constitutes 'income' for most of the

peasants. It is even more problematic to calculate 'surplus' or 'disposable' income after expenses. Although expenses are generally a reflection of income, this may not always be true in rural Bangladesh. Estimates of expenses do not necessarily reflect a peasant's income capability. Small and marginal peasants often borrow or sell what in fact they need themselves. The point is that in such a situation estimates of income and expenditures (i.e., all cash receipts and cash expenses) cannot be considered in the normally accepted sense of the term income. The limitations of the data, as mentioned earlier in Chapter 2, restrict trend analysis and the effects of markets on household income. Moreover, the data collected were based on what respondents could recollect from their memory bank. Usually peasants do not keep accurate accounts of what they produce, sell, or consume.

Incomes for Kazipur were calculated by Haque (1988) using the same database as the present study. He analyzed income differentials of victims of riverbank erosion in Kazipur, and found a very significant income difference between "displacees" and "non-displacees" (a difference of Tk. 1,877 between the two groups; mean income of displacees being Tk.12,575 and non-displacees Tk.14,452). Haque used both Chi-square test and Lorenz Curve to prove his point. He concluded in favour of his hypothesis 'that riverbank erosion has adverse effects on household income' (Haque,1988: 312-318). In consideration of living conditions in the study area, it can be seen how immaterial is the difference Haque found statistically significant. One needs only to refer to the per capita annual income in the country as a whole (US$ 150, i.e., US$ 900 per household, which is Tk. 29,700 at the rate of Tk. 33 per US$). It can be seen that Haque's higher income group, the non-displacees, with an average income of Tk.14,452 falls far below the national average.

The information regarding incomes and expenditures treated here pertains to the year preceding the survey, ie., 1984. This covered all three agricultural seasons, namely, Bhadoi, Aghani, and Rabi; roughly coinciding with August-September, November-December, and March-April respectively. The gross values of agricultural produce and the

income from non-agricultural sources are considered here to measure peasant's economic performances. This includes total agricultural produce (consumed or proportion sold), livestock, fishing, wages, salaries, interests, rents, trading and commerce, and remittances from relatives working outside the study area.

6.9.1 Sustenance Level of Peasants' Households

In order to scale the level of sustenance of households, a simple equation was formulated, the results of which are shown in Figure 6.1 (also see Appendix D for data). A household is considered self-sustaining when GHI-VFL= > or = 0, and not sustainable if GHI-VFL= <0, where GHI is Gross Household Income, and VFL is Viable Farm Level (which was set at 112 mounds of rice earlier in this chapter). When the condition is > or = 0, a household may be able to subsist or even have a disposable income which may be turned into savings and/or investment. On the other hand, when the condition is < 0, the household will be left to 'distress selling' of property, borrow for survival, or go hungry.

The Taka equivalent of the VFL of 112 maunds is Tk.16,800 (at Tk. 150 per mounds -- the local price at the time of the field survey, i.e., 1985). The severe poverty condition of the study population is reflected in Figure 6.1, with mean annual incomes of Tk. 12,668 per household in Kazipur and Tk.11,008 in Chilmari. This average income is itself an indicator of precariousness of the economic condition compared to the national average. But mean income statistics conceal much more than they reveal. When the class-wise distribution of income is considered, the problem appears more serious in terms of class differences.

It can be seen from Appendix D that about 80 percent in Kazipur and 78.5 percent in Chilmari fall drastically below the VFL. A biased pattern of income distribution is clear in this Appendix. The magnitude of the difference is also dramatic. The rate of difference in income level, in terms of VFL, between different groups is depicted in Figure 6.1. (also see Column 4 and 5 of Appendix D). The relationship between farm size and income

Figure 6.1: Relative Position of Households in percentages of Mean GHI around VFL by Operational Holdings.

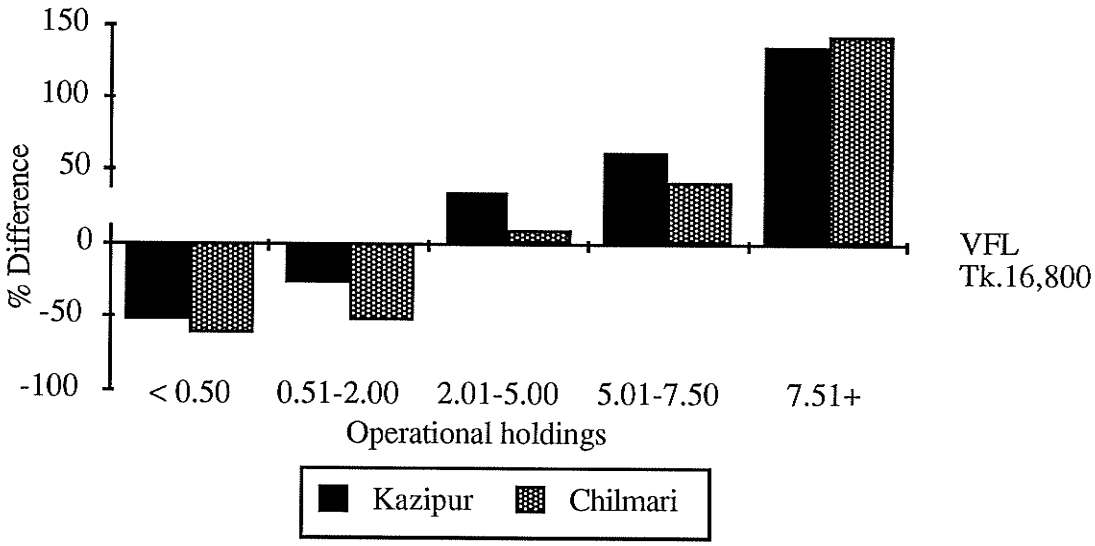
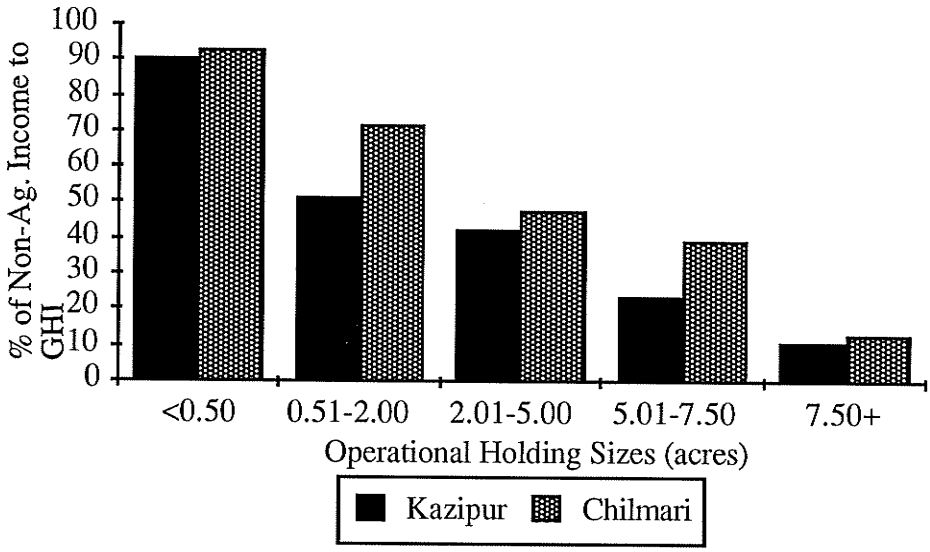


Figure 6.2: Relations between Farm size and Non-agricultural Income



from non-agricultural sources is, as usual, inverse. It is found that 90 percent of GHI is derived from non-agricultural sources for those who operate a farm of less than 0.50 acre (Figure 6.2). A higher contribution of the GHI comes from non-agricultural sources for 0.51-2.00 acres farm size (Appendix D). About 80 percent of total households do not even come close to the average income of the study areas. Clearly, peasants' survival is at stake, not to speak of any insurance against natural hazards. The condition in Chilmari appears to be more deplorable than in Kazipur.

6.9.2 Impact of RiverBank Erosion on Agricultural Income

It may be expected that high land loss due to river bank erosion would have a negative effect on agricultural income. If the reverse is true (i.e., if the income is higher, the land-loss would be negligible), the income from cultivation would increase. In other words, there should be an inverse relationship between riverbank erosion and agricultural income in order to show positive income affect. The following regression estimates were calculated incorporating some other relevant variables that are expected to influence income in the agricultural sector (figures in parentheses are T values):

Kazipur

$$AI = -5628.82 + \underset{(6.98)}{4370.34}FS + \underset{(4.70)}{2.08}EL + \underset{(0.90)}{314.20}FW - \underset{(-1.63)}{465.17}HS + \underset{(8.45)}{8.04}Tech \qquad R^2 = 0.65$$

Chilmari

$$AI = -9633.64 + \underset{(0.54)}{1075.63}FS - \underset{(-0.13)}{0.15}EL + \underset{(1.63)}{1798.13}FW + \underset{(1.25)}{799.65}HS + \underset{(6.92)}{10.69}Tech \qquad R^2 = 0.51$$

AI = Gross income from Crop Production
FS = Operational holding size
EL = Land lost to RBE
FW = Number of Family Workers in the household
HS = Total number of consumers in the household
Tech = Cost of fertilizers used, as a proxy of technology

It is expected that higher farm size positively correlates with higher agricultural income. This argument appears true in the case of Kazipur. The variation shown is statistically significant at 0.1 percent probability of error. The situation in Chilmari is less

clear. Although the regression coefficient is shown as positive, this is not statistically significant, as reflected by the T value in parenthesis. In this case, the efficiency of resource use may be in question. Kazipur reflects a more intensive cultivation compared to Chilmari. In the case of land lost to erosion (EL), the coefficient in Kazipur is positive and statistically significant. If the indication is taken literally, it will be quite meaningless since it would be absurd to suggest that the higher the loss of land due to erosion, the higher the agricultural income. In fact, the relationship indicated here suggests that the households with higher agricultural income are those who experience higher loss of land due to riverbank erosion. Interestingly, the relation appears to be inverse in the case of Chilmari, indicating that the lower the land lost, the higher the income. In other words, the income from cultivation would be lower if there is higher loss of land, and vice versa. However, the variation suggested is not statistically significant as indicated by the T value. The parameter is also not far from zero. In such a situation, a confident conclusion cannot be drawn in favour of the indication that river bank erosion has a negative impact on agricultural income in Chilmari as suggested by the coefficient.

Agricultural income is partly determined by technological inputs. Because of lack of information on all inputs, only fertilizer-use was considered in the above model. The result shows that this variable is significantly related to agricultural income in both Kazipur and Chilmari. The variation suggested in the calculation is significant at 0.1 percent probability of error. The number of family workers is another important factor. The regression coefficient indicates positive relationship, and significant at 10 percent probability of error in Chilmari, but not significant in Kazipur. This perhaps indicates the significance of hired labourers in Kazipur, reflection of which can be found in Table 6.7. Agricultural income is perhaps the function of household size. Income needs to be increased to meet the consumption demand of the family members. Although not statistically significant, this appears to be true in Chilmari. Here, higher household size is

associated with higher income. This is an indirect indication of the importance of family members involved in agricultural income generation in Chilmari (see also the Table 6.6).

6.9.3 Pattern of Household Expenditures

Data on household expenses were collected in the form of gross annual expenditures on specific items. These items were grouped into two categories as i) Investment Expenditures in Agriculture, and ii) Basic Needs Expenditures. Investment expenditures in agriculture included the cost of hired labour, rent, land taxes, hiring a plough, equipment, transport, seeds and fertilizer, pesticides, livestock purchases, animal feeds, repayment of loans, and Zaqat/Fitra.[5] Basic Needs expenditures included cash purchases of foods; cost of clothing, education, health care, and important religious festivals.

Estimates of expenditure patterns shown here give a general idea. Detail information on per acre cost of production of different crops in different seasons would have been a more appropriate estimate of farm expenses. Imputation of cost of family labour would be yet another important criteria in obtaining meaningful expenditure patterns of the peasant households. Given the limitations of the present data, an aggregate pattern may be realized in understanding peasants economic performances.

Table 6.9 reflects the usual pattern of distribution of expenditures by farm sizes. The mean expenses in agriculture increases as farm size increases. If presently available account of expenses is accepted as a workable pattern, i.e., without imputing cost of family labour, it can be seen that the return from land is remarkable (Table 6.9). In the case of Kazipur, the return to cost appears proportionally higher with smaller and marginal farm sizes (compare column 2 to column 1 in Table 6.9). This is congruent to the contention that the productivity of smaller farms is higher (Hossain, 1986). The picture is

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[5] Zaqat/Fitra is a religious obligation of any capable person to donate a given portion of his/her income to the poor relatives or neighbours.

Table 6.9 Gross Household Income in relation to Agricultural and Non-agricultural Income, and Expenses on Agriculture

Operational holding	(1) Kazipur mean income from non-ag	percent to GHI	mean income from agriculture	mean expenses on agriculture	(2) Chilmari. mean income from non-ag	percent to GHI	mean income from agriculture	Mean expenses on agriculture
< 0.50	7,196.3 (54.1)	90.4	1,554.93 (24.94)	550.65 (47.54)	6,159.9 (63.5)	92.4	507.74 (30.48)	394.18 (27.51)
0.51-2.00	6,437.7 (29.5)	51.7	6,321.92 (46.17)	2,780.44 (31.58)	5,875.5 (20.3)	71.6	2,307.98 (31.05)	1,831.50 (32.25)
2.01-5.00	9,644.5 (13.0)	42.3	14,796.38 (23.46)	7,151.87 (16.30)	8,831.0 (11.6)	48.0	11,414.68 (24.22)	3,597.91 (25.15)
5.01-7.50	6,434.8 (2.3)	23.4	21,510.63 (3.95)	9,511.13 (2.72)	9,384.0 (2.0)	39.2	18,721.76 (5.98)	5,969.67 (6.21)
7.51+	4,383.0 (1.1)	11.1	35,918.64 (2.72)	16,799.91 (1.87)	5,515.4 (2.6)	13.5	37,885.76 (8.26)	11,729.00 (8.88)
	x=7,241.5 n=555		x=8,524.9 n=405	x=2,877.6 n=589	x=6,458.2 n=502		x=7,884.56 n=351	x=3,015.82 n=338

Figures in parentheses are percentages of Households.

somewhat hazy in the case of Chilmari. The return to cost appears relatively higher in the larger farm sizes in Chilmari. Although the average return to average cost appears very promising in the study areas, the overall conditions, nevertheless, remain deplorable for the majority in the sense that the average income (GHI) itself is very low compared to VFL. The differential return to cost by farm size classes between the two upazillas indicates small farms in Kazipur are more flexible than in Chilmari. This flexibility in Kazipur and constraint in Chilmari is manifested by greater dependence on non-agricultural income in Chilmari compared with Kazipur. also, the agricultural production is low due to relatively poor soil condition.

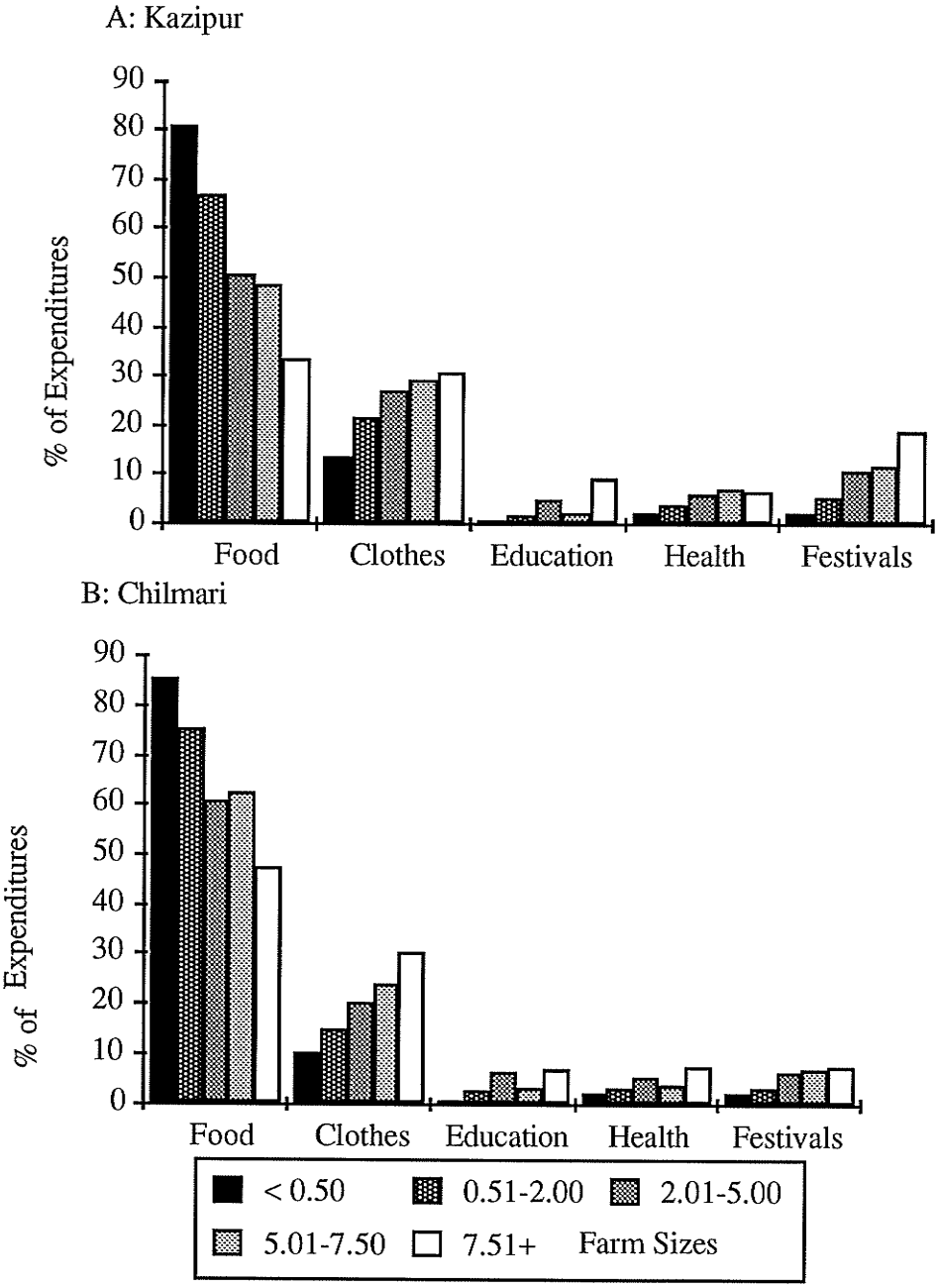
6.9.4 Basic Needs Expenditures

Expenses on basic needs items such as food, clothing, health-care, education, and festivals consist of cash purchases. This means that the proportion of produce consumed by the households are excluded from the calculations of expenditure on food. In other words the expenditure figures quoted for foods do not necessarily reflect total food consumption estimates for a household. Another important point which needs to be re-iterated here is that smaller farms have been reported to sell portions of their food crops despite their own consumption needs. It is normal for a small farmer to sell some of the production despite already being below the amount required for household consumption. This is a dilemma small farmers often have to contend with - 'sell now-buy later'. Moreover, small peasants borrow money to buy food. Hence, patterns of income and expenditures are not easy to conceive, especially in the case of small and marginal farms. However, the available pattern of expenditures on basic needs items is rather interesting. It is found that relative expenditures on food drops drastically with an increase in farm sizes, while the reverse is true on other basic need items (Figure 6.3; also see Appendix E1 and E2).

It is not surprising to see that the majority of the households spend relatively more on food than on other basic-need items. This is a simple reflection of that they are land-poor and are dependant on non-agricultural income sources. The richer counterparts of the population depend on their own food production and are apt to spend more on other basic need items. The pattern reflected in terms of expenses on clothing, education, medi-care, and festivals is reversed with decreasing farm sizes. This does not mean, however, that the poor do not need to spend more on these items. The demand is limited because their capability is limited. The expenditure on religious festivals needs to be highlighted. Under precarious economic conditions, expenditure on religious festivals may appear irrational. However, it should be noted that expenditure on festivals are important, not because people are religiously conservative and make irrational expenses on such occasions despite their urgent need elsewhere, but because these festivals once or twice a year are perhaps the only source of recreation for the peasantry (also see, Wolf, 1966:7).

However, the expenditure patterns which are revealed in the figures and tables here highlight the magnitude of poverty in those terms. These patterns are more or less expected. The important point here is that these expenditure patterns indicate a very significant aspect of the problem of production efficiency in agriculture. It is clear that the poor, who are in the majority, constitute the largest part of the buyers market. But the purchasing power of this majority is so weak that it cannot justify the normal growth of prices of agricultural products. In this situation it is pertinent to ask why capable farmers would aspire to be efficient producers in the sense of profit maximization? The market condition does not offer any motivation to produce more. Potential demand is very high, but real demand is absent. The hopeless condition of the greater majority is evident not only in relation to landownership, income and expenditures, but also in relation to control over other forces of production such as implements, livestock, and other household assets.

Figure 6.3: Pattern of Basic Need Expenditures By Operational Holdings



6.9.5 Patterns of Assets Ownership Distribution

Livestock, especially draught animals, are an integral part of peasant farming. Ownership of draught animals is a proxy indicator of farm sizes. It may be expected that the larger the farm size the greater are the number of livestock. This is found to be true in both study areas. Although larger farmers own a larger number of draught animals, the number of draught animals owned by smaller and marginal peasants is also significant. The average number owned by farmers operating below two acres is just over three per household (Table 6.10). The ownership of draughts animal in poorer households is important for other reasons. Firstly, it enhances their opportunity to access and operate sharecropping land. Landlords usually would not let land on sharecropping to one who does not have draught power to till the land. It is often uneconomic for a poor peasant to hire a plough service. Secondly, owners of draught animals can sell plough services to larger farms, and thirdly, draught animals can also be used to run carts on rental a basis. Bullock carts are very important means of transporting and marketing agricultural produces to and from a homestead. Poultry birds add, sometimes significantly, to poor peasants' household income. Although the ownership of poultry birds is greater with larger farms, it is also significant in the poorer households. The size and pattern of farmwise ownership distribution of draught animals in Kazipur and Chilmari appears to be more or less similar, while in the case of poultry birds, households in Chilmari own higher number of poultry per household (Table 6.10).

However, rearing livestock in rural areas is becoming difficult, not only because the majority of the poor peasants cannot afford to own livestock for economic reasons, but also because of a severe shortage of grazing fields. As a result, cattle feed is scarce and expensive. Thus, it is not surprising that the mean number of livestock is fast declining in rural areas. In fact, one study reported that the mean number of draught animals have declined in the poorer households in the districts of Jamalpur and Bogora since 1951, while it increased somewhat on larger farms (Rahman, 1986).

Table 6.10: Ownership Distribution of Drought Animal and Poultry Birds

Kazipur Operational Holdings	percent of total HH	mean number of animal per HH	percent of total HH	mean number of Poultry Birds per HH
<0.50	27.0	2.6 (37.0)	23.9	7.4 (36.9)
0.51-2.00	26.5	3.3 (36.3)	23.3	8.6 (35.9)
2.01-5.00	15.2	5.0 (20.8)	13.6	11.7 (21.0)
5.01-7.50	2.6	6.1 (3.5)	2.3	12.4 (3.5)
7.51+	1.8	8.4 (2.4)	1.8	15.5 (2.7)
	n=619	n=452 x=3.6	n=619	n=401 x=9.1
Chilmari Operational Holdings	percent of total HH	mean number of animal per HH	percent of total HH	mean number of Poultry Birds per HH
<0.50	31.0	2.3 (43.7)	28.8	9.2 (44.0)
0.51-2.00	16.8	3.6 (23.7)	15.6	10.6 (23.8)
2.01-5.00	14.4	4.9 (20.3)	12.7	15.2 (19.4)
5.01-7.50	3.6	5.3 (5.1)	3.4	22.5 (5.3)
7.51+	5.1	7.3 (7.3)	5.0	29.0 (7.6)
	n=584	n=414 x=3.7	n=584	n=382 x=12.9

figures in parentheses are percentages of households reporting, HH= Households

Table 6.11: Distribution of Assets by Gross Household Income (GHI) Groups.

Kazipur

GHI Groups	Bicycle	Bullock Carts	Boats	Motor cycles	Radio	HTW	DTW	Plough
< 6000	2	0	1	0	2	7	0	18
6001-12000	18	0	14	0	26	54	1	62
12001-24000	26	0	23	1	34	59	0	79
24001+	24	0	19	1	19	42	1	54
Total	70	0	57	2	81	162	2	213

Chilmari

< 6000	2	0	3	0	8	16	1	49
6001-12000	6	1	4	0	12	30	4	51
12001-24000	9	8	2	0	15	32	0	37
24001+	13	18	8	1	25	36	3	29
Total	30	27	17	1	60	114	8	166

To understand a household's position in assets ownership, items which are significant in farm operations are listed here. Although not listed, items such as Langal (wooden plough), Dao (a blade for cutting woods), Kachi (a blade for cutting grass), Nirani (hand weeder), Dheki (pedal-husker), and threshing sticks are other important assets in peasant households. These items are ubiquitous and are usually very cheap in monetary terms and hence kept out of the listing. The ownership pattern may perhaps be best analyzed in relation to income groups. Because the items listed reflect a household's economic activities and position better in comparison to distribution according to farm sizes.

The general pattern of distribution of ownership of assets is found to be biased towards the higher income groups. But ownership of certain items such as bicycles, radios, HTWs, and STWs, are significantly present within the lower income groups (Table 6.11). This table shows that the distribution of assets steadily increases with increasing income level in Chilmari, while the pattern is distorted in favour of middle income groups. It is interesting to note that households with lower income level have reported owning HTWs, DTWs, and STWs. The number of households reporting ownership of DTWs is higher in Chilmari, while the number reporting ownership of HTWs is higher in the groups earning less than Tk. 12,000, both in Kazipur and Chilmari. The DTWs and STWs are exclusively used for irrigation purpose. Selling water for irrigation is becoming a viable option. Manually operated shallow tubewells for Irrigation (HTWs) are also gaining popularity for very small scale irrigation. A HTW is inexpensive, technically very simple and is good enough for small parcels of land. They are make-shift type, and easy to install and relocate wherever necessary. However, it should be noted that a very insignificant number of households in both the Upazillas have reported to own assets as listed in Table 6.11. A slight exception is found in the ownership of ploughs and HTWs.

Table 6.12: Distribution of housing structures by Operational Holdings

Kazipur					Chilmari			
Farmsize	% HH	mean houses per HH	mean rooms perHH	mean HH size	% HH	mean houses per HH	mean rooms perHH	mean HH size
< 0.50	49.9	1.7	1.8	5.0	57.1	1.6	1.7	4.8
0.51-2.00	30.1	2.6	2.6	5.0	19.5	2.5	2.5	5.5
2.01-5.00	15.7	3.9	3.9	6.3	14.6	3.7	3.8	6.0
5.01-7.50	2.6	4.2	4.4	7.6	3.6	3.7	4.1	8.2
7.51+	1.8	5.3	6.2	8.3	5.2	6.0	6.2	10.3
					10.7	11.81		
	n=619	x 2.46	x 2.53	x 5.75	n=581	x 2.37	x 2.46	x 5.83

The distribution of housing structures and rooms therein, is yet another proxy indicator of peasants' socio-economic position. The table showing the distribution of housing structures indicates that every household in the study area has at least one roof over their heads. As usual, the number of structures and rooms therein appears to increase with the increase in farm sizes (Table 6.12). The housing structures listed here, however, includes "kitchen houses", cattle sheds, and storages, and hence may not be precisely comparable in terms of living space available per household or per head. For easy comparison columns 3 and 4 for Kazipur, and 7 and 8 for Chilmari in Table 6.12 may be considered. In any case, field observations showed that housing condition for the majority is deplorable. There exists a severe scarcity of housing materials, and the costs are out of reach for poor peasants.

Finally, it is seen that about 80 percent of the total households surveyed do not even come close to the average income of the study areas. The statements of expenditures are not necessarily a reflection of household's disposable income. As has been mentioned, the cash receipts and cash purchases in the household may give a misleading indication of economic performances. This is because a part of the total transactions might have been generated through "distress sale" or borrowing. Clearly, the very survival of the majority is at stake, not to speak of any insurance strategy against natural hazards. Under the conditions stated so far, it is pertinent to ask how the peasants face natural hazards such as flooding and riverbank erosion? Chapter 7 attempts to answer this question.

CHAPTER VII

PEASANTS' KNOWLEDGE AND EXPERIENCE OF NATURAL HAZARDS

According to the stipulated objective of the present study, the purpose of this chapter is to see how peasants' perception and experiences of natural hazards vary in relations to their class positions. Perceived hazard concepts are expected to vary along class lines. Awareness of the seriousness of a certain hazard are reflected in responses as far as these have direct or indirect implications on respondents' socio-economic conditions. In such a pursuit, the study population was asked to express its views on certain hazard events and the perceived problems arising from such events. Questions were asked to reflect on the expected precautionary measures that are undertaken in coping with potential natural hazards, and their expectations and views of the society at large in alleviating their problems.

For the specific purpose of understanding peasants' perception of hazard and their coping strategies, the questionnaire in the present study was set to reflect only on problems of natural hazards. Unfortunately, the relative importance of socio-economic problems that pervades the poor peasantry had not been considered. However, peasants' experience in hazard-prone floodplains such as Kazipur and Chilmari needs to be placed in proper perspective before analysis can be attempted. Peasants in Kazipur and Chilmari have, at different stages of their life, experienced various natural hazards such as flooding, droughts, cyclones, tornadoes/hailstorms, and some riverbank erosion. All inhabitants of these floodplains, however, are not necessarily victims of these events in equal magnitude and degree.

Perception of any natural, social, and economic hazard is subject to the degree of one's exposure to such problems. Immediate reflections on hazards usually refer to those that haunt the incumbents in their day-to-day life. One study on people's perception of

natural hazards in the USA found that most people consider natural hazards as less serious compared to socio-economic problems (Rossi, at el., 1982). This study noted that people rate inflation, welfare costs, unemployment, and crime higher than flooding or earthquakes in hazard-prone places like California. The fact that peasants' awareness of natural hazards is subject to direct exposure has been elicited in several studies on Bangladesh (Haque, 1988; Islam, 1980; Ralph, 1975). On an aggregated account, Haque estimated that those peasants who inhabit, or live closer to hazard prone areas such as riverbank erosion and flooding zones, are more aware of the seriousness of hazard events. Haque also pointed out that those respondents who are located away from erosion prone areas are more concerned with problems arising from what he calls "biological" events such as famines, epidemics and pests. For obvious reasons, the highest proportion of peasants expressing concern over riverbank erosion are those who have actual displacement experience due to the event.

7.1 PEASANTS' EXPOSURE TO FLOODING AND RIVERBANK EROSION

It should be noted that while flooding affects the whole peasantry in a floodplain, riverbank erosion affects only a few at any given time. Obviously the segment of the peasantry which is vulnerable to riverbank erosion is the one whose properties are located on the bank of a river and on Char lands. The proportion of such peasants is not very high compared to the overall population, as can be see from Table 7.1. This table shows that only 20.5 and 8.6 percent of the survey population in Kazipur and Chilmari, respectively, reported owning cultivable land along the bank of Brahmaputra river. Most of the land belonging to this proportion of the population may be assumed to be highly vulnerable to erosion. In fact, almost every respondent in the above proportion have reported that their land on the bank is effected by erosion (Table 7.1). It can be noted from this table that 129 households in Kazipur and 50 households in Chilmari have reported to own land on the

bank of the river, of which 125 in Kazipur and 44 in Chilmari have reported that their lands are actually erosion affected.

The percentage distribution of those whose land is erosion affected increases with the increase in farm size, particularly in Kazipur, and generally in Chilmari (Table 7.1). On average, 32.8 and 17.6 percent of the landowners in Kazipur and Chilmari, respectively, have reported that their land is actually affected by erosion, while 33.9 and 20.0 percent, respectively, reported owning land on the bank. At this point, it may be recalled from Table 6.3 that in Chilmari the proportion of landless is much higher, mean farm-size is almost double, and the mean amount of land ownership in the highest category (7.51+ acres) is also much higher than in Kazipur. The mean amount of land reported on the bank, and therefore vulnerable to erosion, is 0.8 acres in Kazipur and 2.3 acres in Chilmari per household (Table 7.1).

For obvious reasons, the peasant who has the greater amount of land exposed to erosion is potentially the greater loser of land. The richer peasants in the study area own the highest proportions of land exposed to erosion (Table 7.1) and are, therefore, the higher potential losers (Table 7.2). This fact may go far in refuting the contention of many researchers (Islam, 1971, 1974) that only the poor and disadvantaged people are disproportionately located or compelled to live in hazard-prone areas.

It is useful to keep in mind the following points in further discussions on peasants' perception of natural hazards and their strategies in case of coping with any crises:

- all of the floodplain inhabitants are not equally victim of certain hazard events, and

- not all the poor are disproportionately located in natural hazardprone areas. Within this perspective, the level and variability of peasants perceived hazard concepts may be evaluated.

Table 7.1: Distribution of Household and Erosion Affected Land

(A) KAZIPUR

	Land along Bankline			Erosion Affected Land
Ownership category	# of HH (%)	Mean amount of land	Total land (%)	# of HH reporting erosion affect
< 0.50	26.32 (n=133)	0.19	6.75	25.6 (n=133)
0.51-2.00	32.73 (n=165)	0.76	39.75	32.7 (n=165)
2.01-5.00	47.62 (n=63)	1.18	35.44	42.9 (n=63)
5.01-7.50	40.00 (n=10)	1.78	7.12	40.0 (n=10)
7.51+	60.00 (n=10)	2.69	16.13	60.0 (n=10)
	33.86 (n=381) 20.84% n=619	mean 0.83	105.19	32.8 (n=381) 20.19% n=619

(B) CHILMARI

	Land along Bankline			Erosion Affected Land
Ownership category	# of HH	Mean amount of land	Total land	# of HH reporting
< 0.50	15.09 (n=53)	0.30	2.40	13.2 (n=53)
0.51-2.00	12.50 (n=96)	1.12	13.41	11.5 (n=96)
2.01-5.00	25.42 (n=59)	1.57	23.54	23.7 (n=59)
5.01-7.50	23.81 (n=21)	1.69	8.45	19.1 (n=21)
7.51+	60.00 (n=21)	6.55	65.48	38.1 (n=21)
	20.00 (n=250) 8.56% n=584	mean 2.27	113.28	17.6 (n=250) 7.53% n=584

7.2 THE VARIATIONS IN PERCEPTION OF DIFFERENT HAZARD EVENTS

A number of studies evaluating variations in peasants' perception of natural hazards have been conducted in recent years in Bangladesh. Haque (1988), among others, evaluated natural hazard perception in terms of displacement/non-displacement status in Kazipur. He further evaluated variations in perception in terms of socio-economic variables such as household income, landownership, education, and occupational status, and found that perceived hazard concepts vary with variations in status in all of the above variables except education.

Table 7.2: Mean Amount of Land Lost to Erosion by Landownership Groups.

(A) KAZIPUR			(B) CHILMARI	
Farm-size (acres)	# of HH	Mean amount of land lost	# of HH	Mean amount of land lost
0	158	1.95	171	7.33
0.1-0.50	60	1.44	17	5.51
0.51-2.00	85	2.88	38	5.97
2.01-5.00	34	5.38	32	10.56
5.01-7.50	3	27.28	13	8.84
7.51+	9	33.26	16	14.17

Data analysis shows that the study population is significantly aware and apprehensive of the adverse affects of the various hazards that are likely to produce in the future. These apprehensions are based on previous experiences of not only natural, but also socio-economic hazards (famine), health hazards (epidemic), and hazards in the fields (pests). It is found that concept of hazard recurrence is the same across classes. Inhabitants of a hazard-prone area, irrespective of their class positions, are expected to be apprehensive of hazard possibilities in the future. The important point in identifying variations in perception on the basis of class differentiations would be to examine peasants' views and attitudes and their adopted coping strategies towards specific hazard.

In the present study, respondents are found to recognize the potentials and danger of hazard occurrences with varied emphasis on different hazards (Table 7.3). For example, the problem of pests in crops is a concern only for those who have agricultural land for crop production. Similarly meteorological hazards such as cyclones and tornadoes are highly emphasized by those who are landless or virtually landless because they have less physical protection against such hazards, especially for their housing structures. On the other hand, hailstorms and droughts are a concern for the land rich farmers because these meteorological hazards damage crops standing in the field.

If the emphases of hazards potentials can be rated from the response frequencies in Table 7.3, it can be seen that only three natural hazards rate highly. The perception of flooding as a hazard is by far the highest rated natural hazard that concerns every one in Kazipur and Chilmari. Here too, those who have limited or no access to productive resources are less concerned compared to those who have greater control over means of production. Table 7.3 shows that 89 percent in Kazipur and 83 percent in Chilmari of marginal peasants perceive flooding as a hazard compared to 100 and 87 percent of the rich peasants respectively. Although marginal peasants have no tangible property to lose to flooding, their day-to-day living is seriously affected. Large farmers, on the other hand, face a high probability of property loss to standing crops, livestock, and transport. It is interesting, though not surprising, to note that the hazard of riverbank erosion has been rated third after tornadoes. Tornadoes and riverbank erosion hazards are equally emphasized by rich farmers while to marginal peasants, riverbank erosion is less threatening compared to tornadoes. The reason is understandable - they have virtually nothing to lose to riverbank erosion. However, a different picture appears in Chilmari where tornadoes are rated third after riverbank erosion. A cyclone is rated higher in Chilmari compared to Kazipur.

Almost equally high emphasis was placed on flooding and riverbank erosion when respondents were specifically asked about the seriousness of these events (Table 7.4). This may be considered as a general expression of concerns about the problems threatening

Table 7.3. Peasants View of Future Occurrence of Certain Hazards in the Study Area.

(A) KAZIPUR

	By Operational Holding sizes					
Potential Hazards	<0.50 n=309	0.50-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total n=619
Cyclone	16.54	15.05	24.74	18.75	9.09	17.28
Erosion	49.19	54.30	53.61	56.25	45.45	51.53
Flood	89.00	95.16	93.81	87.50	100.00	91.76
Tornado	58.90	58.06	50.52	50.00	45.45	57.00
Drought	14.56	18.28	17.53	50.00	18.18	17.12
Famine	5.82	7.53	10.31	6.25	9.09	7.11
Epidemic	8.09	10.21	10.31	31.25	0.00	9.53
Pests	4.21	5.91	9.28	12.25	9.09	5.98
Hailstorm	3.88	12.90	14.43	18.75	9.09	8.72

(B) CHILMARI

	n=335	n=113	n=85	n=21	n=30	n=584
Cyclone	25.07	32.74	35.29	28.57	40.00	28.94
Erosion	48.06	43.36	63.53	57.14	73.33	51.03
Flood	82.98	88.50	89.41	90.48	86.67	85.45
Tornado	34.63	49.56	43.53	33.33	36.66	38.87
Drought	6.87	8.85	10.57	4.76	10.00	7.88
Famine	3.88	1.77	4.71	4.76	6.67	3.77
Epidemic	18.21	18.58	18.82	33.33	30.00	20.55
Pests	1.19	5.31	7.06	4.76	0.00	2.91
Hailstorm	0.30	0.88	0.00	0.00	0.00	0.34

the area they live in. Moreover, they are all exposed to the sufferings of others caused by these hazards. They hear and see for themselves the plights of riverbank erosion victims while some of them or their relatives have been victims of the hazard.

Table 7.4 Views of High Flooding and Rapid Erosion as Serious Problems

KAZIPUR

	<0.50	0.51-2.00	2.01-5.00	5.01-7.50	7.51+	Total
Flood	98.1	98.4	96.9	100.0	100.0	98.1
Erosion	99.0	99.5	100.0	100.0	100.0	99.4
	n=309	n=186	n=97	n=16	n=11	n=619

CHILMARI

Flood	99.7	99.1	100.0	100.0	100.0	99.5
	n=335	n=113	n=85	n=21	n=30	n=584
Erosion	99.1	99.1	100.0	95.3	100.0	98.8
	n=320	n=112	n=84	n=20	n=30	n=556

Table 7.5: Peasants' View of Difference between High Flood and Normal Floods.

(1) KAZIPUR

	Operational holdings					
Criterion of difference	<0.50 n=309	0.51-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total n=619
Affects crops	34.95	45.16	58.76	43.75	54.55	
Occurs suddenly	15.86	25.27	30.93	25.00	9.09	
Causes casualties	2.60	2.69	6.18	12.50	9.09	
Act of God	4.21	5.38	5.15	12.50	9.09	
Erodes roads and culverts	2.26	0.00	1.03	0.00	0.00	
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
Affects crops	38.14	53.51	58.14	47.62	66.67	
Occurs suddenly	15.01	14.03	22.09	9.52	23.33	
Causes casualties	2.40	0.00	4.65	9.52	3.33	
Act of God	6.30	3.51	4.65	0.00	13.33	
Erodes roads and culverts	0.00	3.51	6.95	0.00	3.33	

It is generally recognized by the peasants that normal flooding (Borsha) of agricultural areas is beneficial and necessary for replenishing soil fertility. Normal flooding is also a welcome event in that it permits free-fishing for rural people in ditches, canals, and agricultural fields. On the other hand, high flooding (Bonna) is viewed as a serious threat to life, livestock, all properties, and especially to standing crops in the fields. The destruction of crops also means loss of jobs for agricultural wage labourers. Disruptions of transportations due to high flooding causes scarcity of daily necessities and, as a result, causes price hikes which affect the poor peasants the most. Peasants' responses to a question as to why they think high floods are different from normal flooding reflect the ways in which high floods affect them. Table 7.5 shows that concerns that high floods affecting crops are highest with larger farm-sizes.

7.3 PEASANTS' VIEW OF CAUSES OF RIVERBANK EROSION

The peasants' understanding of the causes of riverbank erosion appears consistent across both Kazipur and Chilmari. Interestingly, both the sample population recognized hydrological events as the prime cause of riverbank erosion. Of all the hydrological events, the fast current in the river has been noted by more than 58 percent in Kazipur and 53 percent in Chilmari as the major cause of erosion (Table 7.6). Peasants' emphasis on hydrological events such as fast current, flood, or too much water in the river as the cause of bank erosion reflect their true understanding of the natural hazard that haunts them in their economic life.

Although the geomorphic or meteorological events noted in Table 7.6 appear to be less significant in directly causing riverbanks to erode, the varied emphases on different events in the array of causes in the two study areas reflect a difference in physical geography of the areas. The Brahmaputra is a braided river, with numerous mid-channel sand bars (Chars). These sand bars are likely to slow down the flow of flood water giving rise to a volume of water that subsequently hits the unconsolidated soil of the river banks.

Table 7.6 Peasants' View of Causes of Riverbank Erosion (Percentages of Respondents by Operational Holdings)

(1) KAZIPUR	Operational holdings					
	<0.50 n=309	0.50-2.0 n=186	2.01-5.0 n=97	5.01-7.5 n=16	7.51+ n=11	Total n=619
Causes of Erosion						
A. Hydrological						
Flood	20.39	18.28	20.61	25.00	0.00	19.54
Fast current	57.61	60.21	56.70	68.75	45.45	58.32
Water in River	23.95	17.20	22.68	43.75	36.37	22.45
B. Geomorphic						
Nature of river	3.88	7.53	15.46	12.50	18.18	7.27
Too many chars	2.91	8.60	4.12	6.25	0.00	4.85
Breaking of dam	3.88	3.33	4.12	6.25	0.00	3.71
Loose soil	12.62	10.75	14.43	18.75	9.09	12.44
Shallow river	6.79	13.44	20.61	0.00	36.37	11.31
C. Meteorological						
Tornado	5.50	12.36	5.15	6.25	9.09	7.57
Too much rain	5.82	5.91	12.37	18.75	18.18	7.43
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
A. Hydrological						
Flood	36.72	40.71	40.00	47.62	63.33	39.72
Fast current	48.36	60.17	60.00	42.85	70.00	53.25
Water in river	10.75	14.16	11.76	19.04	20.00	12.33
B. Geomorphic						
Nature of river	13.13	15.04	15.29	9.52	13.33	13.70
Too many chars	12.54	9.73	10.59	23.81	10.00	11.98
Breaking of dam	6.57	6.19	7.06	4.76	30.00	7.70
Loose soil	3.58	3.54	4.71	0.00	10.00	3.94
Shallow river	1.49	1.77	2.35	0.00	3.33	1.71
C. Meteorological						
Tornado	7.16	9.73	14.12	0.00	16.67	8.90
Too much rain	13.73	17.70	17.65	9.52	20.00	15.24

This enhances the rapid erosion caused by more direct hydrological events. However, these physical conditions of the two areas are subjects of geomorphological studies, and are beyond the scope of the present study.

7.4 VIEWS OF RIVERBANK EROSION AND FLOODING AS HAZARDS

Apart from the perception of the hazardousness of a floodplain the peasants' concepts regarding any natural hazard may be expected to reflect the potential impacts that may be inflicted by these hazards. The impact of riverbank erosion, or of any other natural hazards at the household level, especially on the general family well-being, will apparently be felt hardest by those peasants who are in possession of properties. Loss of property, including land, results in a host of other related problems. For example, if land is lost to erosion, it will at least temporarily disrupt the normal livelihood of a household. This will in turn affect children's' education. The stress caused by any property loss may disturb mental health, even leading to serious mental illness. In most cases, ones' social position in rural Bangladesh is based on property relations. The social position is likely to be eroded if that base is disrupted in any ways. This is what happens whenever a disastrous flood situation occur in the study areas (Table 7.7).

However, it is worthwhile to remember that property owners are people having some resilience based on their control over resources. The poorer sections, on the other hand, are the ones who have relatively little to lose in terms of social and material possessions. Once there is a material loss to a marginal peasant, such as the meagre amount of land owned, it will perhaps mean some added days of hunger. In other words, hazard losses will add a few more days of hardship and days without food to the conditions of poverty they were already living in under normal circumstances. This is one of the reasons why some poor peasants feel that there is little or no change in the household's level of living (Table 7.7). Table 7.8 shows the property related impact biases. The losses

Table 7.7 Impact of Riverbank Erosion on Family Well-being (by Operational Holdings)

(1) KAZIPUR	Operational holdings					
	<0.50 n=216	0.51-2.0 n=98	2.01-5.0 n=59	5.01-7.5 n=11	7.51+ n=10	Total n=394
Serious cut in living level	43.98	41.84	40.68	54.55	40.00	43.15
Stops child's education	2.31	5.10	8.47	0.00	20.00	4.31
Illness in family	20.37	20.41	22.03	27.27	20.00	20.18
Mental illness in family	44.91	33.67	35.59	18.18	70.00	40.61
Loss of assets	32.87	38.78	42.37	45.45	50.00	36.55
Loss of social position	7.41	7.14	15.25	27.27	10.00	9.14
Fragments Bansa	3.24	14.28	0.00	9.09	0.00	5.58
No remarkable change	1.85	1.02	0.00	9.09	0.00	1.52
chi-square=35.13	df=21	critical value=32.67		at 0.05 level of significance		
(2) CHILMARI	n=217	n=58	n=50	n=17	n=24	n=366
Serious cut in living level	32.72	39.65	38.00	23.53	8.33	32.51
Stops child's education	4.15	8.62	8.00	11.76	4.17	5.74
Illness in family	19.81	13.80	12.00	5.88	4.17	15.85
Mental illness in family	25.35	25.86	22.00	41.18	54.17	27.59
Loss of assets	39.63	50.00	38.00	41.18	54.17	42.08
Loss of social position	9.22	12.07	16.00	23.53	33.33	12.84
Fragments Bansa	10.60	5.18	16.00	23.53	12.50	11.20
No remarkable change	2.76	1.72	0.00	11.76	4.14	2.73
Chi-square=36.72	df=21	critical value=32.67		at 0.05 level of significance		

are felt according to class lines. This is also confirmed by a chi-square test which suggest that the impact of riverbank erosion is not independent of class (Table 7.8).

Theoretical arguments may be raised to emphasize the impact of loss of a marginal farmer's meagre property, but in reality there is no sharp dividing line between a destitute landless labourer and a marginal farmer. As was shown in Chapter 6, the so-called subsistence farmers are incapable of providing any adequate level of subsistence to themselves. However, it is not intended here to say that natural disasters are a problem only for rich peasants. On the contrary, the real problem lies with the below-subsistence level peasants. The problem arises from the decaying capacity to rebound from disasters. This in fact should be the main thrust of any mitigation strategy of natural hazards. It was suggested earlier that not all hazards are expected to have an equal impact across and, therefore, be of equal concern to different classes in society. In order to highlight how peasants realize impact of specific natural hazards, questions were asked as to why they think high flooding and rapid riverbank erosions are hazards. Responses to this question reflect general class interests of the peasantry.

Table 7.8 shows that the highest proportion of respondents generally point to the impact of erosion on agricultural crops, household properties, and land. In this table, for example, 83.0 and 74.5 percent of the total respondents in Kazipur and Chilmari respectively pointed out that riverbank erosion hurts agricultural crops, while 85.9 percent in Kazipur and 73.3 percent in Chilmari point to erosion hazard hurting household property. Similarly, high proportions (52.5 percent in Kazipur and 46.1 percent in Chilmari) think that riverbank erosion has land-losing impact. In terms of specific class concerns, household property loss and land erosions are mentioned by a relatively high proportion of larger farmers, while landless and marginal peasants expressed their concerns more on loss of societal property such as income and jobs. It is interesting to note that the poorer sections expressed less concern over food shortages occurring due to riverbank erosions. The impact of such hazards to the poorer sections is less likely to change much

from their previous condition of limited food availability. On the other hand, if the richer peasants feel the impact of riverbank erosion on their private properties such as food producing land, it is very likely that there would also be immediate, though temporary, disruptions in their food supplies.

Table 7.8 Peasants' View of Rapid Riverbank Erosion as Hazard

(1) KAZIPUR	Operational holdings					
	<0.50	0.51-2.00	2.01-5.00	5.01-7.50	7.51+	Total
	n=309	n=186	n=97	n=16	n=11	619
Hurts crops	74.1	92.5	90.7	100.0	81.8	83.0
Hurts property	82.2	89.3	89.7	93.8	90.9	85.9
Food shortage	20.1	27.4	33.0	37.5	36.4	25.0
Transport problem	20.4	21.5	30.9	25.0	18.2	22.5
Erodes land	50.8	56.5	49.5	56.3	54.5	52.5
Reduces income	19.1	16.1	14.4	31.3	0.0	17.5
Reduces jobs	3.9	4.3	2.1	0.0	0.0	3.6
Chi-square=16.82	df=24		critical value=36.42	at 0.05 level of significance		
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
Hurts crops	66.0	82.3	85.9	90.5	96.7	74.5
Hurts property	65.7	81.4	78.8	95.2	96.7	73.3
Food shortage	22.1	17.7	25.9	52.4	46.7	24.1
Transport problem	9.9	10.6	18.8	28.6	40.0	13.5
Erodes land	44.2	49.6	60.0	14.3	36.7	46.1
Reduces income	25.6	18.6	10.6	9.5	3.3	20.4
Reduces jobs	17.3	9.7	4.7	0.0	0.0	12.5
Chi-square=82.53	df=24		critical value=53.29	at 0.01 level of significance		

However, a chi-square test of erosion hazard perception does not directly suggest that the overall perception of riverbank erosion is dependent on class position in Kazipur. This is in contrast to what is found in the case of Chilmari. The chi-square test for Chilmari suggests that this perception may be dependent on peasants' class positions. The explanation may be found in variations in the overall access to productive resources in the two areas. It may again be mentioned here that the proportion of marginal peasants is

higher in Kazipur than Chilmari, while the proportion of landless and marginal peasants is higher in Chilmari. This is one of the reasons why a relatively higher proportion of marginal peasants pointed to the impacts of riverbank erosion on crops and private properties. However, it may be recalled that the proportion of peasants affected by the hazard in question is not significant in any of the study areas.

Table 7.9 Peasants' View of High Flood as Hazard

(1) KAZIPUR	Operational holdings					
	<0.50 n=309	0.51-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total 619
Hurts crops	74.8	96.8	95.9	93.8	100.0	85.6
Hurts property	72.8	78.0	84.5	68.8	72.7	76.7
Food shortage	25.6	33.3	30.9	43.8	18.2	29.1
Transport problem	31.4	26.9	38.1	43.8	18.2	31.2
Water shortage	1.6	1.6	2.1	0.0	0.0	1.6
Erodes land	13.6	19.4	25.8	31.3	18.2	17.8
Reduces income	34.9	21.5	15.5	31.3	0.0	27.1
Reduces jobs	10.7	6.5	4.1	0.0	0.0	7.9
Sand covers land	0.3	0.5	1.0	12.5	0.0	0.8
Chi-square=70.56	df=32		critical value=53.19		at 0.01 level of significance	
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
Hurts crops	75.2	91.2	96.5	100.0	100.0	83.6
Hurts property	63.6	77.9	75.3	85.7	90.0	70.2
Food shortage	22.7	14.2	28.2	47.6	50.0	24.1
Transport problem	19.4	31.0	37.7	28.6	43.3	25.9
Water shortage	2.1	1.8	3.5	0.0	6.7	2.4
Erodes land	15.5	16.8	17.6	9.5	16.7	19.5
Reduces income	28.9	23.9	17.7	9.5	10.0	24.8
Reduces jobs	21.8	15.0	7.1	0.0	6.7	16.8
Sand covers land	0.6	0.9	1.2	4.8	6.7	1.2
Chi-square=69.13	df=32		critical value=53.29		at 0.01 level of significance	

High flood, on the other hand, affects almost all living on the floodplains. It can be seen from Table 7.9 that the effects of high floods are felt clearly along class lines. This fact is also supported by a chi-square test where an alternative hypothesis (that the concept

of hazardousness of flood is dependent on class positions) is acceptable at a significance level of 0.01 (Table 7.9). The percentage distribution pattern clearly suggests that the overall hazard perception is subject to one's class position, as far as these hazards affect the interests of the concerned classes.

7.5 THE MORAL ECONOMY OF COPING WITH DISASTER

Given the economic conditions described in Chapter 6, it is impossible for the majority of the peasants to successfully cope with any natural hazard. In the absence of a sufficient coping ability at the individual household level, peasants draw instead on social resources. Voluntary aid to victims of hazards is a traditional practice in rural areas in Bangladesh. In the past there was a form of 'crisis coping food supply system' called Dharma Gola. These Dharma Golas were organized within communities to meet the needs of victims of socio-economic hazard (famines) or natural hazards (tornados and floods). However, such community-level crisis coping system have completely disappeared from the rural scene of Bangladesh. Rural communities have become burdened with a higher magnitude of poverty; they can no longer fund a Dharma Gola. Also, the magnitude of crisis situations has increased, since demand for aid and relief greatly exceed the capacity of the local moral economy.

Apart from the traditional Dharma Gola system in rural areas, there now exists an emergency food supply system similar to what is known as 'food banks' in the North America. It is popularly known as Langarkhana. The Langarkhanas are organized by the state to supply cooked food to famine or disaster victims. Under the patronage of the state, the Langarkhana has become an tradition in mitigating disaster impacts, and apparently this is a task the state emphasizes most in a disaster situation. When such local fall-back mechanisms disappear, how can inhabitants of a hazard-prone area survive? Undoubtedly, they have to survive by themselves, which perpetuates the already chronic poverty situation.

However, the rural moral economy of coping with disasters has not disappeared altogether. It still functions in rural crisis situations at individual levels, if not at the formal community level. Table 7.10 gives a summary of types of assistance available in the study areas. Food and shelter are the two most immediate needs people have in a disaster situation arising from flooding and erosion. To some extent these types of needs are still met by relatives, friends and neighbours. Despite their economic limitations, local people offer various types of assistance, including financial help.

Table 7.10 Types of Local Assistance Usually Received in Crisis Situations

(1) KAZIPUR	Operational holdings					
Types of assistance	<0.50 n=216	0.51-2.00 n=98	2.01-5.00 n=59	5.01-7.50 n=11	7.51+ n=10	Total n=394
Financial	3.2	7.1	5.1	9.1	10.0	4.8
Moral support	5.1	9.2	10.2	18.2	0.0	7.1
Physical help	17.1	15.3	18.6	27.3	20.0	17.3
Advice (place)	3.7	6.1	1.7	0.0	0.0	3.8
Advice (jobs)	0.0	0.0	0.0	0.0	0.0	0.0
Food	0.9	1.0	3.4	0.0	10.0	1.5
Land for housing	0.9	0.0	0.0	0.0	0.0	0.5
(2) CHILMARI	n=217	n=58	n=50	n=17	n=24	n=366
Financial	7.4	5.2	4.0	0.0	4.2	6.0
Moral support	10.1	5.2	16.0	0.0	16.7	10.1
Physical help	21.7	15.5	24.0	23.5	20.8	21.0
Advice (place)	2.3	3.5	4.0	5.9	12.5	3.6
Advice (jobs)	0.0	0.0	0.0	0.0	0.0	0.0
Food	2.3	1.7	2.0	0.0	0.0	1.9
Land for housing	0.5	0.0	0.0	0.0	0.0	0.3

In a place where formal rescue operations and crisis counselling services are totally absent, local social traditions of comforting ones' stresses and strains is very important. Physical help such as helping a distressed household in moving out of the disaster area, plays a vital role in evacuating and rescuing households from disaster conditions. This

appears to be the most frequent type of assistance that is available in Kazipur and Chilmari areas. The next most frequently offered help is the provision of moral support people need most in a distressed condition (Table 7.10).

It is not unusual for communities to invent and adopt their own kind of crisis coping measures in the absence of national-level formal programmes such as hazard insurance, rescue and evacuation, and psychological counselling services. The role of the state, as can be seen in Table 7.11, is hardly traceable despite peoples' expectations. It is interesting to note that local leaders and the district and sub-district level government administrators are on a similar plane in terms of peasants' expectations of sources for assistance in a disaster situation. Distance between the place of hazard occurrence and the district administrative offices may be one of the reasons for the negligence. Moreover, this is not surprising in terms of the existing linkages between the national level elites and rural leaders, as was described in Chapter 3.

Formal non-government organizations (NGOs) work throughout rural Bangladesh, albeit mostly on casual and often sporadic development projects. In crisis situations, these NGOs reach some disaster areas, and act as temporary relief agents, primarily through distributing food and medicines. A regular presence of NGOs in disaster-prone areas such as Kazipur and Chilmari is negligible. Poorer sections of rural people are the target groups of these NGOs and, therefore, the poor peasants who qualify according to the set criterion of the NGOs receive assistance. The richer peasants do not usually expect any assistance from relief agencies. But in a crisis situation the richer peasants indeed expect some kind of assistance from the local or national government (Table 7.11).

In general, villagers appear to be the most significant source of assistance in disaster situations. Table 7.11 shows that villagers offered assistance to the victims in a number far exceeding expectations. They appear to extend assistance even to those who did not expect it; for example, the larger peasants (Table 7.11). Although relatives and

Table 7.11: A Comparative Picture of Expected Source and Observed Source of Assistance (X= Expected, Y= Received Assistance)

(1) KAZIPUR Assistance from		Operational holdings <0.50 n=216	0.51-2.00 n=98	2.01-5.00 n=59	5.01-7.50 n=11	7.51+ n=10	Total n=394
Relatives	(X)	19.0	33.7	28.8	27.3	10.0	24.1
	(Y)	16.1	20.4	20.3	9.0	0.0	17.3
Friends	(X)	13.0	21.4	10.2	18.2	0.0	17.0
	(Y)	6.9	13.3	10.2	0.0	0.0	8.6
Other villagers	(X)	1.4	2.0	1.7	0.0	0.0	1.5
	(Y)	4.6	4.1	1.7	18.2	10.0	4.6
Local leaders	(X)	3.2	3.1	3.4	9.1	10.0	3.6
	(Y)	1.8	0.0	0.0	0.0	0.0	1.0
Upazilla office	(X)	2.8	3.0	3.4	9.1	10.0	3.3
	(Y)	0.0	0.0	3.4	0.0	0.0	0.5
District office	(X)	0.0	1.0	0.0	0.0	10.0	0.5
	(Y)	0.0	0.0	0.0	0.0	0.0	0.0
National gov't	(X)	48.6	52.0	59.3	63.6	80.0	52.3
	(Y)	0.0	0.0	3.4	0.0	0.0	0.5
Relief agency	(X)	6.0	3.1	1.7	0.0	0.0	0.5
	(Y)	0.9	0.0	0.0	0.0	0.0	0.5
(2) CHILMARI		n=217	n=58	n=50	n=17	n=24	n=366
Relatives	(X)	20.3	31.0	30.0	41.2	41.7	25.7
	(Y)	22.6	19.0	40.0	23.5	25.0	24.6
Friends	(X)	19.8	24.2	30.0	17.7	29.2	22.4
	(Y)	16.6	12.1	20.0	11.8	16.7	16.1
Other villagers	(X)	6.9	12.1	12.0	23.5	12.5	9.6
	(Y)	1.8	0.0	0.0	0.0	0.0	1.1
Local leaders	(X)	7.8	10.3	4.0	0.0	20.8	8.2
	(Y)	2.3	0.0	0.0	0.0	0.0	1.4
Upazilla office	(X)	10.1	8.6	8.0	0.0	8.3	9.0
	(Y)	1.8	0.0	0.0	0.0	0.0	1.1
District office	(X)	0.0	0.0	2.0	0.0	0.0	0.3
	(Y)	0.0	0.0	0.0	0.0	0.0	0.0
National gov't	(X)	46.1	46.6	36.0	41.2	37.5	44.0
	(Y)	1.8	3.5	2.0	0.0	0.0	1.9
Relief agency	(X)	16.6	8.6	12.0	0.0	0.0	12.8
	(Y)	1.8	0.0	0.0	0.0	0.0	1.1

figures are percentages of households

friends fall short of the expected frequencies, they are no less important sources to fall back on. It is important to note from this table that while larger farmers do expect more assistance from local or national government, the poorer sections expect assistance from their own community (relatives, friends, and villagers). This fact explains why most peasants, especially the poorer ones, want to cling to their localities, despite so many hardships. This is not due to a 'love of the place' nor an invisible attachment to 'kinship ties', as is often claimed by researchers, rather, it is clearly a question of the social security that is available even if it means poverty sharing for both parties.

7.5.1 Local Information and Advisory Services

Information, or for that matter warning, about a potential crisis situation is a vital component in preparing oneself for coping with disasters. Inhabitants are well aware of the potential hazards that may occur in Kazipur and Chilmari. Moreover, unlike earthquakes, flooding and riverbank erosion does not occur without notice. Symptoms of an imminent flood or impending erosion are recognizable well ahead of time to allow safeguarding of life, livestock, and movable properties. The respondents' in the study area were found to adopt precautions within their capabilities. Local level sources of information is available for an impending disaster. Advice, precautions, and some supports are also available from the local community in the face of disaster.

It appears from Table 7.12 that the most important source of information and advice is within the local community, especially relatives and friends. While villagers and some local leaders provide information and suggest precautionary measures, the role of the local level to national level administration, or even the media, is almost nil. This is due to a complete absence of a forecasting system readily accessible to the local people. It may be noted here that flood water levels in the rivers are regularly monitored by government agencies such as BWDB. Some relevant agencies of the government also monitor erosion potentials at the vulnerable reaches of rivers. The circulation of all this information is

restricted, however, and seldom reaches the ones who in fact need it most.[1] Nevertheless, it has also been mentioned that local or national government officials do provide information and suggestions (Table 7.12). Table 7.12 shows that only 0.16 percent of the respondents in Kazipur were given suggestions or advice by upazilla and district officials, or by the media, and only 0.32 percent were advised by national government officials.

Table 7.12 Sources of Information and Suggestion for Precautions

(1) KAZIPUR	Operational holdings					
Who suggested	<0.50 n=309	0.51-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total n=619
Relatives and friends	7.1	15.1	22.7	18.8	36.4	12.8
Other villagers	3.6	4.3	6.2	6.3	27.3	4.7
Local leaders	3.9	2.2	3.1	6.3	9.1	3.4
Upazilla office	0.3	0.0	0.0	0.0	0.0	0.2
District office	0.3	0.0	0.0	0.0	0.0	0.2
National gov't	0.0	0.5	1.0	0.0	0.0	0.3
Media	0.3	0.0	0.0	0.0	0.0	0.2
	15.5 n=48	22.0 n=41	33.0 n=32	31.3 n=5	72.7 n=8	21.6 n=619
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
Relatives and friends	7.5	9.7	11.8	4.8	23.3	9.3
Other villagers	6.6	5.3	5.9	4.7	10.0	6.3
Local leaders	2.4	4.4	2.4	0.0	10.0	3.1
Upazilla office	1.5	1.8	1.2	0.0	1.3	1.5
District office	0.3	0.0	0.0	4.8	0.0	0.3
National gov't	0.0	0.9	0.0	0.0	6.7	0.5
Media	0.0	0.9	0.0	0.0	1.3	0.3
	19.1 n=64	23.0 n=26	21.2 n=18	14.3 n=3	60.0 n=18	22.1 n=584

[1] A recent news release declares that a flood information centre started to function in Dhaka from May 2, 1991. The centre intends to collect and dessiminate news on river positions and floods (The Bangladesh Observer, April 28, 1991)

Table 7.13 Precautions Suggested and Actions Taken (by Operational Holdings)

(1) KAZIPUR Precautions Suggested (Actions taken)	Operational holdings <0.50 n=309	0.51-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total n=619
Pray to God	1.3	3.8	3.1	6.3	0.0	2.4
(Prayed to God)	14.9	20.4	17.5	50.0	18.2	17.9
Leave village	4.5	6.5	15.5	6.3	18.2	7.1
(Left village)	23.9	35.0	48.5	18.8	45.5	31.3
Inform officials	0.0	0.5	0.0	0.0	0.0	0.2
(Informed officials)	0.3	1.6	0.0	1.7	9.1	1.0
Shift homestead	6.8	8.1	12.4	18.8	18.2	8.6
(Shifted homestead)	66.7	74.2	77.3	75.0	72.7	70.9
Move to embankment	1.6	1.6	1.0	6.3	9.1	1.8
(Movedto embankmnt)	14.6	10.2	6.2	12.5	9.1	11.8
Reinforce bank	0.3	0.5	0.0	0.0	0.0	0.3
Earth protection	1.3	0.5	0.0	0.0	0.0	0.8
(Built protection)	2.9	6.5	5.2	1.7	0.0	4.4
Make chegar	1.0	0.5	2.1	0.0	0.0	1.0
(Saved money)	0.7	1.6	1.0	0.0	0.0	1.0
(Sold land)	0.3	0.0	0.0	0.0	0.0	0.2
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
Pray to God	6.9	4.4	3.5	4.8	13.3	6.2
(Prayed to God)	20.9	18.6	25.9	19.0	20.0	21.0
Leave village	6.3	7.1	9.4	4.8	10.0	7.0
(Left village)	36.0	30.1	44.7	42.9	40.0	36.8
Inform officials	0.3	2.7	1.2	0.0	3.3	1.0
(Informed officials)	0.6	0.9	2.4	0.0	0.0	0.9
Shift homestead	5.7	6.2	7.1	0.0	10.0	6.0
(Shifted homestead)	45.7	46.9	44.7	23.8	40.0	44.7
Move to embankment	0.6	1.8	2.4	0.0	0.0	1.0
(Movedto embankmnt)	12.8	8.0	9.4	4.8	10.0	11.0
Reinforce bank	0.3	0.9	2.4	0.0	0.0	0.7
Earth protection	0.0	0.0	0.0	0.0	6.7	0.3
(Built protection)	0.9	0.0	0.0	4.8	3.3	0.9
Make chegar	0.0	0.0	0.0	0.0	0.0	0.0
(Saved money)	2.1	7.1	10.6	4.8	6.7	4.6
(Sold land)	0.0	0.9	0.0	14.3	10.0	1.2

A similar picture is repeated in the case of Chilmari. Moreover, it would not be surprising if all the government-level information was provided on a personal basis rather than as part of official responsibility.

It was mentioned earlier that the adoption of certain mitigation measures against potential hazard is subject to one's social and economic capability. Such capability also determines the type of actions that one takes in a disaster situation. The type and patterns of information available to, and actions actually undertaken by the victims in disaster situation is summarized in table 7.13. Most of these suggestions were not backed by organized support services. As a result, victims found themselves left alone to actually decide where and how to move or make some protections against erosion. However, the actions respondents took also reflect victim's capabilities to act. Interestingly, the larger farmers received more advice compared to the marginal ones. It may be seen from Table 7.13 that more of the larger farmers left their village before erosion could take place while a higher proportion of poor peasants moved to flood protection embankments.

7.6 PEASANTS' ADJUSTMENT STRATEGIES

The fact that the magnitude of distress is higher for the poorer sections in a disaster situation is demonstrated in Table 7.14. This table summarizes the response frequencies of a question about the actions the peasants undertook at the time of their most recent flight from riverbank erosion. The most prominent actions were (a) abandon land, (b) sell livestock, and (c) dismantle housing structures and move out. Some also had to sell cultivable land or jewellery in order to bear the cost of resettlement. Here again, the poorer sections are forced to sell in distress to a much higher degree (Table 7.14). It is not always the case that everybody simply moves out of a place to avoid imminent disasters. Some stay back in the futile hope of protecting their property. Some even prefer to think that the fast current or the rising water level is not serious enough to threaten their properties. An

Table 7.14 Strategies Before Most Recent Move

(1) KAZIPUR	Operational holdings					
Actions	<0.50 n=216	0.51-2.00 n=98	2.01-5.00 n=59	5.01-7.50 n=11	7.51+ n=10	Total n=394
Sold livestock	21.8	21.4	32.2	54.6	30.0	24.4
Sold ornaments	2.3	7.1	0.0	9.1	0.0	3.3
Sold cultivable land	2.3	1.0	0.0	0.0	0.0	1.5
Sold homestead land	4.6	1.0	1.7	9.1	0.0	3.3
Protected land	1.9	3.1	5.1	0.0	10.0	2.8
Abandoned land	51.4	60.0	62.7	45.5	70.0	55.6
Shifted homestead	16.7	18.4	11.9	0.0	10.0	15.7
Saved money	2.3	1.0	3.4	0.0	0.0	2.0
(2) CHILMARI	n=217	n=58	n=50	n=17	n=24	n=366
Sold livestock	30.4	44.8	42.0	47.1	37.5	35.5
Sold ornaments	15.7	20.7	18.0	23.5	16.7	17.2
Sold cultivable land	0.5	0.0	0.0	0.0	4.2	0.6
Sold homestead land	12.9	8.6	12.0	0.0	4.2	10.9
Protected land	1.4	3.5	4.0	23.5	29.2	4.9
Abandoned land	19.4	15.5	20.0	11.8	20.8	18.6
Shifted homestead	13.8	20.7	20.0	23.5	20.8	16.7
Saved money	0.0	0.0	0.0	0.0	0.0	0.0

Table 7.15 Reasons for Staying at the Face of Erosion Disaster

(1) KAZIPUR	Operational holdings					
Reasons for staying	<0.50 n=216	0.51-2.00 n=98	2.01-5.00 n=59	5.01-7.50 n=11	7.51+ n=10	Total n=394
Safeguard homestead	9.7	5.1	11.9	9.1	10.0	8.9
Hoped river won't rise	13.4	5.1	11.9	18.2	20.0	11.4
Nowhere to go	5.1	5.1	1.7	0.0	0.0	4.3
Others stayed	2.8	0.0	5.1	9.1	0.0	2.5
So, had to be rescued	15.0	3.6	3.8	1.0	0.8	24.1
(2) CHILMARI	n=217	n=58	n=50	n=17	n=24	n=366
Safeguard homestead	1.4	0.0	4.0	0.0	0.0	13.7
Hoped river won't rise	4.2	0.0	8.0	11.8	0.0	4.1
Nowhere to go	13.4	5.2	0.0	0.0	0.0	8.7
Others stayed	2.3	1.7	0.0	0.0	0.0	1.6
So, had to be rescued	11.5	1.4	1.4	0.6	0.6	15.3

average of 24.1 and 15.3 percent of respondents in Kazipur and Chilmari, respectively, were found to have remained and had to be rescued (Table 7.15). They stayed until the situation had really gone out of control. Their reasons for staying in the face of imminent disaster are summarized in Table 7.15. It can be seen that the reason for staying to protect their properties or in the hope that the river would not rise further is more or less consistent across classes, while a much higher proportions of poorer peasants remained because they had nowhere else to go (Table 7.15).

7.7 THE PROBLEM OF RESETTLEMENT

In a densely populated land like Bangladesh, where can people be resettled from disaster-prone bank-line villages in Kazipur and Chilmari? Moreover, resettlement is not a simple matter of physically removing people from an unsafe place to a safer one (even if such a place is available). Population resettlement needs to be integrated with socio-economic resettlement. Respondents are apprehensive of any resettlement possibilities without such integration. In a crisis condition, poor peasants can think only of a socio-economic and geographic environment which would offer them some leverage of survival within their own control. A known environment, or an environment similar to what they are used to, is preferable to unknown or uncertain environment. Peasants acquire over the years an adequate knowledge of their own socio-economical and geographical environments. They adopt and train themselves in certain technologies which they simply cannot shed and quickly settle in a new environment. Table 7.16 may be treated as an illustration of this concept.

Peasants were asked where they would prefer to move in case they are forced to relocate by riverbank erosion. It is not surprising that majority of respondents want to move to a known environment. A nearby char obviously offers a known environment and hence it is a highly prefered choice. Other places in one's own sub-district (upazilla) are also prefered (Table 7.16). Even settling on a flood control embankment is preferable

because it is located in a known surroundings. Other sub-districts or towns are less preferred by respondents, except in the case of some larger farmers. This is because rich farmers have established linkages in towns. Economically also they can afford to make such a choice. But for the poorer peasants, khasland (land owned by the government) is a viable option.

Table 7.16: Peasants' Preferences of Places to Move due to Erosion Displacement

(1) KAZIPUR	Operational holdings					
Move to	<0.50 n=309	0.51-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total n=619
With relatives	11.7	17.2	26.8	18.8	0.0	15.7
To embankment	20.7	18.8	6.2	6.3	9.1	17.3
Khas land	8.1	7.0	5.2	12.5	0.0	7.3
Own upazilla	11.7	19.9	19.6	31.3	18.2	16.0
Other upazilla	2.9	3.8	6.2	0.0	0.0	3.6
To a town	0.0	0.5	3.1	0.0	9.1	0.8
To a Char	18.1	28.5	33.0	50.0	45.5	26.5
Resettlement area	5.8	8.6	5.2	0.0	0.0	6.3
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
With relatives	12.2	25.7	28.2	38.1	26.7	18.8
To embankment	21.8	13.3	10.6	14.3	10.0	17.6
Khas land	9.0	8.9	9.4	0.0	3.3	8.4
Own upazilla	15.5	14.2	22.4	4.8	26.7	16.4
Other upazilla	1.5	3.5	1.2	4.8	6.7	2.2
To a town	0.6	0.0	0.0	0.0	13.3	1.0
To a char	25.1	26.6	25.9	19.1	20.0	25.0
Resettlement area	10.2	8.9	3.5	0.0	3.3	8.2

The question arises as to why the more marginal peasants, in comparison with the larger ones (Table 7.16), have a lower preference to move to a char, given that the char is a known environment. This is because of their relations in the production system. Marginal peasants are, in fact, wage labourers. Their major source of income is from selling their labour and not from farming. Since charlands are cultivated less intensively, and because

the demand for agricultural labourers is not as high as on the mainland, the char appears to be less attractive to marginal peasants. However, char areas are still the most preferred place for all sections of the peasantry in both Kazipur and Chilmari.

It is interesting to note that government resettlement was not received with much enthusiasm (Table 7.16). This is not so much because peasants do not want to be resettled by government, but because resettlement to an unknown place involves uncertainties as regards to socio-economic environment. A very high proportion of the peasantry might be eager to move to known chars under a government resettlement programmes. Such uncertainty plays significantly in the minds of peasants regarding any public policy of resettlement and hazard mitigation. For example, when asked what the government should do about the overall mitigation and resettlement of vulnerable people, peasants commonly expressed the notions of physical (engineering) solutions to flood and erosion problems, which is discussed in the following section.

7.8 PEASANTS' ATTITUDE TO PUBLIC POLICY FOR DISASTER MITIGATION.

The attitudes towards government's role in population resettlement is summarized in Table 7.16. It appears that peasants are not very keen on government attempts of resettlement options. This attitude is based on uncertainties in the resettlement options hence option of relocating 'elsewhere' is viewed with apprehensions.

Apart from temporary socio-economic measures the state undertakes in mitigating hazard hardships, such as Langarkhana, other interventions in mitigating flood and erosion disasters are essentially engineering measures (see Chapter 4). These include the construction of embankments along bank-lines, laying concrete slabs along banklines to lessen the effects of fast current on unconsolidated soils, and building groyns to divert fast currents away from the bank-line. Dams are also possibilities in some instances, however, they are unlikely in the near future. A higher proportion of respondents in Kazipur think

that the government should build a dam on the Brahmaputra, while construction of more embankments is preferred in Chilmari (Table 7.17).

Table 7.17: Peasants' Attitudes regarding Government's Role in Disaster Mitigation

(1) KAZIPUR	Operational holdings					
Government Actions	<0.50 n=309	0.51-2.00 n=186	2.01-5.00 n=97	5.01-7.50 n=16	7.51+ n=11	Total n=619
More embankments	16.5	11.3	9.3	25.0	9.1	13.9
Strengthen embankmnt	2.6	4.8	1.0	0.0	9.1	3.1
More groyns	29.5	18.8	20.6	31.3	54.6	25.4
More concrete slabs	9.4	4.3	6.2	6.3	18.2	7.4
Build dams	31.4	29.6	35.1	37.5	27.3	31.5
Relocate on embankment	1.0	0.0	0.0	0.0	0.0	0.5
Remove from embankment	0.0	0.0	0.0	0.0	0.0	0.0
Relocate elsewhere	0.7	0.0	0.0	0.0	0.0	0.3
(2) CHILMARI	n=335	n=113	n=85	n=21	n=30	n=584
More embankments	23.0	23.9	30.6	38.1	36.7	25.5
Strengthen embankmnt	5.1	7.1	9.1	23.8	30.0	8.1
More groyns	12.8	7.1	7.1	14.3	10.0	10.8
More concrete slabs	21.8	16.8	16.5	0.0	23.2	19.4
Build dams	13.4	10.6	5.9	14.3	10.0	11.6
Relocate on embankment	0.0	0.0	0.0	0.0	0.0	0.0
Remove from embankment	0.0	0.0	0.0	0.0	0.0	0.0
Relocate elsewhere	0.3	0.0	0.0	0.0	0.0	0.2

In terms of embankment protection measures, respondents in Chilmari want the government to place more concrete slabs along the embankment, while respondents in Kazipur prefer that more groyns be built. Although hydraulic engineers in the BWDB are in better position to ascertain the relative effectiveness of such measures, as well as the respective costs and benefits, the local people have perhaps had some good experiences

from the respective engineering structures mentioned above. The engineering solutions that are suggested to the government are generally expressions of interests from the farmers who have lands to protect, rather than from the landless or the marginal peasants (Table 7.17).

Another interesting point needs to be mentioned here. In personal discussions with local people during data collection in the field, considerable resentment was expressed against the existence of the huge embankment that stretches about 250 km along the Brahmaputra. It was suggested by some people that the extents and durations of floods have increased since creation of the flood control embankment. This allegation cannot be totally ignored since the embankment is often breached under the heavy pressure of flood water. As a result, flooding occurs in the entire area near the breach. Moreover, once flooding starts at the breach-point the water cannot move back into channel downstreams due to the same embankment. Hence, at this point the flood protector becomes a flood enhancer in terms of duration and expanse. While feasibility and costs and benefit analyses were undertaken before the embankment was built in the early 1960s, it is not known if any pre-project impact assessment was ever made in the context described above.

Such pre-project impact assessments are important for any development projects and should incorporate people's opinion about developments that have a bearings on local environment. Popular opinion at individual level, such as mentioned above regarding the negative impact of the embankment, provide important perspectives on the whole project. Individual level opinion regarding natural hazards and development strategies is the focus of Chapter 8.

7.9 FATALISM IN PEASANTS' MINDS

It is often alleged that peasants in Bangladesh are fatalists (see for example, Islam 1974; and Haque, 1988); their actions are not pragmatic or they often do not do anything because they believe that nothing can be changed against the will of God. How justified

are these claims and what is the basis of such an allegation? Peasants' apparent passivity and their resistance to change and development or their failure to take initiatives in mitigating crisis situations have variously been conceptualized. For example, Foster (1965) holds that peasants view their world to be a finite one, where available resources are scarce and limited. In such condition of scarcity one's gain means someone else's loss. According to Foster, this image of scarce or limited goods encourages peasants to take no risk and become fatalist. Foster (1965:196) argues that

> "...the kinds of behaviour that have been suggested as adversely influencing economic growth are, among many, the 'luck' syndrome, a 'fatalistic' outlook, inter- and intra-familial quarrels, difficulties in co-operation, extra ordinary ritual expenses by poor people and the problems these expenses pose for capital accumulation, and the apparent lack of what the psychologist McCelland has called "Need for Achievement".

However, Foster's qualification of peasants' behaviour is not sufficient to explain the motivation of such behaviour.

In sharp contrast to Foster, Huizer (1972) directs his attention to a "culture of repression" highlighting coercive social structural conditions in which peasants live. Huizer suggests that the peasantry shows passivity and reluctance in taking risk because they are in a constant fear of hunger, of lossing jobs and property, and of punishment. Huizer's explanation makes it easier to understand why poor people behave like a fatalist in a repressive society. Physical violence does not prevail in Bangladesh in such mode and magnitude as it did in the Zamindary system in the past. Nevertheless, there exists a constant sense of insecurity of food, job, and property. Kabir (1988:18, in Hussain Zillur Rahman, 1988) points out that personal security is of vital importance as it relates to the condition of poverty. She notes that

> "...Vulnerability to violence and harassment appear to be endemic to the poverty situation in Bangladesh. In the rural context, both the intense competition for dwindling resources among the very poor as well as the maintenance of the existing power structures results in random as well as systematic intimidation, harassment, violence and murder, of which it is the relatively powerless that are most often victims" (Kabir, 1988:18, in Hussain Zillur Rahman, 1988).

The complex of ever increasing poverty and the dominance of the rural power structure over the society often make peasants remain passive and express fatalism. However, the responses of peasants to various questions regarding hazard-causes and mitigation strategies does not support the contention that the peasants are more fatalistic than pragmatic. It was shown in the earlier discussions on peasants perception and adjustment strategies that vulnerable victims show pragmatism in dealing with crises situation. Indeed, some strongly hold that "...the actions of the members of the households observed were strikingly and nearly uniformly purpose-oriented in respect of their obtaining a livelihood and economic security" (Jansen, 1987:11, emphasis added).

Table 7.18 Peasants' Views of Supernatural Power in Hazard Occurrence

	Will of God causes erosion		Expected assistance from God		Prayed to God	
	K	C	K	C	K	C
<0.50	30.4	38.2	17.2	4.5	14.9	20.9
0.51-2.00	40.3	34.5	23.7	3.5	20.4	18.6
2.01-5.00	34.0	22.4	30.9	10.6	17.5	25.9
5.01-7.50	37.5	23.8	31.3	14.3	50.0	19.0
7.51+	18.2	30.0	18.2	3.3	18.2	20.0
Total	33.9	34.2	21.7	5.5	17.9	21.1

K=Kazipur, C=Chilmari

The basis of the allegation that peasants are fatalist comes perhaps from some of the structured questionnaires used in social science survey research. For example, the REIS questionnaire contains a question asking what causes riverbank erosion. Possible responses to this question were supplied to respondents of which one was "Will of God"[2]. A significant number of responses were forwarded by the respondents (Table 7.18).

[2] It remains to be seen what the peasants response would be if the word 'God' is replaced with another word, for example, 'Devil'.

On the basis of such high response it would usually be very tempting to draw a conclusion that the concerned peasants are fatalists. But it would be misleading to generalize, firstly, on the basis of these percentages since a significant majority did not express a similar view, and secondly, these responses are often an expression of respect to God. It has nothing to do with one's actions in a disaster condition.

If it has to be believed that peasants are really fatalist, then their actions and precautions in the face of disasters, as shown earlier in this chapter, would become meaningless. Verbal responses, that floods and erosions are the acts of God may be a self delusion. When a society is left with no efficient technology to control disasters, it can only resort to God to express its helplessness and perhaps to gain a psychological boost to survive. Victims of flood and riverbank erosion in Kazipur and Chilmari, or in all the hazard prone areas in Bangladesh, are more helpless than fatalistic. To understand the reality of the helplessness reflected in peasants' apparent conviction one should, as suggested by Rogge and Haque (1987: 9) "...not loose sight of the fact that the dilemma faced by displacees is but part of the much larger issue of impoverishment and marginalization that permeates the whole of rural Bangladesh" (emphasis added).

CHAPTER VIII

INDIVIDUAL EXPERIENCES OF SOCIAL, ECONOMIC AND NATURAL HAZARDS: SOME CASE STUDIES

As noted in Chapter 2, the purpose of these case studies is to focus on the free opinion of individual peasants regarding agricultural problems and their views on the effects of natural hazard on agriculture in general. The life histories of individual farmers are intended to show specific examples of their ability to cope with crisis situations. It is also expected that the individual life histories will focus on the differential capabilities of rich and poor peasants in coping with natural disaster. The specific purpose of the case studies is to understand the relative significance of social processes of impoverishment and marginalization as a result of natural disaster.

Six case studies are presented in this chapter. The first three respondents fall into the category of Class B farms as outlined in Chapter 1, while rest are Class A farms. Opinions on life experiences and data on farming put forward by the respondents are recorded here exactly as reported, and any inconsistencies there may be were not corrected. These inconsistencies do not invalidate the data; rather, they reflect sincere expressions of the manner in which farms are managed. They show that formal stock-taking or accounting of farm operation is not usually practiced and that rural household budgets are in fact negatively balanced in most cases in rural Bangladesh.

The real names of the respondents are suppressed, and pseudonyms are used on the grounds of ethics and rights of privacy. However, the fact remains that the respondents would be readily identified in the field on the basis of the facts recorded here. The case studies were recorded in Bangla and translated later. Some of the inner senses might have been lost in translation but attempts have been made to keep the exact expressions of the respondents.

8.1 CASE STUDY # 1: CHILMARI

8.1.1. MIR KASIEM TALUKDAR

Age:	85	Land Ownership:	65 acres	
Education:	5 years	Homestead land:	(1) 1 acre	(2) 0.90 acre
Occupation:	Farming/business	Housing Structures:	(1) 7	(2) not reported.
Household size: 16		Land lost due to erosion: nil		

8.1.2 Household Structure

The household consists of 16 members, including three maids and three male servants. The male servants are younger in age, ranging from 13 to 17, while the maids are from 12 to 60. All the servants are employed to take care of household chores. The respondent had two sons, of which one died at about 19 years of age. The eldest son, Abid (50) is a registered physician and his wife, Abidjan (40) is a high school graduate (matriculate). They look after the family farm of 55 acres in Chhurimari. Abid has three daughters whose ages range from 9 to 25. The eldest daughter, Gina is a final year medical student, and the two other daughters go to school. The respondent's deceased son left behind his wife, Rani (45) and a son, Raja (Table 9.1). Both the wife and the son live with the respondent. Raja (25) is married and very recently became father of a daughter (Aloo). Raja's wife, Momo (18) is a matriculate.

8.1.3 Family History

The family of this respondent is prominent in the locality. The respondent himself was a member of the Union Parishad (now Union Council), while his brothers was Chairman since 1945. Originally they were resident of Banshpara village, but due to riverbank erosion they had to move to their present location in Sargaon in Modafat Thana. The respondent's grandfather (Ful Miah), though illiterate, was a gram pradhan (village chief); owned 13.33 acres of land; and had four sons and a daughter, including the respondent's father. His first uncle, Komol, was also illiterate, a Matbar (leader) and a

farmer. Komol used to cultivate a four acre farm, and had two sons and a daughter. The second uncle, Dukhu, had the same amount of land as Komol. All his children (two sons and a daughter) died of cholera, leaving the household descendentless (Nirbangsha). The third uncle, Jitu, was also a very well-to-do farmer, and had 4 sons and 2 daughters, all of whom are now maintaining impoverished households.

The grandfather's daughter, Fatema, was married to a very rich Kuthial (plantation farming of Indigo). This aunt had four sons and three daughters who are more or less well off, but not comparable to their mother's property. The fourth son of the grand-father, the respondent's father - Miru had five years of schooling and was very well-off. He was a manager of the Zamindary-cum-Trading estate of Modhuram Shaha. During this time, he purchased 28 acres of land through the privilege and influence he enjoyed by being the manager of the Zaminder. Miru also inherited six acres from his grandfather. Obviously he could not cultivate all these 34 acres by himself and thus rented-out all his land on 50 percent sharecropping basis. He was honest, simple, prudent, and a socially respectable man. He was also a social worker and established a primary school in the village.

Miru had three sons and two daughters. The first daughter, Hira, was married to a very rich man and had five sons and two daughters, all of whom were educated and respectable in the society. The second child, Akter, had BA and BT degrees and taught in various government schools for a long time.

After retiring from his government job he became the headmaster of a local high school. He had nine acres of land, all of which were rented-out to sharecroppers. He left seven daughters and two sons. All his children are university graduates. All his daughters are married to well educated and service-holding families. The youngest son, Abdul, was a government servant. Abdul rented out part of his inherited (10 acres) land and cultivated part of it with the help of wage labourers. Abdul had four sons and two daughters; all were well educated. All the sons were in various services, including the elder son who is a professor in Naogaon College. The last but most favorite of all children was a daughter

(Sufia, now 78). She was married to a very rich and respectable family and had three sons and three daughters. All of them are educated and well placed. Two of the sons are in services. The eldest one is a farmer, a contractor, as well as a social worker and is presently the elected Chairman of Paranpur Union Council.

The respondent, Mir Kasiem, was the second son, and third among the children of Miru. Mir Kasiem was a farmer, a jute trader, and a member of union council. His eldest son is a doctor and practices medicine in the locality and supervises their farm in Chhurimari. The second son died, leaving behind his wife and a son. This grandson, Raja, is a high school graduate, and looks after the land in Modafat Thana. Raja also runs a business.

8.1.4 Land Control, Farming, and Household Income

Mir Kasiem inherited 10 acres of land from his father and purchased five acres in Sargaon. Later he purchased an agricultural farm of 55 acres in Chhurimari. Over the years he had to sell five acres of land in Sargaon due mainly to (i) loss of crops caused by floods in the 1960s, (ii) to cover the cost of medical school for the elder son, (iii) to purchase land in Chhurimari, and (iv) to meet union council election expenses. Most of the money for the purchase of the 55 acre estate came from his jute trading.

At present the Mir Kasiems have a total of 65 acres of land. The farm in Chhurimari is supervised by the elder son and his wife. The land in Chhurimari was under their direct cultivation with the help of wage labourers, but due to high labour costs they have rented out 25 acres of land since 1984. The rest of the land (33 acres) remains fallow due to want of interested sharecroppers because the land is not suitable for crops other than tobacco. The homestead size is 0.9 acre including a 0.3 acre garden. The land in Sargaon is managed by the grandson (Raja) and they have five acres under their own cultivation which they cultivate with wage labourers. An amount of three acres is rented out on a 50 percent sharecropping basis. They also mortgaged-out an acre (to cover election

Table 8.1 Annual Agricultural and other Expenditures

Expenses	Taka	Expenses	Taka
Wages (150 casual labourers, @ Tk. 20)	3, 000	Groceries	1, 800
		Clothes	10, 000
Hiring plough team	2, 000	Education	7, 000
Implements	500	Health	1, 000
Transport	500	Festivals	600
Fertilizers	1, 200	House repairs	200
Pesticides	500	Guest entertainment	500
Bank interest	1, 600	House rent in town	3, 000
Irrigation cost	5, 000		
Land tax	2, 000	Election expenses	150, 000
Zaqat/ Fitra	100		
Permanent labourers (paid to 2 workers)	1, 300	Bank Loan	15, 000

Table 8.2. Housing Structures

Structure	Size (Sq.ft)	Construction Materials	Use
1	540	Wall and roof tin,	Bedroom
2	540	Wall and roof tin	Bedroom, paddy storage
3	594	Wall and roof tin	3 Bed rooms, 1 paddy store
4	210	Wall and roof tin	Kitchen, Paddy Husking
5	240	Wall and roof tin	Shallow Tube Well shed
6	200	Straw hut	Fire wood storage
7	300	Straw hut	Cattle shed
8	3600	Drying floor	for paddy
9	3600	Drying floor	for paddy husking, drying
10	4800	Threshing floor	threshing,jute & Straw drying

There are concrete walled and tin roofed bath room, a hand tubewell, and two tin walled latrines in the homestead. They have electricity (grid) in the homestead.

expenses). The value of agricultural land has risen substantially since 1940. Cost of one bigha (0.33 acre) of land has risen from Tk. 50 in 1940 to Tk. 500 in 1962, to Tk. 4,000 in 1973, and to Tk. 25, 000 in 1985.

The farm in Chhurimari is irrigated by a DTW. This is a government DTW, but is managed by Mir Kasiem's household. The land in this area is not suitable for all crops needing irrigation because the top-soil is very shallow (1 to 1.5 feet). The top-soil is underlain by a layer of coarse sand and thus cannot hold irrigation water. Only tobacco is suited for such shallow top-soil. While there are many DTWs in this area, farmers lost by investing in irrigation in this area. The engineers who installed DTWs did not examine the soil conditions, but rather installed them for their personal gain (the engineers were bribed).

The land in Sargaon is managed by the grandson (Raja) and the Mir Kasiems have five acres under their control which is cultivated with wage labourers. About three acres is rented-out on a 50 percent sharecropping basis. Mir Kasiem also mortgaged-out an acre to cover election expenses. The homestead consists of 0.33 acre of housing units, 0.57 acre of ponds, and 0.05 acre of bamboo grove.[1] Their household income includes Tk.20, 000 from the medical practice of the elder son and Tk. 15, 000 from a business operated by the grandson.

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[1] Rural settlements are complex phenomenon in terms of their size, function, and pattern. The patterns and sizes of settlements are related to surface configuration, economic function, cultural values, and population size (see Rahman, 1981). A rural settlement consists of farmsteads of various shapes and sizes. Due to high population growth, the need for new housing is ever increasing in the rural areas, and valuable agricultural lands are being lost regularly to accommodate new homesteads. Housing is needed for newly created, separated, or erosion displaced households. The pulse of peasant society, its economy, values, and attitudes all gravitate towards the farmstead. A farmstead varies in size with variations in activities of a peasant household which is, in turn, a reflection of its social relations, resource control, and economic strength. The appearance of homestead structures in a rural setting will instantly reflect the social position of a peasant household.

8.1.6 Social Problems and Changes

Mir Kasiem believes that the all pervasive poverty is the major problem in present day society. This poverty causes widespread divorce and multiple marriages in the poorer section of the community. Mir Kasiem holds that despite poverty conditions due to excessive population growth, the condition of agricultural labourers has improved much these days. They are gaining status. In the old days only rich people could afford bicycles, but today poor people are buying and using bicycles. The Krishi Bank and the Gramin Bank help the poor and destitute people, especially the women. Many women are now earning a living with the help of the loans from these Banks.[2]

Table 8.3 Ownership of Assets

Assets	Number	Assets	Number
Bullock carts	1	Other trunks and suitcases	enough
Motor cycle	1	Bedsteads (Khat)	3
Bicycle	1	Dressing table	1
Radio/cassette player	1	Almirahs	3
Hand tube well	1	Wooden beds (Chauki)	4
Shallow tube well	1	Chairs/tables	10
Ploughs	2	Gold ornaments	worth Tk. 20, 000
Large wooden trunk	1	Cows	4
Wooden boxes	2		

8.1.7. The Significance of the Case:

The ancestors of Mir Kasiem were traditionally rich and prominent in the locality. Members of the respondent's household and their relatives are all well educated and engaged in various professions. Although their prominence is traditionally land-based, professional diversification played a significant role in their local prominence. It appears

[2] In fact, credit from the Krishi Bank (the Agricultural Bank in the public sector) is not accessible to poor peasants, especially those who have nothing to offer as collateral; and the Gramin Bank is still an experimental banking system in a few selected Upazillas aimed at providing a non-collateral form of rural credit for the poor.

that the prominence of the family now rests more on diversified and significant professions than on farming alone.

There are doctors, professors, civil servant, and traders in the greater family circle of Mir Kasiem. However, this household has lost much of the social power it had despite the fact that they still own an unusually large landholding, much of which is sharecropped out. Today, sharecroppers are much less obliged to act as obedient clients in this family's control of rural power; the defeat of one of its members in the local union council election is an example of such loss of power.

Another interesting point is that rich households such as this one mortgages-out land when they are in need of cash. Mir Kasiem also sells portions of his land as much to mitigate flood damages as to buy land elsewhere. Moreover, unlike marginal peasants, crop damage due to flooding does not cause any hardship from which the household cannot recover.

8.2 CASE STUDY # 2: KAZIPUR

8.2.1 RAHMAN MONDOL

Age : 40	Landownership: 8 acres
Education : BA	Homestead land: 0.66 acres
Occupation : Farming/business	Housing Structures: 6
Household size: 13	Land lost due to erosion: 35 acres

8.2.2 Household structure

Rahman's is a joint family of 13 members, including his aunt and cousins. His late father, Shamsher Mondol, and uncle, Ali Mondol, jointly inherited five acres of land from their grandfather, Borat Mondol. Rahman's grandfather (Borat Mondol) was an illiterate farmer who formerly maintained a five acre farm and had three sons and a daughter. Rahman's father was the first son of Borat Mondol. Common interest in land that had been inherited made the two families remain as one household.

After the death of their parents, Rahman Mondol and his cousins remained in the same household, which now consists of Rahman Mondol (40), his wife (32), one son (7) and a daughter (3). Also included are his two male cousins (45 and 28), their wives (25 and 22), and their offsprings (3, 1 and 1). A widowed aunt (55) and a female cousin (13) also live in the household. Rahman Mondol looks after the major functions of farm and trades in jute. The youngest of the cousins helps him with farming while the older one teaches in the local primary school. Like Rahman Mondol, the older cousin also has a BA degree. The female members of the household, except the aunt, have several years of schooling. All the wives (whose ages range between 22 to 32), the aunt and the younger cousin together look after the household chores.

8.2.3 Sphere of Social Relations

Rahman Mondol's households, starting from his parental household, were displaced several time by riverbank erosion. Usually the Samaj remained together while moving in the face of these erosion related displacements, except the younger uncle (Afzal Mondol) who moved to Kunkunia following displacement in 1963. People belonging to one Samaj do not usually move out of their own Samaj, because they would not be well received in a new Samaj. Though people of another Samaj would likely treat newcomers well, in reality they ostracize river erosion displacees. This is why frequent displacees prefer to remain in their own Samaj.[3]

Rahman Mondol is a Matbar (village leader and arbitrator) in his own Samaj, as well as outside his. He is often invited by other Samaj to arbitrate and likewise Matbars (leaders) of other Samaj are also called in to participate in dispute settlements.

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[3] The Mondols have a wide geographical, and therefore also a social sphere of relations and interactions that extends to neighboring Unions, Thanas, and even Districts (Table 9.6). This table points to one important facet of the social relations; matrimonial relations across geographical boundaries invariably and most necessarily reflects relationship across social (Samaj) boundaries. It may be mentioned here that 3, 4 or 5 miles in rural Bangladesh is a significant distance. Within such distances, there may exist a number of villages and, therefore, social organizations (Samaj).

The local level dispute settlement courts (Salish) are convened to deal with family disputes over land property or monetary transactions. The verdicts of the Salishs are normally accepted and carried out. But there are problems in implementing orders through Salish. For example, one person was seriously injured in the head in a dispute over distribution of inheritable land and the verdict of the Salish was not honored. As a result, the case ultimately landed in a civil court and was settled three years later. On an average three cases come to the Salish in a month. Some cases involve women, mostly divorces. Some of these cases are sent to formal courts and are settled there.

8.2.4 Land Control, Farming and Household Income

Rahman Mondol's father and older uncle jointly inherited all of his grandfather's land (five acres) while his younger uncle purchased three more acres of land in Kunkunia (his father-in-law's village) and settled there. Before he settled in Kunkunia, he had lost 17.5 acres of land to riverbank erosion. Rahman Mondol and the joint family of cousins now own eight acres of land of which two acres are in char areas, and four acres are located in another union (Sonamukhi).

The family has lost a total of 35 acres of land to riverbank erosions. Rahman Mondol's household cultivates a total of two acres which is fragmented into six plots on the mainland. They also cultivate 0.66 acre of their char land, while the rest of the land (1.33 acres) is sharecropped-out on a 50 percent share basis. The land they own in Sonamukhi Union (4 acres) is sharecropped out to 4 different farmers on 33 percent share basis. Rahman Mondol recently sold two oxen for Tk. 2,600 and incurred a loss of Tk. 3, 200 due to the death of two cows. They expect to purchase two cows this year.

8.2.5 Agricultural Technology

The Mondols use traditional ploughing methods for cultivation and own three modern irrigation systems, namely, one power pump and two STWs. These three systems

are irrigating about 55 acres of land under HYV paddy, chillies, wheat and potatoes. Apart from irrigating their own two acres of land, they rent the machines for irrigating others' land. Rental income from the power pump is Tk. 3, 000 per season, while the two STWs earn 500 mounds of paddy at a Taka value of about Tk. 75, 000.

Table 8.4 Sphere of Matrimonial Relations of the Mondols

Persons	Relationship to respondent	Married in the village of	Distance from homestead
Shamsher Mondol	Father	Sariakandi Thana, District Bogora	8 miles
Azhar Mondol	Uncle	Meghai	6 miles
Rupali	Female cousin	Fuljhar	3 miles
Komola	Female cousin	Kunkunia	4 miles
Hayatoon	Paternal aunt	Dhunat, Bogora	10 miles
Afzal Mondol	Uncle	Kunkunia	4 miles
Hossain	Male cousin	Meghai	6 miles
Saiful	Male cousin	Bawga, Dhunat	6 miles
Rahman Mondol	Self	Own village	(Maijbari)

Table 8.5 Annual Household Expenditures

Household Expenditures		Agricultural Expenditures	
Purchases	Taka	Expenses	Taka
Paddy	6,000	Fertilizers	2, 000
Clothing	4,000	Insecticides	200
Groceries	5,000	Seeds	500
Kurbani (Eid)	900	Rent (spray machine)	100
Medicine	500	Transport	500
Jakat/Fitra	150	Labour	2, 500
		Land tax	170
		Straw (fodder)	5,000

The two STWs were purchased through a Krishi Bank loan from the Bangladesh Agricultural Development Corporation at cost of Tk. 66,000. They paid a Tk. 8,000 down payment and Tk. 1,000 as "service" charges (bribes). The terms of payment for these two

STWs is six installments of Tk. 12,000 each. The two STWs consume nine barrels of diesel and 10 gallons of mobile oil per season at a total cost of Tk. 16, 500 . Rahman Mondols also own a HTW for drinking water which is also used by at least 10 neighbours in the village.

8.2.6 Displacement Experience

Besides losing 35 acres of agricultural land to riverbank erosion, the Mondols have been displaced from their homestead five times since 1958. Following each displacement, they moved a very short distances away from the riverbank and remained in the same village until their third move to the present village (Maijbari).

First Displacement (1958):
Lost a homestead of 1 acre, and moved 50 yards away from the river in the village of Hat Gachcha. They were able to move their housing structures. All the valuable trees were lost to the river. Amount of loss was approximately Tk. 50, 000 (including value of land at the rate of Tk. 100 per decimal).

Second Displacement (1959):
This time moved a distance of 100 yards in the same village. Lost 0.66 acre of homestead land. At this time the value of land was Tk. 150 per decimal and total loss amounted to Tk. 20, 000.

Third Displacement (1961):
At this time they were able to move out before erosion could take its toll on the main housing structures, except a cattle shed. Amount of loss was approximately Tk. 10, 000 when the land value was Tk. 150 per decimal. This displacement moved them to a homestead of 0.50 acre in the village of Maijbari, 200 yards away.

Fourth Displacement (1961):
Amount of loss was Tk. 8, 000 at this fourth displacement. Value of land remained the same as before. This time they moved 300 yards inland to a new homestead of 0.83 acre.

Fifth Displacement (1963):
Approximate amount of loss was Tk. 15, 000 at the rate of Tk. 200 per decimal, and moved to a distance of 600 yards to the present homestead of 0.66 acre. The river is approaching the present homestead and is at a distance of only 200 yards.

During these five displacements, the Mondols have had to move once out of their own Mouza (Hatgachcha) in 1961 to settle in the present one (Maijbari). On every

occasion, neighbours were of great help in dismantling and shifting the housing structures and other properties to the new locations.

8.2.7 Land Value and Riverbank Erosion

Rahman Mondol thinks that the reason for the rise in land value is not due to the WAPDA Embankment. Rather, he believes that demand for land has increased tremendously due to riverbank erosion which creates scarcity of land. All displacees want to purchase land for cultivation and for homestead.[4]

8.2.8 Housing Structures of the Mondols

Mondols have six housing structures (for bedrooms) made of tin roofs and walls. They also have a large 900 square feet drying floor used for drying paddy, chillies, pulses, and mustards. Their threshing floor is about 3,375 square feet and is used for threshing paddy, drying jute and straw and feeding cattle. This floor is capable of operating four threshing teams simultaneously; usually six cattle are set to make a threshing team.

8.2.9. The Significance of the Case:

This household's prominence, like the previous case, does not stem from the amount of land they cultivate. The main source of income is trading and renting irrigation equipment. This case shows that the rural Samaj is not a closed institution as is often portrayed by social scientists (see Chapter 2). The fact that rural Samaj do not necessarily operate in a rigid social boundary is exemplified by Rahman Mondol's involvement in activities of different Samaj. The extended family of Rahman Mondol is also involved in different Samaj through matrimonial relationships.

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[4] It is suggested by many local people that the land values in this part of Kazipur Upazilla have risen because of the embankment created for flood protection by WAPDA. This embankment has provided protection to agricultural land and people can now cultivate safely. Hence, as believed by some, value of land has also risen.

The most significant point in this case is the number of displacements the household suffered and the amount of land it lost to riverbank erosion. Despite five costly erosion-related displacements and a loss of 35 acres of land, this household did not turn into a destitute household.

8.3. CASE STUDY # 3. KAZIPUR

8.3.1. MALI AKOND

Age	: 60	Landownership:	5 acres
Education	: 3 years	Homestead land:	0.29 acre
Occupation	: Farming/business	Housing structures:	7
Household Size: 12		Land lost due to erosion:	2 acres

8.3.2 Household Structure

Akond has four sons and three daughters. The eldest son, Hossain (40), is a member of the Union Council. He is married and has one son and four daughters. The second son, Ali (28), is a teacher in Bilchatal Primary School and runs a clothing business. The third son, Satter (20), is the driver of their own power pump. The fourth son, Islam (17), is a student in grade ten. None of the other three sons are married. Of the three daughters (Sabia, Salma, and Sajeda), the elder died of fever at the age of 22 and Salma died during delivery of her second child. Salma's orphaned daughter, Lata (7), now lives in her paternal grandparents house. The third daughter is married and lives with her husband in a separate household. Akond's household also contain two minor permanent household servants. He also hires a maid servant on a daily basis.

8.3.3 Sphere of Social Relations

Mali Akond's grandfather, Baham Munshi, who was an Imam at the local mosque, had an entrance (equivalent of matriculation) degree. Therefore the family has had considerable influence in the locality. Akond's household was displaced in 1971 due to

riverbank erosion and moved to a new Samaj. He had no problems in adjusting to this new Samaj. The general prosperity of the household was also not affected by the move to new location. Riverbank erosion loss includes 0.66 acre of land valued at about Tk. 40, 000. Before the river actually hit the homestead, they were able to cut and sell all trees and shift all housing structures and cattle. Like the second case study, Akond's household also has a wider geographical and social sphere of relations and interactions, as shown in Table 8.7.

8.3.4 Land Control, Farming, and Household Income

Mali Akond cultivates 4.17 acres of land, including 1.33 acres leased-in, and 0.83 acre sharecropped-in land, while he leased out 0.50 acre of Charland.

Table 8.7: Sphere of Matrimonial Relations of Akond's Family

Persons	Relations to Respondent	Married in the Village of	Distance from Homestead
Ahmed Akond	Grandfather's brother	Hatgachcha	0.5 mile
Rais Akond	Grand uncle	Char Ghoragachcha	2.5 miles
(Name not reported)	Grand aunt	Char Ghoragachcha	2.5 miles
Jubeda Khatoon	Grand aunt	Satkoya, Kazipur	3.0 miles

8.3.5 Cases of Disintegrations

Akond's grandfather (Baham Munshi) had 16 acres of land, including nine acres on a Char. He was an influential man in his locality because of landownership, education, and his social position as an Imam at the local mosque. Baham Munshi had three sons and two daughters, all of whom were illiterate. The first son, Ahmed, inherited 13.17 acres of land, while the second one, father of the respondent, inherited 11 acres and purchased a further two acres. Ahmed, the respondents' uncle, had four sons. He left 0.83 acre of land for each of his sons. Ahmed's first son died without descendents and his land was inherited by his brothers. The other three sons have now become marginal farmers with an

average of one acre each. On the other hand, Baham Munshi's brother, Abdul, left a very bleak future for his descendants. Four of his grand daughters now live on the WAPDA Embankment, while seven of his grandsons are landless, one of which has settled in his father-in-law's households on a char. Abdul's only daughter was married on a char (Ghoragachchar Char).

Table 8.8 Annual Household Income and Expenditures (1984-85)

A). Agricultural Income — Non-agricultural income

Crops Sold	Taka	Source	Taka	
Paddy	15,000	Clothe business	13,000	
Chillies	16,000	Flour mill	10,800	
Jute	6,700	Sale of livestock	4,200	
Mustard	7,000	Remuneration	1,800	(UC Member)

B). Household Expenditures: — Agricultural Expenses

Costs	Taka	Costs	Taka
Food	10,000	Seeds	500
Clothes	7,000	Fertilizers	3,000
Education	3,000	Pesticides	200
Health care	5,000	Implements	200
Eid festival	15,000	Irrigation	1,000
Transport	3,500	Labourers	6,000
Goats purchase	700	Flour mill operator	800

8.3.6. Significance of the Case:

Akond's is an enterprising household. His household income is derived from farming, trading and services. Akond operates a viable farm which includes rented land, while he leases-out half an acre of his own land. Income from various sources has given this household an ability to mitigate a large erosion-loss of property in 1971.

Despite their roots to a wealthy and prominent family, all of Akond's cousins eventually turned into marginal and landless peasants. Their impoverishment is not,

however, related to any natural hazards. It is interesting to note that a viable farmer such as Akond is well received in a different Samaj after erosion related displacement.

8.4. CASE STUDY # 4: CHILMARI

8.4.1. FOZLUL HOQUE

Age	: 41	Housing structure:	4
Education	: 5 Years	Landownership:	1.50 acres
Occupation	: Business/farming	Homestead land:	0.15 acre
Household size: 9		Land lost to erosion:	0.34 acres

8.4.2 Household Structure

Fozlul was married to Ambia (30) in Guratipara, two miles from his own village and had five sons and two daughters. The third son died at birth. The first son, Shah Jalal (16) is a student in grade ten. The daughter Kohinoor (13), the third and fourth sons, Sekander (10) and Mustafa (8), are in grade 6, 3 and 1 respectively. The fifth son, Ershad, is five years old, while the last daughter, who has not yet been named, is eight months old. The household of nine includes a Rakhal (a permanent cowboy who is paid Tk. 800 cash per year, plus clothing).

Fozlul's grandfather (Arat Ullah) had three sons and 6.33 acres of land which were inherited by his sons in equal shares of 2.11 acres each. The grandfather's younger brother, Zinat Ullah, owned 4.33 acres of land which were inherited by his two sons in equal shares.

8.4.3 Land Control, Farming, and Business

Fozlul Hoque had two brothers. His father's land (2.11 acres) was divided into three shares, allowing Fozlul to inherit about 0.69 acre. This inherited land was in 16 fragmented plots. Later, Fozlul purchased 0.66 acre in seven fragments. Besides his own land, Fozlul also sharecrops another 0.66 acre. Both Aus and Aman paddy are produced

on this sharecropped land. Since 1984, he also started to cultivate Irri with the help of a STW. He has to pay Tk. 50 per 0.33 acre for irrigation. Previously, most of his land was under Aus paddy. Besides farming, he deals in cattle feed (Bhusi Mal) which earns him about Tk. 1,000 per month. About four years ago, HYV paddy was introduced in Chilmari Upazilla.

8.4.4 Land Value and the WAPDA Embankment

Fozlul Hoque purchased 0.63 acre of land for Tk. 6,000 in 1982, and in 1985 he purchased a further 0.24 acre of land for Tk. 8,000. In 1983, he lost 0.24 acre of land to riverbank erosion valued at Tk. 1,600, and in the same year he bought another 0.10 acre for Tk. 300, which has since gone to the river.

These days, the land value inside the WAPDA embankment is Tk. 24,000 per bigha (0.33 acre) and outside the embankment land is very cheap at Tk.1,600 to 2,000 per bigha.[5] Land is even cheaper outside the old embankment at Tk. 1,000 to 1,200 per bigha. Land values immediately after independence in 1971 were Tk. 8,000 to 10,000 inside the embankment, and Tk. 4,000 to 6,000 per bigha outside it. The price of land has gone up due to the construction of the WAPDA flood protection embankment.

8.4.5. Significance of the Case:

In terms of landownership or operational holding, Fozlul Hoque is a marginal peasant, but his second occupation, petty trading, gives him the advantage of living a relatively better life than his fellow marginal peasants.

This case, like case #3, shows the negative side of property distribution through the law of inheritance. Viable farms are often turned into unviable ones by this process of property distribution. The viability of a farm cannot be preserved from destruction because

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[5] Due to breaches at several points in the old embankment a new embankment was constructed behind the old one.

there are no alternative income opportunities available for all the members of a household. This situation makes family members cling to whatever they can grab by the right of inheritance.

8.5. CASE STUDY # 5: CHILMARI

8.5.1. SATY NATH

Age	: 59	Housing Structure:	2
Education	: Illiterate	Landownership:	0.66 acres
Occupation	: Farmer	Homestead land:	very insignificant
Household Size: 6		Land lost to erosion:	11 acres

8.5.2 A Severe Case of a Victim of Natural Disaster

Saty Nath assumed responsibility for his household at the age 42. At that time they had 11 homestead structures including 5 large tin-roofed houses. They had 22 cows, including eight milking cows which produced 15 to 20 liters of milk every day. They used to have three plough teams, owned a country racing boat, and reared a horse as a hobby.

Saty Nath had no brother or sister. At present, Nath has a 6 member household living on the very brink of the river on a very small piece of left-over land from bank erosion. His father had 11.66 acres, while his grandfather had 23.33 acres of land. Saty Nath was the sole owner of his father's land (11.66 acres), but unfortunately almost all of it was eroded by the Brahmaputra between 1969 and 1985. Recently, 2.33 acres have reemerged on a char but are not cultivable due to excessive sand. The erosion has been caused by a channel called Dharla which used to run at a distance of more than two miles from the Brahmaputra 40 years ago but now these two channels have blended into one.

Because of continuous erosion, the Brahmaputra almost reached Nath's homestead in 1969 but then receded, leaving behind a long tract of char. After about six years, however, the river started again to encroach on his land and ultimately engulfed 33 bigha (11 acres) of it, including the homestead. He moved to a new location but this location is

now also highly vulnerable to erosion and may disappear at any time. Apart from the damage caused by riverbank erosion, he also sustained damage from the invading pakbahini (the Pakistani army) and local people who burnt their house and looted all movable properties during the war of liberation in 1971. In order to escape trouble from the Pakbahini, the whole family had to take refuge in India east of Malliker Char.

8.5.3 Significance of the Case:

This is an extreme case of riverbank erosion disaster. Riverbank erosion has turned this into a destitute household. However, the complete destitution of this household had to wait for a final blow from the socio-political situation in 1971.

8.6. CASE STUDY # 6: KAZIPUR

8.6.1. GEDA MONDOL

Age	65	Household Size:	6
Education	Illiterate	Homestead land:	0.07 acre
Occupation	Wage labourer	Housing Structure:	2
		Land lost to erosion:	nil

8.6.2 Household Structure

The household consists of 6 members that includes Geda's mother, Jamiron (80); his wife, Jamironnessa (50); one son, Ramjan (20); a daughter-in-law, Oleda (15); and a grand daughter, Monzura (3). Geda had four sons and five daughters, but three of his sons and two daughters had died at very early ages, for which he adopted a boy, Haran. Haran is now 25 and has one boy, Kansa (8), from his first marriage and a daughter, Laily (3), from a second marriage. The adopted son recently separated to form a household of his own.

Geda's son, Ramjan, is illiterate and is a day labourer. His wife did not have any schooling either. All of Geda's daughters are married and settled in different villages. The

eldest, Saul Banu (27), is married to the elder brother of Geda's adopted son Haran, and lives in Pukuria village. Saul Banu's husband is a marginal farmer. They have a son and a daughter. The second daughter, Jahane (25), is married in the district of Rangpur. Jahane's husband is a day labourer and occasionally a petty trader. They have three sons and a daughter. The youngest, Gulbanu (23), is married in the same village; at present they live on the WAPDA embankment.. Her husband is also a day labourer and has a son and two daughters.

Table 8.15. Housing Structures of Geda Mondol.

Structures	Size (Sq ft)	Materials	Use
1.	123.8	Straw hut	Bed room for 3
2.	123.8	Straw hut	Bed room for 3
3.	360.0		threshing/drying floor

8.6.3. Land Control and Livelihood:

Geda's great grandfather had about 2 acres of land but had to sell one acre due to want in the family. His grandfather inherited 0.33 acre of land from the great grandfather. Geda bought 0.16 acre of land from his father at the time he formed his separate household. After his father's death, he inherited 0.08 acre of his father's land. The other part of his father's land went to Geda's brother.

At times Geda's family experienced serious economic hardship in his own village. This hardship compelled him to sell all of his land (0.24 acre) and move to Rangpur district where he purchased 0.50 acre of land. He lived there for three years. During his stay in Rangpur, his daughter (Jahane) married. Unfortunately, he failed to make a living there, and moved back to his own village. He spent all his money on household expenses and on construction of the present homestead. At present, Geda cannot work because of stomach

pain (ulcer). Thus, the six member household depends mostly on his son's (Ramjan) daily wage income.

Neighbours often help the family with food (paddy or rice) and some cash. Sometimes the family also receives relief (wheat) from Union Council members, such as 20-25 Kg of wheat received in 1984.

8.6.4 Significance of the Case:

Geda Mondol is a typical example of an impoverished peasant in Bangladesh. Geda Mondol, his grandparents and parents had no land to lose to riverbank erosion. This household represent the common process of landlessness. In the zamindary system, Geda's great grandfather was a marginal peasant, while his grandfather and father were landless labourers. His decendants live a similar life.

Geda, like many millions of other peasants, has tried hard to survive by changing location, but not his profession. Because there is no choice available, changing his profession is as hard for him as it was for his forefathers. Hence, poverty sharing is the only survival strategy this household can think of. The entire household, including Geda's mother, survive on the only son's income from wage-labour and, more often than not, it depends on the rural moral economy.

8.7 A Review

The six case studies presented above are self explanatory. However, a few points need to be highlighted. These case studies reflect the resilience of natural hazard victims and shows that the ability to cope with natural hazards such as riverbank erosion is clearly a function of one's control of resources and occupational diversity. Apparently, the amount of land lost to riverbank erosion does not necessarily land one in destitution (see Haque, 1988; Rahman, 1988; Zaman, 1991). However, the complete lack of resources, or the

absence of alternative income sources, make peasants hopeless victims of natural hazards. Moreover, riverbank erosion is not the only cause of landlessness.

With increasing educational attainments and the occupational diversities of rich households, interest in land appears to be declining (examples may be found in case study #1). The "Jotedar-style" of land control, if it exists anywhere at all, is by itself not the sole determinant of control of social power in rural Bangladesh. For example, in the same case study, the respondent's eldest son failed to commandeer sufficient votes to win the election for union council chairmanship, despite the fact that most of their land was given to the so-called "patronaged peasants" known as sharecroppers.

Another point that may be mentioned here is that the Samaj is generally viewed by social scientists as a form of rigid social organization which is often in conflict with others (Bertocci, 1977; Zaman, 1988). Describing Samaj in such manner is tantamount to holding it as a closed institution. Intermarriages (between adherents of different Samaj) and interactions by Samajpatees or Matbars (leaders) of different Samaj shows that Samaj relations are more fluid than rigid. Rahman Mondol's household is a representative example of conspicuous lack of rigidity in inter-Samaj relations. For example, as is reflected in the second case study above, Rahman Mondol participates in Salish (rural informal dispute settlement courts) as an arbitrator across different Samaj and most of his household are married to persons in different Samaj. This is not only a general practice in the study area, but also in Bangladesh as a whole. Therefore, rigid characterization, as is often done by social scientists, may not be valid in determining relations of production that is presumed to emanate from kinship and Samaj relations.

Apart from the experiences and opinions recorded in the above case studies, a wide range of opinions and concerns were expressed during personal meetings with various individuals in the field. These opinions and concerns ranged from flood problems to causes of poverty, effects of land fragmentation to population problem, indebtedness to land values, lack of employment to changes in crop practices, and so on. The general

pattern of these concerns is more related to socio-economic problems than problems of flooding and riverbank erosion. As an informant put it, "...flooding is a serious problem once in a while, like Kazipur experienced serious flooding in 1974, and then again 10 years later in 1984, but a lot of us lost land in repaying our parents or grandparents loans". In a separate interview, one Ala Bakth from Kachihara village detailed the process through which he lost a major portion of his own land as follows (none of his land is vulnerable to erosion):

1) sold 0.40 acre to repay his father's debts,
2) sold 0.60 acre to buy draughts animal,
3) sold 0.30 acre to meet household's basic needs,
4) sold 0.50 acre to meet household's basic needs,
5) sold 0.30 acre to meet expenses of a litigation, and
6) sold 0.50 acre to meet expenses of another litigation.

Beside this specific case, quite a number of villagers narrated various causes of land-loss and diminishing farm sizes which can be summarized as follows:

(1) inheritance
(2) growth of family members
(3) distress sale (in meeting basic needs)
(4) in meeting litigation expenses
(5) cost of medical services
(6) crop damage due to flooding
(7) dowries and other matrimonial expenses
(8) purchase of implements and draughts animal
(9) repayments of loans (formal / informal credits).

One informant, Tara Sarkar from Bilchatal Village, reported that approximately three percent of the peasants in his village had lost land due to erosion only. The problem for another poor peasants, Ibrahim, is lack of capital for farming. For example, Ibrahim (30), owns 0.33 acre of irrigated land but he cannot cultivate it for lack of draught animals, and cash for irrigation water and fertilizers. As a result, he sharecrops it out.

Natural hazard problems, such as riverbank erosion and flooding, are necessarily viewed as serious problems, but peasants are more concerned with their day to day problems of survival. Land lost through erosion creates additional problems on top of the

already existing destitute condition. Lack of sufficient land for subsistence, lack of sufficient employment opportunities, lack of accessible education and health care services, and inadequate housing are of prime concerns for the millions of landless and virtually landless people in the floodplains.

CHAPTER IX

SUMMARY AND CONCLUSION

In the face of the general problem of food and agriculture, the conditions of pervasive poverty and inequality in rural Bangladesh are exacerbated by natural hazards such as cyclones, droughts, floods, and riverbank erosion. Such natural hazards often trigger famine conditions more often at local levels, but occasionally also at the national level. In a densely populated country like Bangladesh, it may be expected that the plights of peasants are intensified by the occurrence of natural hazards. But one should also ask why natural hazards become a critical issue, while hundreds of thousands die of hunger and malnutrition each year irrespective of whether there are famines or cyclones. The socio-economic and political causes of famine or natural disaster have been neglected in natural hazard studies until recently. It has also been realized recently that the conventional wisdom of hazard causes and consequences is insufficient to explain the vulnerability of people living in hazard-prone areas.

It has been argued here that the structure of social relations of production moulds the peasants' ability to respond to natural hazards such as riverbank erosion and flooding. This ability, in turn, is a function of their socio-economic position in the social structure they are placed in. The peasantry in Bangladesh is clearly differentiated into classes. Therefore, the impact of flood and bank erosion is experienced differentially by different social classes. A proper context of analysis should encompass social interaction in exploiting nature -- the resources through which a given society reproduces its material means of existence and thus advances. Any extreme natural event such as flood hazard for example, that perturbs this societal reproduction and progress can be viewed in terms of society's ability to cope with such events.

The agricultural crises in Bangladesh are frequently intensified by deliberately conceived development policies. The development strategies of the 1950's and 1960's, for example, unduly favoured urbanization and industrialization. The whole economy was streamlined on the basis of western development theories such as 'trickle-down' theory. The fact is that the benefits of economic growth are bound to accrue to the owners of means of production, especially in a class-based society. The natural polarization of resources into the hands of a few privileged elites leads to the pauperization of the masses and places the unprivileged majority into a vulnerable situation in the face of extreme natural, social, economic and political phenomenon. Public policy measures for protection of riverbank erosion and flooding, and related agricultural development, by-pass the poor strata of the peasantry, forcing dislocations of agricultural practices and reinforcing the viable farmers.

The integration of social, economic, and political factors into the current theoretical framework was necessary to better understand why peasants in Bangladesh behave/respond in a way which may appear to a casual observer as being irrational. Hence, it was decided to evaluate the social class relations of production in order to understand the impacts of, and adjustment strategies to natural hazards on peasants in Bangladesh. The specific objectives of this study were:

- to evaluate the underlying processes that contribute to peasants' vulnerability in general, and in particular, at the times of crises caused by flooding and riverbank erosion;
- to analyze the condition and process of peasants adjustment to flooding and Riverbank Erosion; and,
- to focus on the links between the hazard vulnerability and the national development policy objectives.

9.1 Internal Colonialism in Bangladesh

It was shown that a certain group of elites have brought the whole country into a condition similar to what Casanova (1969) termed as "internal colonialism". The ruling hybrid group of elites do not represent any of the basic producing classes in Bangladesh

and the political activists are comprised of non-productive segments of the population. The small cluster of elites that control the country through unscrupulous means, did not develop through normal capitalistic mode of production, i.e., through production and exploitation of the working class; rather, they developed through plundering of a national wealth in a manner similar to primitive accumulation. The current political institutions deliberately fosters a policy of resource concentration into the hands of a few. While the per capita income of US$ 150 is one of the lowest in the world, and the distribution of income in Bangladesh is highly unequal and the country is increasingly engulfed in international debt bondage.

9.2 The Role of the State in Hazard Mitigation

For the last three decades, Bangladesh has been drawing huge amount of financial aid and technical assistance from various international sources for agricultural and rural development through mitigation of flood and erosion hazards. All the measures of flood and erosion protection undertaken since the early 1960's were aimed at agricultural development and rural infrastructure building. The main focus was on the protection of towns and agricultural settlements through flood embankments, drainage, irrigation, channel diversion, and rural electrification and road construction. The general flood and erosion control projects were implemented through Rural Public Works Programmes.

Despite rhetorical emphasis posed in the Development Plans and other political deliberations, marginal peasants and landless labourers were neglected in the process of development. Though the objectives are fervently set to create employment, eliminate poverty and provide support to rural poor, the innovations and incentives are all deliberately directed towards the higher stratum of the society. The purpose of development investment is not to address the actual need of the land-poor peasantry. In terms of employment creation for the landless, these projects provide very temporary

solutions. Employment opportunities are created for only very short period of time during the construction period of the projects.

It is argued that credible strategies were set to work in an incredible situation. The development strategies were credible in alleviating the rich farmer's problems of agriculture and food production. But the rural society itself is not homogeneous in terms of resource distribution. The development strategies did not alleviate the dwindling economic condition for the majority of peasants. Homostatic strategies are bound to work well for one section of the population, whatsoever "target groups" are tagged to it. In this regard, the strategies set so far are well suited for increasing agricultural production on the large farm-holdings. But the issue of increasing poverty baffles both protagonists and antagonists of rural development in Bangladesh. The dilemma created by the need for food production and increasing unemployment and poverty emphasizes the fact that overall development in the countryside is not a simple technical problem, and no trickle-down method of development is sufficient to deal with the ever increasing poverty.

9.3.1 Agrarian Structure in Bangladesh

Often it is theorized that the existing labour, tenancy, and credit relations reflect a feudal relation of production. It has been argued here that substantial transformations have taken place in Bangladesh's agriculture since the end of British colonial rule and the prevailing social relations of production in agriculture is anything else but feudalistic or semi-feudalistic. The residuals of feudalism are so insignificant that characterizing agrarian relations on the basis of these residues is insufficient.

The contemporary relationships between peasants and land in the study area has become more simple than was the case in the British period. The relationship is one between direct owners and non-owners of land. Given the small size of average holding, it appears that there exists a homogeneity in land ownership. But within these small peasant farms, land being so vital a part of the means of production, the viability of a farm is solely

determined by the amount of land a household operates. It has been reported that average farm size decreased from 3.5 acres in 1960, to 2.8 acres in 1974, and to 2.00 acres in 1977. There was also a continuous decline in other forms of land tenure from 1960 onwards, such as the size of owner-tenant farms registered more than a 30 percent decline, while tenant farms declined 37.5 percent. The proportion of landless households in rural area progressively increased from 14 percent in 1951, to 18 percent in 1961, to 38 percent in 1973-74, and to about 50 percent in 1977. If the size categorization of landlessness defined by the Land Occupancy Survey as below 0.5 acre, is extended to cover all farms below 1.00 acre then the proportion of landless household rises to about 62 percent. This figure grows to 77 percent when all farms below two acres are considered as functionally landless.

Most of the peasants holding below two acres are forced to make distress sales (of crops, assets, lands) or to mortgage land, which is seldom redeemed. A World Bank Report (1983) estimates that the land-owning strata is (a) six percent of rural household with landholding of more than five acres controlling 45 percent of cultivable land, and (b) 94 percent owning farms of less than five acres. If a farm size of six acres can be considered as a viable farm, the data from the World Bank Report translates into the fact that 94 percent of the agricultural population are living below a subsistence level.

9.3.2 Tenancy Relations

Following the revision of the Permanent Settlement of 1793, viz. the Rent Act of 1859 and the Bengal Tenancy Act of 1885, smallholding farming became the dominant feature in East Bengal. Demographic pressure played a key role in the rapid decrease in farm sizes at the peasants' household level. Sharecropping was influenced by the need for supplementing household income. Renting land for cash or kind was common for a labour surplus peasant household. The notion that the existence of sharecropping implies the existence of feudal relationship appears no longer valid in Bangladesh.

9.3.3 Agricultural Labour Relations

Demand for agricultural workers has been increasing across the predominating smallholder peasant farms in Bangladesh since the second half of the 19th century. Marginal and small peasants supplied the labour force. Being unable to secure enough subsistence for the households from the meagre farm sizes, peasants looked for substitute income by selling their labour. In the case of medium-sized peasant holdings, family members were forced to work for wages in the event of natural disaster losses. Analytical accounts for these work-forces in rural areas reflect a different picture than the one portrayed by the proponents of the "landlord-bonded labour" theory.

9.3.4 Rural Credit Relations

In modern day Bangladesh, the relationship between landowner/money lenders and the tenants/small peasants are not as pronounced as they were in the first half of the present century. In fact, there is evidence of a different kind of credit behaviour in rural Bangladesh. Atiqur Rahman (1979) convincingly argued that the landlords neither have significant credit relations with their tenants nor that usury is a major source of their income. This is confirmed in the present study.

9.4.1 Viability of Operational Holdings

With the limited definition of a viable farm adopted in this study, it was found that a peasant household in the study area would need to produce about 112 mds (or 4.15 tons) of paddy to survive and to reproduce. Given the average paddy productivity in Bangladesh of 0.65 tons per acre, which is about 18 mds, a farm would need more than six acres of cultivable land to be considered as a viable farm. Given this situation, the picture appears very gloomy in Kazipur and Chilmari where a little more than four percent and about nine percent of farms respectively qualify as viable farms. In other words, it means that 96

percent of farms in Kazipur, and 91 percent of farms in Chilmari fall drastically short of being viable. This is not surprising in a condition where more than 85 percent of people live below the poverty level. The highest proportion of farms operate at a marginal condition. There are no alternative opportunities available to allow people to abandon agriculture completely. Peasants innovate strategies in various informal sector to supplement their survival, such as turning to sharecropping, mortgaging property, especially land, off-farm activities such as rickshaw peddling, selling labour in temporary and low-paid non agricultural works, and indebtedness. Alternatively starving (or remaining half-fed) is the most common of the strategies the marginal group of peasants are forced to adopt.

9.4.2 Landownership and Impact of Riverbank Erosion

It is found that the impact of riverbank erosion is moderate in determining farm sizes in Kazipur. This relationship is more random in Chilmari. This is suggested by a regression calculation. The relationship expressed by the regression analysis is functional, rather than causal, and it can be said that the larger farms are also the largest losers of land. This relationship appears statistically significant in Kazipur, but it is not significant in Chilmari. This is congruent to the previous argument that the impact of riverbank erosion on land ownership is random in Chilmari.

9.4.3 Alternative Access to Land

The context in which an increased numbers of owner farmers take land on sharecropping basis (including rich ones) in contemporary Bangladesh is quite different from the practice of sharecropping in the British colonial period. While the practice in the British period may be termed as a feudal instrument of exploitation, the same practice in the current situation may not be termed as such. It was found that proportion of both sharecropping-in and -out are concentrated within farm sizes of less than five acres. In the

Kazipur area, only about 21 percent of the households with more than five acres of landholding let-out land on a sharecrop basis. The corresponding figure for Chilmari is higher, accounting for 50 percent. About 21 percent of households with more than five acre-farms let-out about 71 percent of the total sharecropped land in Kazipur. The corresponding figures for Chilmari is 50 percent and 82 percent. A significant proportion of households in the less than five acres categories let out an insignificant amount of land.

However, the overall proportion of those renting-out land in the study areas is very insignificant. The figures for those who take land on a sharecropping basis is comparatively higher in both Kazipur and Chilmari. Though the proportion of those who rent land for sharecropping are concentrated in the categories below five acres (97 percent renting-in about 95 percent of available land), three percent of the larger farmers in Kazipur and seven percent in Chilmari are found to rent-in 4.32 percent and 4.69 percent land, respectively. It appears that the mean amount of land available for sharecropping in Chilmari is higher than Kazipur. The mean amount of land rented-in per household is also higher in Chilmari.

9.4.4 Tenancy and Natural Hazard Risk

In recent years a number of conceptual postulations were put forward in order to explain the incidence of tenancy. An attempt is made in the present study to observe the relationship between natural hazard risk and incidence of land-renting. In regression calculations for Kazipur, it appears that the relationship between tenancy and natural risk is negative, while there is a positive relationship with farm size. The relationship between tenancy and family workers is inverse, implying that renting out increases with the decrease in number of family workers. These estimates are statistically significant at one percent probability of error, except for Chilmari, where it is significant at five percent probability of error.

9.4.5 Labour Relations

In relation to each particular phase of annual farming operations, every farm needs to have extra hands, besides those of its household, to work on the farm. In the present study area, it is found that the proportion of both households and family labourers are highest in the farm category of two acres or less. About 80 percent of the households with less than two acres of land use 74.2 percent of the family labourers in Kazipur and about 76 percent households use about 67 percent of family labourers in Chilmari. However, the mean number of family workers is higher in the richer farm categories. This is consistent with the fact that the richer the farm in terms of land ownership, the higher the household size. Given the fact that every class of peasant household hires agricultural labourers, it is interesting to note that 79.3 percent in Kazipur and 68.6 percent in Chilmari of those who reported to have hired casual labourers belong to operational holding sizes of 0.51-2.00 and 2.01-5.00 acres. But considering the household percentages of the total of different categories, it appears that the proportion of those hiring wage labourers increases with the increase of operational holding size in both Kazipur and Chilmari. While most of the rich farmers hire wage labourers, the proportion of hired hands drops down to 50 percent in the farm size categories of 0.51-2.00 acres, and about 7.5 and four percent for the 0-0.5 acre category in Kazipur and Chilmari respectively. A demand function coefficient suggests that larger farm size, higher wages, technological innovations, and lower number of working hands in the households enhances the demand for casual workers.

However, it is important to note that 64 percent of the total households in Kazipur and 67 percent in Chilmari, do not employ any wage labourers at all. Hence, it may be concluded that the problem expressed in the concept of "patron-client" or bonded labour relations is more apparent than real. It was found that a very insignificant number of permanently hired labourers (so-called bonded labourers) are actually involved with a very negligible number of households in both Kazipur and Chilmari.

9.4.6 Credit Relations

Although it was found that the highest proportion of households incurring loans belongs to the small farm-sizes, both in owned-land and operational holding categories (0.51-2.00 acres) in Kazipur and Chilmari, the richer farmers are also increasingly involved as debtors in the credit market. Although the relationship between these farming categories and the incurrence of loans is positive, it is insignificant in Kazipur compared to Chilmari. However, the relationship between income and the incurrence of loans is significant in both sub-districts (**r**s being 0.54 for Kazipur and 0.58 for Chilmari). The pattern of distribution of loan money is indicative of the changing context of credit relations in rural areas.

9.5.1 Sustainability of Peasants' Households

It was found that the mean annual income is Tk. 12,668 per household in Kazipur and Tk. 11,008 in Chilmari. This average income is itself an indicator of the precariousness of economic condition compared to the national average. But mean income conceals much more than it reveals. When the class-wise distribution of income is considered, the problem appears more serious in terms of class differences. On a sustenance scale, it was found that about 80 percent in Kazipur and 78.5 percent in Chilmari drastically fall below the defined viable farm level. The relationship between farm size and income from non-agricultural sources was found to be inversely related.

9.5.2 Impact of Riverbank Erosion on Agricultural Income

It was expected that there would be an inverse relationship between riverbank erosion and agricultural income. In order to show a positive affect, the higher the farm size, the higher will be the agricultural income. This argument appears true in the case of Kazipur. The variation appeared statistically significant. But the situation in Chilmari is less clear. Although the regression coefficient is positive, it is not statistically significant.

In this case, the efficiency of the resource use may be in question. Kazipur reflects a more intensive system of cultivation compared to Chilmari. The coefficient appears positive and statistically significant in the case of land lost to erosion in Kazipur. The relationship indicated here suggests that the households with higher agricultural income are those that experience higher loss of land due to riverbank erosion. Interestingly, the relation appears to be inverse in the case of Chilmari, indicating that the less land lost, the higher the income. In other words, this means that the income from cultivation would be lower if there is higher loss of land. However, the variation suggested is not statistically significant as indicated by the T value. The parameter is also not far from zero. In such a situation, a confident conclusion cannot be drawn in favour of the indication forwarded by the sign of the coefficient that riberbank erosion has a negative impact on agricultural income in Chilmari.

9.5.3 Pattern of Household Expenditures

It was found that cash return from land is remarkably beneficial. In the case of Kazipur, the return to cost appears proportionally higher among smaller and marginal farms. This is congruent with Hossain's (1986) contention that the productivity of smaller farms is higher. But the picture found is not as clear in the case of Chilmari. There, return to cost appears higher in the larger farms. Although the average return to average cost appears very promising in the whole study area, the overall condition, nevertheless, remain deplorable for the majority, in the sense that the average income itself is very low. It is not surprising to see that the majority of the study population spends relatively more on food than on other basic needs. The pattern reflected in terms of expenses on clothing, education, medicare and festivals is inversely related to decreasing farm sizes.

9.5.4 Ownership Distribution of Draught Animals and Other Assets

Though the larger farmers own a greater number of draught animals, the number of draught animals owned by smaller and marginal peasants is also significant. The average number owned by farms of below two acres is little more than three per household. The general pattern of distribution of ownership of assets is also found to be biased towards the higher income groups. But ownership of certain items such as bicycles, radios, hand tube wells, and shallow tube wells are significantly present within the lower income groups. It has been found that about 80 percent of households surveyed do not even come closer to the average income for the study areas. Clearly, the very survival of the majority is at stake, not to speak of any insurance strategy against natural hazards. Under the conditions described, it is pertinent to ask how peasants face natural hazards such as flooding and riverbank erosion?

9.6.1 Peasants' Exposure to Flooding and Riverbank Erosion

The segments of the peasantry that are most vulnerable to riverbank erosions are the ones whose properties are located on the banks of the river and on Charlands within the river. The proportion of such peasants is not very high compared to the overall population in the study areas. Only 20.5 and 8.6 percent of the surveyed population in Kazipur and Chilmari, respectively, reported to own cultivable land on the Brahmaputra banklines.

9.6.2 The Variations in Perception of Different Hazard Events

Data analyses show that study population is significantly aware and apprehensive about the adverse affects of various hazards likely to occur in future. Such apprehension is based on their previous experiences of not only natural, but also socio-economic hazards (famine), health hazards (epidemic), and hazards in agricultural fields (pests). It is found that the perception of hazard recurrence is the same across classes. Inhabitants of a hazard-prone area, irrespective of their class positions, are uniformly apprehensive of hazard

possibilities in the future. However, only three natural hazards are rated very highly. The perception of flooding as a hazard is by far the highest rated and concern all people. Here too, those who have no or limited access to productive resources are less concerned vis-a-vis those who have greater control over the means of production. About 89 percent in Kazipur and 83 percent in Chilmari of the marginal peasants perceive flooding as hazard compared to 100 and 87 percent, respectively, of rich peasants. Although the marginal peasants have few tangible properties to lose to flooding, their day-to-day living is seriously handicapped, while the larger farmers face the high probability of property loss. It is interesting, though not surprising, to note that riverbank erosion is rated as the third most serious hazard after tornadoes. Tornadoes and riverbank erosion hazards are equally emphasized by rich farmers, while to marginal peasants, riverbank erosion is seen as less threatening than tornadoes, because the landless and marginal peasants have virtually nothing to lose from riverbank erosion. However, a different situation is found in Chilmari where tornadoes are rated third after riverbank erosion. Local tropical storms such as one known as KalBaishaki are rated higher in Chilmari compared to Kazipur.

9.6.3 Peasants' View of Causes of Riverbank Erosion

Peasants' understanding of the causes of riverbank erosion appears consistent in both Kazipur and Chilmari. Interestingly, both sample populations recognized hydrological events as the prime cause of riverbank erosion. Among hydrological events, fast current in the river were identified by more than 58 percent in Kazipur and 53 percent in Chilmari as the major cause of erosion. The peasants' emphasis on hydrological events such as fast current, flooding or too much water in the river as the cause of bank erosion reflect their true understanding of the natural hazard.

However, it is worthwhile to remember that property owners are the ones having some resilience based on their control of resources. The poorer sections, on the other hand, are the ones having relatively less to lose in terms of social and material possessions.

Once there is a material loss to a marginal peasant, such as the meagre amount of land owned, it will result in little more than a few additional days of hardship over and above the days they are already living in normal conditions of hardship. Theoretical arguments may be raised to emphasize the impacts of loss of the meagre property of marginal farmers, but the reality is that there is no fine dividing line between being destitute and possessing a marginal farm. It was shown that the so-called subsistence farms are incapable of providing meaningful subsistence to the peasants. Thus, the problem arises from the decaying capacity to recuperate from disasters. This lack of recuperative ability, in fact, should be the main thrust of any mitigation strategy for natural hazards in Bangladesh.

9.6.4 The Moral Economy of Disaster Coping

In the absence of a sufficient capability to cope with hazards at the individual household level, peasants draw on wider social resources. But the local community's ability to cope with crisis is fast disappearing from rural Bangladesh. Rural communities have become burdened with an ever higher magnitude of poverty; they can no longer fund traditional moral support such as Dharma Gola. The magnitude of crises has also increased with demands for aid and relief substantially superceding the limits of the moral economy.

However, the moral economy still works in rural crises situations at individual levels. Food and shelter are the two most immediate forms of assistance people need in a disaster situation arising from flooding and erosion. To some extent, these forms of assistance are still provided by relatives, friends and neighbours. Despite their economic limitations, local people are found to extend various types of assistance including financial help. In a place where formal rescue operations and crisis counselling services are totally absent, local social traditions of comforting stress and trauma are very important. Physical help also plays a vital role in evacuating and rescuing households from disaster condition. This appears to be the most frequent forms of assistance available in the study areas. The next most frequently offered help is moral support. It is normal that communities evolve

and adopt their own kinds of crisis coping measures in the absence of formal national programmes, such as hazard insurance, rescue and evacuation, and psychological counselling services. In general, villagers appear to be the most significant source of help in times of disaster. It was found that villagers offered assistance to victims at a rate far exceeding expected levels. Also, it was noted that while larger farmers expect more assistance from local or national government, the poorer peasants expect assistance only from within their own community (relatives, friends, and villagers). This fact explains why most peasants, especially the poorer ones, want to cling to their localities, despite their hazardousness. The role of the state is hardly noticeable despite peoples' expectations. It was found that assistance from the local leaders and government administration is almost nil.

9.6.5 Local Information and Advisory Services

Apparently, inhabitants are aware of potential hazards that may occur in Kazipur and Chilmari. Moreover, flooding and riverbank erosion, unlike earthquakes, do not occur without notice. Local level sources of information are generally available for a potential disaster. Advices, precautions, and some supports are also available from the local community in the face of disaster. It is noted that the most important sources of information and advice come from within the local community, and especially from relatives and friends. While in general, villagers and some local leaders provide information and suggest precautionary measures, the role of local level and national level administrations, as well as the media, is almost nil. This is due to an absence of a monitoring and forecasting system accessible to the people in need.

It has been contended that the adoption of efficient mitigation measures against a potential hazard is subject to one's economic ability. Such ability will determine the type of action one can take at the time of disaster. The types and quality of precautionary information available in the study areas are not very useful because of the fact that these are

not backed by any organized support services. As a result, victims find themselves alone in deciding what to do in an actual crisis situation. It was found that a higher proportion of larger farmers left the village before the erosion took place while the highest proportion of the poorer peasants ended up on flood protection embankments.

9.6.6 Peasants' Adjustment Strategies

The most prominent adjustment strategies in Kazipur and Chilmari were (a) to abandon land, (b) to sell livestock, and (c) to dismantle housing structures and move out. Some have to sell cultivable land (that is unaffected by erosion threats) and jewellery or ornaments in order to bear the cost of resettlement. Here again, it is the poorer sections of the peasantry that are forced to make the highest proportion of distress sales. Moreover, not everybody simply moves to avoid imminent disasters. An average of 24.1 and 15.3 percent of respondents in Kazipur and Chilmari, respectively, remained in their homestead in the face of imminent danger. Such people reported that they had to be rescued by others from the flood or riverbank erosion because they stayed until after the situation had gone out of control. Their reasons for staying were (a) to protect properties, (b) in the hope that the river would not rise further and, (c) because they had nowhere to go.

9.6.7 The Problems of Resettlement and Public Policy of Disaster Mitigation

Respondents appear to be very apprehensive about resettlement possibilities offered by government. It has been noted that suggestion to be resettled by government agencies was not received with much enthusiasm because of uncertainty about this policy. It is not surprising to note that although there is little interest in resettlement on the embankment, people are strongly opposed to the suggestion that those already occupying embankments should be removed by government. A high proportions of respondents think that the government should build more dams and embankments, and construct concrete slabs and groyns to protect properties from flooding and erosion. Needless to say, the engineering

solutions that are suggested to government are general expressions of interests by farmers who have lands in need of protection, and do not originate from the landless or the marginal peasants.

9.7 Individual Experiences of Social, Economic, and Natural Hazards

Traditional control of rural power is changing hands. The 'Jotedar-style' of land control is no longer the sole determinant of control of social power in rural Bangladesh. Traditionally, political power was land-based in rural areas where village headmen and the local talukdars who owned large tracts of land were usually the people who were prominent on the political scene at the Union Council/Board or at the village-level Panchayat. In contemporary Bangladesh, rural power-base is less singularly land-based and increasingly comes from diversified occupations and professions. It is very common to find school teachers, political activists, traders, rice-mill owners, and leaders of association of landless competing and holding office in local-level political institutions as members and chairmen. Under such changing conditions, it is naive to define relations of production as emanating from landownership alone.

The case studies reflect the fact that the resilience of natural hazard victims, or their ability to cope with natural hazards, is clearly a function of their control of resources or their occupational diversity. Apparently, the amount of land lost to riverbank erosion does not necessarily make one destitute. However, with an utter lack of alternative sources of income or any sufficient resource become hopeless victims of natural hazard. Riverbank erosion is not the only the cause of landloss. There are various other causes of land loss and diminishing farm sizes such as a) inheritance, b) growth of family members, c) distress sale (in meeting basic needs), d) meeting litigation expenses, e) cost of medical services, f) crop damage due to flooding, g) dowries and other matrimonial expenses, h) purchase of implements and draught animals, and i) repayments of loans.

Natural hazard problems, such as riverbank erosion and floodings, are necessarily viewed as serious problems, but the majority of peasants are more concerned with day to day problems of survival. Lack of sufficient land for subsistence, lack of sufficient employment opportunities, lack of accessible education and health care services, and lack of housing, are all of prime concern for the millions of landless or virtual landless people in the floodplains.

9.8 Policy Implications and Specific Recommendations

Farm sizes are becoming smaller with the concomitant increase in landlessness in Bangladesh. In terms of production, most peasant farms are incapable of maintaining a bare subsistence and lack resilience in the face of any socio-economic or natural hazards. As a means of production, the possession of an insignificant amount of land is immaterial for the majority of peasants in Bangladesh. Ownership of a meager amount of land does not put smallholding peasants qualitatively away from landless labourers. The ownership of insignificant amounts of land (means of production) does not place a peasant into the same level of larger farmers. Large farmers are capable of producing surplus or, at least, subsistence. Here, separation of producers from the means of production is qualitative. It is fruitless to identify marginal peasants as "owners" of means of production without considering practical implications, other than the marginal peasants themselves being exploited in the existing relation of production. Despite the drastic change brought about by the abolition of the Permanent Settlement, the vulnerability of peasants in contemporary Bangladesh has not changed; rather, it has intensified. In fact, no land regulation can change or, for that matter, turn the already fragmented and ever decreasing sizes of holdings into viable farm sizes for all needy peasants. This is an impossible task in a country of too many peasants and too little land. Obviously, a practical reform is to relieve agriculture from bearing the undue burden of supporting the whole peasantry. The agricultural labour force would serve agriculture better by creating a real demand for

agricultural products, if it could be turned into an industrial labour force at any feasible scale of industrialization.

The problems embedded in the socio-political condition described in chapter 3, need a pragmatic solution. The reason why such a irresponsible state of affairs exists in the country is the lack of people's participation in the decision making process of politics and national socio-economic development. A lack of people's participation renders the decision makers and the planers unaccountable.

The need for making the planners and the decision makers accountable to the people is a decisive factor in solving Bangladesh's problems of poverty, and sustainable development. Politicians, decision makers, planners and executioners in public offices can be, and must be held responsible and accountable to the people for which development projects and programmes are meant. Common people are honest, hard working, and they have patience. People are also aware of the malicious social and political condition Despite the fact that the people are socio-politically conscious, lack of proper organization and network preclude the people from participating in decision making.

Though sporadic and insufficient, peoples awareness and attempts to organize in exercising rights are not totally absent in Bangladesh. As for example, some rural NGOs, such as the *Gramin Bank,* are trying to impart a spirit of organization of the disadvantaged peasants. Spontaneous organizing and protesting to public irresponsible development projects are also not rare in the country (see Adnan, 1991: 98-101).

Perhaps Bangladesh can not develop itself without external assistance, and funding. The funding agencies will be deciding on what to develop and how to run development programmes and projects. The donor agencies may play significant role in decision making towards a sustainable development of the people, for the people and by the people. As far as humanitarian concerns are related, the external funding agencies have some obligations and responsibility to ensure people's participation in development programmes and projects. Government attempts, so far, have failed to produce any real development for the

majority after several decades of "development". Now it is only pragmatic to give rights and responsibility to the people. A formal social organization is a necessity for common people to exercise rights to participate, and demand explanation and review justification of all local or national development projects and programmes. This kind of organization can play an important role as a watch dog to all public projects, funding, and process of execution so that misappropriation and corruption in any form can be minimized.

Natural hazards are occurring frequently, and causing heavy loses to the national economy, but a national policy on hazard mitigation is utterly lacking in national planning (Rahman, 1991:1). Since most of the peasantry is highly vulnerable to social, economic and natural hazards, national development policies should be directed to addressing the needs of the teeming millions who are unable to make a living from agriculture. Results of the present study suggest a need for a drastic shift in rural development strategies, including water resource management, from those currently being pursued. A whole-hearted endeavor to generate employment outside of agriculture, possibly in rural industries, is thus urgently needed. It is possible to encourage informal sector investment in rural areas which will diversify income-generating activities. Besides offering formal incentives, monitoring and forecasting of disasters would be needed as a necessary mitigation strategy. Before the adoption of a national strategy to address the natural hazard problem efficiently and effectively, there should be a formal institution to deal with the overall management of hazard problems. Therefore, it is advisable that national hazard legislation be instituted under which all public policies could be carried out. It may be recommended that:

A. People must be mobilized to form social organizations to exercise rights to participate, and demand explanation and assess all local or national development projects and programmes.

   (local non government development organizations (NGOs) should be encouraged in fostering sustainable development and ensuring peoples' participation through networking and organization. NGOs with success stories are the only ones who are organized and are able to reach the doors of the poor).

B. National natural hazard legislation may include clearly defined policies and regulations on such matters as:

1. National Committee on Natural Hazard Management

1.1. Disaster Coping Assistance Programmes
1.1.1. Post-disaster economic rehabilitation under which economic resettlements (from agriculture to rural industries, commerce and trading) can be encouraged by offering Disaster Recovery Investment Credits (the experience of Gramin Bank can be used)
1.1.2. Investment training, and
1.1.3. Consumption for disaster survival loans.

1.2. Pre-disaster Resource Assessment/Inventory of pre-designated vulnerable zones in a given upazilla.

1.3. Post-disaster impact assessment in disaster areas.

1.4. Policies regarding provisions of relief and rehabilitation (disaster shelter, emergency food and health care).

C. Coordination and Organization of Mitigation Measures

1. National Hazard Emergency Preparedness Cell (NHEPC) with upazilla units,

2. Provisions of pre-disaster mitigation measures,

3. Volunteer Rescue and Evacuation Team (RET) (organized with local teachers, students, and village youths; under upazilla management),

4. Hazard education, and preparedness training to potential victims,

5. Information centre, disaster shelter, emergency food, sanitation and medicine,

6. Hazard (cyclone, flood and erosion) monitoring, forecasting and warning system.

As far as natural hazards are concerned, strengthening peasants' ability to cope will be a more pragmatic mitigation strategy. At present, mitigation measures are reactive and ad hoc. Extraordinary measures are taken after disasters occur. Since flooding and fast current cannot be stopped from occurring and eroding lands, peasants must be encouraged to live with such hazards. In fact, that is what the peasants have been trying to do for ages and thus they urgently need a more pragmatic form of support to be successful in their struggle with nature.

Appendix A

RIVERBANK EROSION IMPACT STUDY QUESTIONNAIRE

INSTRUCTION TO ALL INTERVIEWERS

At the start of every interview, the following statement was read to the respondent--

The riverbank Erosion Study is a research project being undertaken by Jahangirnagar University in collaboration with the University of Manitoba, Canada. Its aim is to collect information on the consequences of river erosion. This information will be circulated to various government agencies in Bangladesh and to various relief agencies. We believe that there has not previously been any attempt on a large scale to collect information which summarizes the plight and difficulties faced by rural people when the river erodes away their land.

We do not promise that this research will have any direct impact upon improving your conditions. We do, however, guarantee that the information we gather and analyze will reach the ears of people in government who are in a position to formulate programs and policies aimed at assisting riverbank erosion displacees. We believe that the collection of a data base, which this survey is all about, will give such agencies the necessary information which may, hopefully, lead to more effective planning and relief measures in riverbank erosion effected areas.

It is our desire that you, the people affected by riverbank erosion, be informed of our findings. These findings should be available in about one year's time. We urge you to request a summary of the findings from your local authorities.

This questionnaire is in four parts. We are focussing upon the household unit, and ideally we wish to interview the household head.

In the first part of the questionnaire we will ask you a few questions about each member in your household. This is followed by a section which deals with the social and economic make up of your household. In a third section we ask you about how you consider and understand the hazard of riverbank erosion. Only if you have personally been displaced by riverbank erosion at some time in your life, we will ask you the questions contained in the fourth part of the questionnaire.

We would like to request that only you answer these questions, that is, that the other people that are here do not participate in the interview. The interview will take at least one hour and may take longer for some people, especially if they have been severely affected by erosion. If you are unable to spare so much time right now, then please advise us now, so that we can schedule the interview at a more convenient time for you.

Although we will be asking your name, the information you give will remain anonymous. Any information released by the research team will not contain the names of any individuals.

We thank you for agreeing to allow us to interview you.

SECTION A: DEMOGRAPHIC CHARACTERISTICS OF THE HOUSEHOLD.

First, can you tell us how many persons live in your household including persons who normally resides with you but who are possibly temporarily away?
Now, in this section of the survey we request some basic information about each member of your household. We need to record the names of each person so that we are clear about whom we are speaking.

Household Structures:

1. What is your name? (Household head)
2. What is your relationship to the head of the household?
3. How old are you?
4. State whether male or female.
5. What is your marital status?
6. What is your highest level of schooling?
7. What is your primary occupation?
8. Do you have a secondary occupation? If so what is it?
9. Were you born in this Upazila? (if yes, next person)
10. In what Upazila were you born?

(Next person in the household and repeat the above questions)

SECTION B: SOCIO-ECONOMIC CHARACTERISTICS
Landownership and Tenures

11. First, how much land do you currently own and use yourself?
    (excluding land leased or sharecropped out)
12. How much of this is Char land?
13. How is this land currently used?
14. How many times per year do you normally crop it?
15. Is this land currently erosion effected?
16. How much is on the bankline and currently vulnerable to erosion?
17. How much is currently under water?
18. How much land is currently leased to some one else through KOT or other similar agreement?
19. How much of this is Char land?
20. How is this land currently used?
21. How many times per year do you normally crop it?
22. Is this land currently erosion affected?

23. How much is on the bankline and currently vulnerable to erosion?
    How much land do you currently use by KOT or similar agreement?
24. How much of this is Char land?
25. How this land is currently used?
26. How many times per year do you normally crop it?
27. Is this land currently erosion affected?
28. How much is on the bankline and currently vulnerable to erosion?
29. How much KHAS land are you leasing?
30. How much of this is Char land?
31. How is this land currently used?
32. How many times per year do you crop it?
33. Is this land currently erosion affected?
34. How much is on the bankline and currently vulnerable to erosion?
35. How much land do you own that is sharecropped by some one else?
36. How much of this is Char land?
37. How is this land currently used?
38. What proportion of the crop do you receive from the share cropper?
39. How many times per year do you normally crop it?
40. Is this land currently erosion affected?
41. How much is on the bankline and currently vulnerable to erosion?
42. How much land do you currently use as a share cropper?
43. How much of this is Char land?
44. How is this land currently used?
45. What proportion of your crop do you pay to the land owner?
46. How many times per year normally do you crop it?
47. Is this land currently erosion affected?
48. How much is on the bankline and currently vulnerable to erosion?
49. How much land does your homestead occupy?
50. What is the tenure status of your homestead?
51. How much pond land do you own?
52. Altogether, how many separate parcels of cultivable land do you own or use/
53. What is the distance from your homestead to the farthest piece of land you own or use?
54. How much of your rural land did you inherit?
55. How much of your rural land did you purchase?
56. How much of your rural land did you receive from the government?
57. How much of your rural land did you receive through marriage/

58. How much of your rural land did you acquire by other means?
59. What were these other means?
60. Do you own any land in a town?
61. How much land?
62. How was this acquired?

Landuse and Agricultural Income:

63. How many of your household members contribute labour to generate household income?
64. How many household members do household chores for which they are not paid?
65. How many household members are maintained as "hired labourer"?
66. In the busy season (Winter to early Monsoon), of those contributing to household income in cash or kind, what is the average number of hours of work per day per person? (list according to age and sex)
67. Do you cultivate any land at all?
68. Do you grow AUS?
69. How many maunds do you grow per year?.
70. How many maunds do you sell?
71. What is the average price per maund that you receive?

(Same questions were repeated for AMAN, BORO, Wheat, Jute, Sugar-Cane, Tobacco, Potatoes, Pulse, Maize, Oil seeds, Spices, Vegetables, Fruits, Paddy seedlings, and other crops)

72. Do you own any livestock or animals?
73. What are those, and how many?
74. How many do you sell in a year?
75. How much received from sells?
76. How many livestock or products are consumed in the household?
77. Do you fish?
78. Do you sell any fish?
79. How much income per year do you earn from sell of fish?

Non-Agricultural Income and Sources:

80. Do any members of your household earn any non-farm income (cash or kind)?
81. What are these sources?
82. What is the annual income for each source?
83. Do you receive any rental income?

84. How much per annum
85. Do you receive any interest income?
86. How much per annum?
87. Has your household received any gifts, including ZAQAT and FITRA during the last year?
88. What is the approximate Taka value of these gifts?
89. Have you received any loans in the last year?
90. What was the value of these loans?
91. Have you received any relief assistance in the past year?
92. How much assistance did you receive?
93. Does your household receive any remittances from outside of Bangladesh?
94. What is the approximate annual value in Taka?
95. For how long have you received these remittances?
96. How frequently?
97. Who is the remitter?
98. From what countries are the remittances received?
99. Does your household receive any remittances from someone living elsewhere in Bangladesh?
100 What is the amount of these remittances?
101.For how long have you received these remittances?
102. How frequently?
103. Who is the remitter?

Household Expenditures:

Agriculture.

104. Do you have any hired labourer?
105. How many people do you hire on a permanent basis?
106. How many casual labourers do you hire per year?
107. What is the total cost of the wages you pay your hired labour per year?
108. What is the annual value of clothing, food and other provisions to your labourers?
109. Do you cultivate any land?
110. How much do you spend annually on land rent?
111. How much do you spend annually on land tax?
112. How much do you spend annually on purchase if HAL?
113. How much do you spend annually on rental or purchase of farm equipments?
114. How much do you spend annually on transport?

115. How much do you spend annually on seed?
116. How much do you spend annually on fertilizers?
117. How much do you spend annually on pesticides?
118. How much do you spend annually on purchase of livestock?
119. How much do you spend annually on animal feed?
120. How much do you spend annually on other taxes (ZAQAT/FITRA)?
121. How much do you spend annually on interest paid on loans?
122. Do you have any other major agricultural expenditure?
123. What are those?
124. How much are these?

Basic Needs Expenditures:
125. Can you tell us about the amount your household spends annually on:

1. Food 2. Clothing 3. Education 4.Health care and medicine 5. Annual festivals.

Assets Ownership:

126. How many of the following assets your household own:

1. Bicycles 2. Rickshaw 3. Bullock Carts 4. Hand Carts 5. Boats 6. Motor Cycles
7. Radios 8. Hand Tube Wells 9. Deep Tube Wells 10 Plougjs 11 Any other Assets

Homestead Structures:
127. How many buildings/structures are there in your homestead?
128. What is the total number of rooms in all of these structures?
129. Do any of these structures have pucca roof?
130. Do any of these structures have pucca floor?
131. Do any of these structures have tin roof?
132. Do you have a pucca latrine?
133. Do you have a hand tube well in your homestead?
134. Does any of your household ever use Hospital or Rural Health Centre, Mobile Health Unit, Paramedic Services?
135. Have there been any deaths in your household during the past year?
136. How many people have died during the last year?
137. What was his/her relationship to household head?
138. How old was he/she?
139. What did she/he die of?

Family Planning:

140. What do you think is the ideal number of children that a woman should have?
141. How many of these should be sons?
142. Do you know if there are ways that a husband and wife can avoid or delay pregnancy?
143. Which ways do you know about?
144. Do you practice any of these methods currently?
145. Which method?
146. Do you think that the problem of land shortage in Bangladesh is because there are too many people?
147. Do you think that the problem of poverty in Bangladesh is because there are too many people?

SECTION C: HAZARD PERCEPTION.

148. What is the distance of your present homestead from the riverbank line?
149. To what extend has the riverbank line been approaching your homestead in recent years?

1. Very Rapidly 2. Rapidly 3. Moderately 4. Slowly 5. Not at all 6. Don't Know

150. Can you tell us what type of natural hazards are likely to occur and adversely affect you and your household?
151. Do you consider the normal flood (BORSHA) to be different from the high flood (BONNA) in terms of it' affect on household? Why?
152. Do you regard high flood (BONNA) to be serious hazard for your household? Why?
153. Do you consider rapid riverbank erosion to be a serious hazard? Why?
154. What do you think causes rapid riverbank erosion?
155. Do you recall rapid erosion occuring during your life time?
156. Was there any worse erosion than 1984? Which year?
157. Do you think that any of your cultivable land will be affected by erosion in future?
158. In how many years time is this likely to occur?
159. Do you think that your homestead will be affected by erosion in future?
160. When do you think that will occur?
161. Have any precautionary measures ever been suggested to you to help you cope with riverbank erosion or flood?
162. What measures were suggested?
163. Who suggested these measures?

164. If erosion threatens your homestead, what actions or precautions would you take?
165. If erosion was to threaten your cultivable land, what actions would you take?
166. If your household was affected by riverbank erosion and you were forced to move, from where or when would you expect to receive help?
167. What do you think the government should do to prevent or reduce riverbank erosion?
168. If your homestead was about to be lost to riverbank erosion and you were forced to move, where would you most likely move to?
169. Why would you choose this location?
170. If your cultivable land was lost to riverbank erosion in the near future, could you afford to purchase land elsewhere?
171. Where would you buy such land?
172. How much land do you think you could afford to buy?
173. Have you ever been forced to move because your homestead was lost to riverbank erosion?

SECTION D: DISPLACEMENT EXPERIENCE.
(To be answered only by heads of households who have been displaced by riverbank erosion)

174. How many times during your life time have you been displaced because of riverbank erosion (i.e., have had to move homestead because the land was eroded)?
175. When was the earliest move you can recall?
176. When was the most recent move?
177. In what Mouza and/or Upazilla were you living before you were forced to undertake the recent move?
178. What was the total distance you had to move?
179. When you were forced to move the last time and chose to come to this location, can you tell us some of the reasons why you decided to relocate to this place?
180. What measures, if any, did you take prior to your move?
181. Have you ever had to be rescued because your household tried to remain in the homestead during high flood or rapid bank erosion?
182. Why did you remain so long so that you had to be rescued?
183. What measures did you undertake when you realized that you had no choice but to move because riverbank erosion was eliminating your homestead land?
184. In any of your displacements, did you ever move before the bankline reached your homestead?

185. Have any of your relatives who previously lived with you in your village, but were also displaced, moved away to more distant places?
186. To which places did they move?
187. What was the reason why they decided to move away?
188. Tell us how much land that you owned has been lost during your life time?
189. Cultivable land?
190. Homestead land?
191. Other land?
192. During the same time how much new land have you acquired?
193. Cultivable land?
194. Homestead land?
195. Other land?
196. Can you summarize for us the other impacts that your displacement has had upon the overall well-being of your family members?
197. Prior to your displacement, what was your primary occupation?
198. What was your principal secondary occupation?
199. When you were forced to move the last time, did you receive any assistance to help you cope with the displacement?
200. What type of assistance did you receive?
201. From whom did you receive this assistance?
202. Did any of your displacement separate you from your BANGSHA OR GUSTHI?
203. What happened to the other members of your BANGSHA or GUSTHI?
204. Does the BANGSHA from which you have been separated continue to help you in any way since you were displaced?
205. In what way does it help you?
206. Did any of your displacement separate you from your SAMAJ?
207. What happened to the other members of your SAMAJ?
208. Does the SAMAJ from which you have been separated continue to help you in any way since you were displaced?
209. In what way does it help you?
210. What problems, if any, have you encountered from the SAMAJ or other factions which exist in the settlement to which you are relocated?
211. In your opinion, do the local people where you have resettled are friendly, hostile, or indifferent to your presence?
212. Have you ever repossessed any of your land previously lost?
213. How were you able to repossess the land?

214. Why have you been unable to repossess your land?

215. Do you think that you will ever be able to repossess any of the land that you lost to riverbank erosion?

216. Suppose that the government was to provide land for resettlement for persons such yourself who have been displaced by riverbank erosion. If they provided assistance to help you move to these areas, would you be willing to relocate to any of the following?

    (1). Other CHAR land farther away

    (2). Coastal CHAR areas

    (3). Rehabilitation areas in Chittagong Hill Tracts

    (4). Other KHAS land in this Upazilla

    (5). Other KHAS land in more distant Upazilla

    (6). To a town or city

217. If yes to 216.6, For what reasons would you consider moving to a town/city?

218. What type of town or city would you move to?

End of Interview.

Appendix B

Achievements in Rural Works Programs During 1963-68.

Year	Hard-Surfaced Roads (Miles)	Dirt-Surfaced Roads (Miles)	Embankments (Miles)	Drainage& Irrig Canal. (Miles)	Bridges/ Culverts (Nos.)	Area Benefited (Acres)	Community Buildings (Nos.)
1962-63	0	12,300	360	1,750	NA	NA	NA
1963-64	64	24,195	1,212	1,315	NA	110,346	26,300
1964-65	1,080	28,410	3,654	5,356	NA	3,266,069	1,952
1965-66	891	21,410	2,789	1,144	NA	1,236,490	1,006
1966-67	447	12,298	1,543	1,561	NA	2,517,898	801
1967-68	678	16,675	1,780	2,871	NA	NA	646
Total*	3,160	115,288	11,338	13,997	NA	7,130,803	30,705
FFYP Target (1973-78)	145	4,370	243	10,485	21,150	NA	NA
Achievements	96	3,118	123	6,225	143,560	NA	NA
Percentage of Achievement	66	71	51	43	68	NA	NA

Source: Alamgir, 1983: 28, Table III.

* Figures include constructions & reconstructions.

Appendix C

Food For Works Projects and Achievements During 1974-84.

Year	Projects (nos.)	River/Canals (miles)	Embankments (miles)	Roads (miles)	Tanks (nos.)	Bridges/Culverts (nos.)	Wheat Distributed ('ooo tons)	Millions Man-days Involved
1974-75	21,479	1,091	871	2376	NA	NA	32	9
1975-76	1,554	1,001	774	900	NA	NA	209	56
1976-77	2,328	1,674	1,906	1,078	326	NA	223	60
1977-78	2,087	2,261	303	1,470	198	NA	275	74
1978-79	2,113	1,915	2,167	1,100	210	NA	230	62
1979-80	2,124	2,617	2,027	2,051	181	NA	227	61
1980-81	3,927	4,159	3,147	3,095	197	NA	358	96
1981-82	3,431	803	4,000	4,294	301	NA	288	77
1982-83	3,029	1,071	5,333	5,725	NA	215	379	101
1983-84	4,292	2,071	5,223	13,722	73	1,250	390	107

In addition to this there was about 4200 miles of roads that were repaired during 1982-84.
Source: Statistical Pocket Book of Bangladesh 1984-85, Dhaka: Bangladesh Bureau of Statistics, 1985: 198-99.

Appendix D

Distribution of Gross household Income (GHI) by Operational holdings

A: Distribution of Gross household Income (GHI)

Kazipur

Operational Holdings	% of HH	mean GHI	% of GHI	rate of change between groups	
				by GHI	by VFL
< 0.50	49.9	7962.3	31.1	-37.2	-52.6
0.51-2.00	30.0	12450.4	29.5	-1.7	-25.9
2.01-5.00	15.7	22823.5	28.2	+80.2	+35.9
5.01-7.50	2.6	27462.6	5.6	+116.8	+63.5
7.51+	1.8	39656.3	5.6	+213.0	+136.1
	n=616	x=12668.4			

Chilmari

< 0.50	57.0	6665.3	34.3	-39.9	-60.3
0.51-2.00	19.5	8204.2	14.4	-26.0	-51.2
2.01-5.00	14.7	18382.2	24.4	+65.8	+9.4
5.01-7.50	3.6	23917.2	7.8	+115.7	+42.4
7.51+	5.1	40924.5	19.1	+269.1	+143.6
	n=579	x=11085.5			

B: Gross Household Income from Non-agricultural Source:

	Kazipur			Chilmari		
Operational Holdings	HH (%)	mean income	percent to GHI	HH (%)	mean income	percent to GHI
<0.50	54.1	7196.3	90.4	63.6	6159.9	92.4
0.51-2.00	29.6	6437.7	51.7	20.3	5875.5	71.6
2.01-5.00	13.0	9644.5	42.3	11.6	8831.0	48.0
5.01-7.50	2.3	6434.8	23.4	2.0	9384.0	39.2
7.51+	1.1	4383.0	11.1	2.6	5515.4	13.5
	n=555	x=7241.5		n=502	x=6458.2	

Appendix E1

Pattern of Distribution of Basic Needs Expenses in the Households by Operational Holdings.

(a) Kazipur

Farmsizes->		< 0.50	0.51-2.00	2.01-5.00	5.01-7.50	7.51+(acres)	
Expenses							
Food	(a)	5,381.23	4,273.18	3,780.95	4,292.31	3,845.00	mean=4,775.48
	(b)	58.72	27.01	11.22	1.97	1.08	n=Tk.2,831,860
	(c)	81.19	66.91	50.84	48.84	33.63	
		(309)	(179)	(84)	(13)	(8)	
Clothes	(a)	910.68	1,344.28	1,778.38	2,087.50	2,850.00	mean=1,239.61
	(b)	36.73	32.62	22.50	4.40	3.76	n=Tk.758,643
	(c)	13.69	21.64	27.33	29.24	31.16	
		(306)	(184)	(96)	(16)	(10)	
Education	(a)	188.66	329.83	503.00	299.00	972.22	mean=365.72
	(b)	15.03	29.33	40.06	3.97	11.61	n=Tk.75,339
	(c)	0.55	1.93	4.83	2.62	9.57	
		(60)	(67)	(60)	(10)	(9)	
Health	(a)	156.80	237.72	399.01	515.62	550.00	mean=237.15
	(b)	32.29	30.74	26.92	5.79	4.25	n=Tk.142,288
	(c)	2.24	3.83	6.13	7.22	6.62	
		(293)	(184)	(96)	(16)	(11)	
Festivals	(a)	175.19	361.92	699.41	920.00	1,581.82	mean=365.11
	(b)	23.13	30.50	31.76	6.46	8.15	n=Tk.213,591
	(c)	2.41	5.70	10.86	12.10	19.03	
		(282)	(180)	(97)	(15)	(11)	
		n=2,048,136	n=1,143,232	n=624,653	n=114,240	n=91,460 (Taka)	

a= mean expenses, b=row percentages, c=column percentages
figures in parentheses are Household numbers reporting.

Appendix E2

Pattern of Distribution of Basic Needs Expenses in the Households by Operational Holdings.

(b) Chilmari

Farmsizes->		< 0.50	0.51-2.00	2.01-5.00	5.01-7.50	7.51+(acres)	
Expenses							
Food	(a)	4,805.18	3,858.05	3,530.00	3,819.05	4,940.74	mean=4,408.89
	(b)	63.15	16.80	11.60	3.17	5.28	n=Tk.2526296
	(c)	85.29	75.36	61.15	62.31	47.44	
		(332)	(110)	(83)	(21)	(27)	
Clothes	(a)	579.54	755.95	1,151.53	1,537.50	2,937.93	mean=850.00
	(b)	39.19	17.14	20.00	6.28	17.40	n=Tk.489,600
	(c)	10.26	14.90	20.43	23.89	30.30	
		(331)	(111)	(85)	(20)	(29)	
Education	(a)	181.67	341.13	737.68	394.55	1,262.50	mean=520.67
	(b)	8.72	18.20	40.34	5.79	26.94	n=Tk.74,970
	(c)	0.35	2.42	6.31	3.37	7.18	
		(36)	(40)	(41)	(11)	(16)	
Health	(a)	133.69	192.79	338.35	254.20	725.67	mean=217.44
	(b)	33.49	18.00	24.44	4.20	19.90	n=Tk.10,973
	(c)	1.96	3.49	5.58	3.55	7.74	
		(274)	(102)	(79)	(18)	(30)	
Festivals	(a)	147.17	213.51	385.74	442.50	686.67	mean=242.64
	(b)	32.73	17.63	25.55	7.24	16.85	n=Tk.122,290
	(c)	2.14	3.83	6.52	6.87	7.33	
		(272)	(101)	(81)	(20)	(30)	
		n=1,870,384	n=563,170	n=479,090	n=128,715	n=281,170(Taka)	

a= mean expenses, b=row percentages, c=column percentages
figures in parenthesis are Household numbers reporting.

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