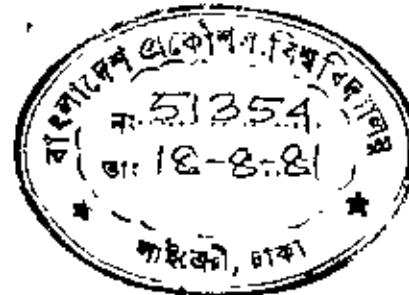


SPATIAL AND SOCIO-ECONOMIC ASPECTS IN THE  
LAND USE PLANNING OF SHERPUR THANA



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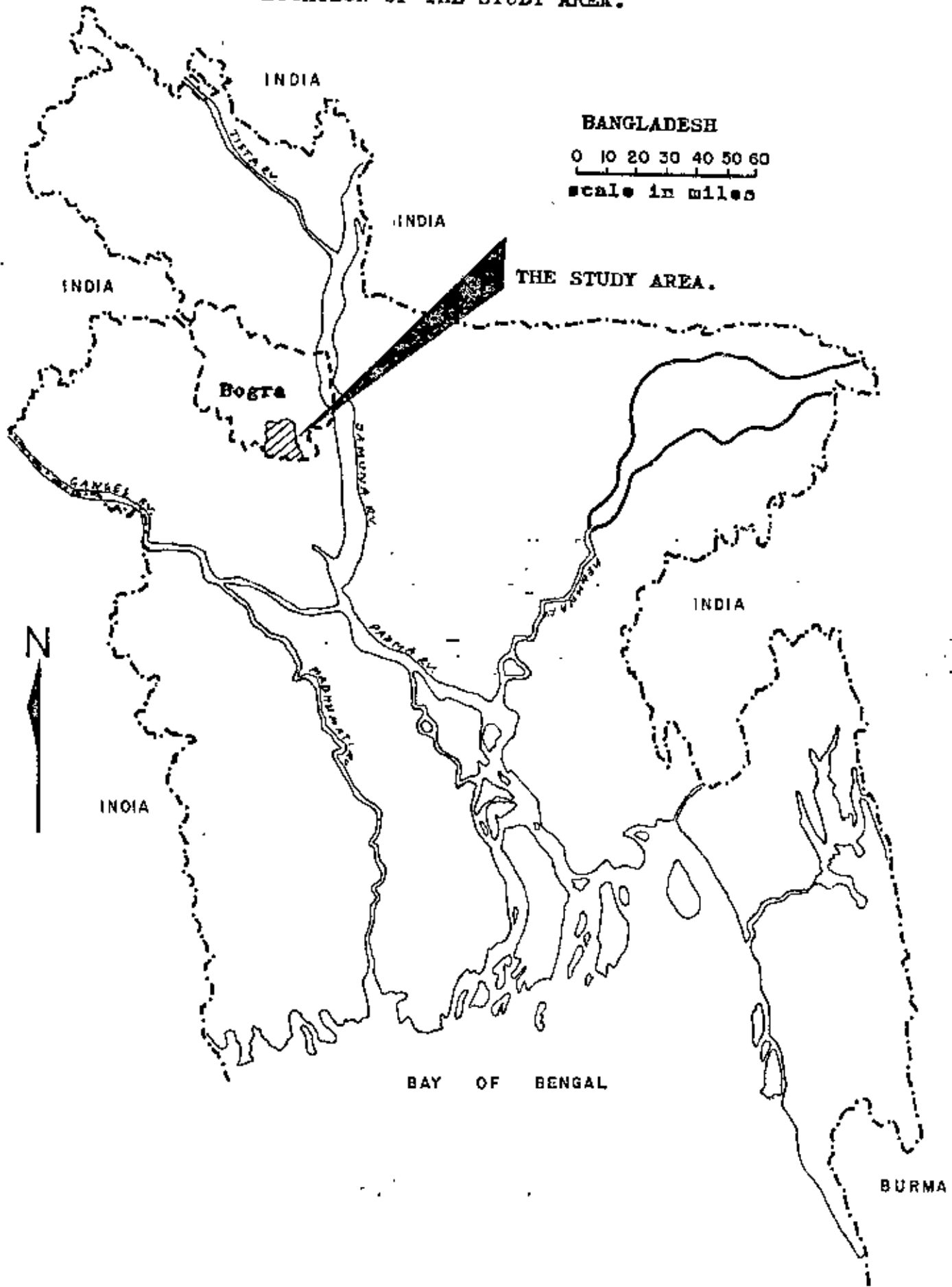
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MAP NO. 1

LOCATION OF THE STUDY AREA.



CHAPTER I  
INTRODUCTION.



The present research examines physical and socio-economic determinants of rural land use at the thana level. Understanding of spatial variations in the quality of soils and the socio-economic forces affecting the utilization of land is assumed instrumental for more efficient use of land.

**1.1. Orientation of the Study:**

Rapid urban growth in Bangladesh has already created problems requiring physical planning measures both at national and regional levels. Urban population in the country, during the period between 1961 to 1974, has grown by 137.61% (HABITAT 1976:103) with an average yearly increase of 10.58%. This growth rate when compared with national growth (3%), reveals that 7.58% of urban population growth is accountable to migration from outside, precipitated by push and pull factors. "The push factors like: (1) eventual unemployment of a sizeable agricultural labour force, (2) climate hazards and natural disasters; coupled with the pull factors such as better economic opportunities, and the other facilities offered by the cities, create a favourable condition for the drift from the countryside" (Choudhury et.al.1976:56). But this drift has created crucial urban problems like inadequate housing, insufficient physical and socio-cultural, infrastructural facilities. The rapid urban growth will greatly accelerate the problems of urbanisation in the future unless and until an all out attempt is undertaken to cope with the structural change while developing the country.

**1.1.1. Need for Rural Development:**

Population increase exacerbates the problems of social and economic life in Bangladesh. An upward trend in population growth has resulted in unfavourable land-man relationships, reducing per capita farming land (less than half an acre) and in an agrarian structure that help to perpetuate growing "poverty and pauperization" (Alamgir 1976:1) for majority of the population in rural areas. Together traditional management of land with marginal technological impact provides limited scope for rural employment, leaving a part of rural

working population in unemployed/or underemployed position. As such every increase in rural population also increase the size of the working population, part of which will eventually be pushed to urban areas for jobs. This trend needs "planning.... to consider the balance between rural and urban population, what the most desirable shape of the future should be and how best to make provision for it both in the sectoral and geographical allocation of resources" (Jassa 1973:9). Basic to the maintenance of the balance is the initiation of rural development - a need to combat rapid urban growth and development of the country.

The rural context of Bangladesh economy is reflected by the proportion of her population (90%) residing in the rural areas and the contribution of the primary activity, viz., agriculture to her GDP (58%). Even with this importance rural development in the country has been neglected for a long time. The earlier attempts to mobilise resources in rural areas have taken the form of centralized decisions of the national level directed at sectoral allocations. The result has been disregard of decentralized decisions and of spatial considerations. Such attempts have led to a growing concentration of income in the hands of a few and the large masses have been victims of growing impoverisation. Rural areas of Bangladesh reflect the nature of her economy which are "characterised by low labour productivity, and low per capita income and small industrial sectors low levels of living, undesirable attitudes and patterns of performance in life and at work, and institutional barriers to change" (Myrdal 1966: Appendix-2).

#### 1.1.2. Aspect of Rural Development Planning:

Rural development is tuned to the economics of land use; to provide and generate income and employment in rural areas. Rural activities are mainly concentrated on existing pattern of land uses which are not conducive to development. Rural land use comprises two broad aspects viz., non-farm and farm. Non-farm land refers to the use of land for settlement, ponds and ditches and other related

activities; whereas farm land is mainly agricultural. The growing concern of rural development is beset with land utilization; is retarded by underutilization of resource which is not at par with development. More and more village land is being absorbed for settlement precipitated by population growth. Ponds and ditches remain derelict due to ownership pattern. On the other hand, population pressure on land tends to reduce the individual parcel for farming. This coupled with low productivity and low crop intensity explain adequately the poor performance of agriculture on both total and per capita basis. Crisis of farm land use is further compounded by the continuous process of subdivision and fragmentation of land-holding.

The prevailing condition within which land is being used for different purposes needs planning which aims at effecting rational land use policies encompassing both farm and non-farm lands. The present research intends to focus on the economics of land use and tries to evolve policies for land use planning.

#### 1.1.3. Theme of the Study:

The theme of the present study is the consideration of effective land use planning of one thana in Bangladesh which combines both urban and rural land uses. This is attempted within a broad spectrum consisting of physical, spatial and socio-economic aspects of land utilization. The level of resource use in a community is determined by existing physical, social and economic factors, based on the economic interaction among the people through which emanate sets of relationships which may either provide impetus or impediments to development. Land is the fundamental resource around which relationships among men are established in rural societies. It generates activities of various kinds and provides income and employment in rural areas. It is also the source of power (social and economic) which inflicts differential level of resource use and reward structure in the society. Present level of land utilisation is not economic; not upto the inherent capabilities, to generate sufficient income and

employment in rural areas. As such planning policies for land uses should be concerned with finding ways and means of achieving efficient utilization of land in which a community's well-being is the main objective.

The proposition as to underutilization of rural land may be dealt with under such aspects as homestead land, use of ponds and ditches, and land being used for agricultural production. There are no national level statistics on the amount of land used for rural settlement. Two studies, Fayadabad (1962) and Rampal (1961) areas carried out by the Geography Department of Dacca University, indicate that about 15 to 20 percent of village land is used for settlement and footpaths. The population density is about 40 persons per acre of settlement land. An inclusion of water bodies reduces the density to 30 persons per acre. Reference may be made of a single village study, Pathalia (1978) which shows that 15% of village land is being used for settlement and footpaths. Including waterbodies, it stands at 26% of village land. "These studies may not be typical of the country as a whole but if they are characteristic, they will reflect the loss of over two million acres from agriculture by the turn of the century"(James 1973:5).

The overall utilization of ponds in Bangladesh reveals how these could be used for pisciculture and irrigation. Rene Dumont (1973) refers to 6,33,000 ponds and ditches (the figure received from the Ministry of L.G.R.D.) ..... "about 75% of them are derelict, silted, without any or almost any use". Whereas ponds have potentials of fish and irrigation, the existing use limits the scope of protein in-take and increasing agricultural production in the country. Very few ponds are at present being used for irrigation, the constraint is availability of water during dry season. Fish cultivation is rarely practised. One possible reason for underutilisation of ponds is the ownership structure. Smith (1973) refers to how shared use and ownership of tanks impede rural development by limiting income and irrigation potentials.

The most important aspect of land use is agriculture, the performance of which both at total and per capita levels are below expectation. In productivity scale, Bangladesh agriculture ranks low compared with other developing countries like Philippines, India etc. "This will be true no matter whether one makes such comparison on the basis of yield per acre of different crops as total value added per capita in agriculture...On the whole it is observed that during the last two decades the overall rate of growth of agricultural output never exceeded the rate of growth of population" (Alamgir 1975:1).

The organization of Bangladesh agriculture determined by ownership and property relations is related to the poor performance of agriculture and the use of land. Khan (1973) in his analysis of the Master Survey of Agriculture of 1968 came to the conclusion that the ownership distribution, judged on the basis of the measure of skewness, is highly unequal upwards" (Ibid:40), and "recent surveys reveal that per acre output is more often a declining function of farm-size" (Ibid:53). To this generalisation may be added a case study by Hossain (1974) who classified the farms of one area according to acres of land cultivated, measured their relative efficiency and concluded that smaller farms were relatively more productive than larger ones.

The tenure-structure of agriculture in Bangladesh has also been examined by efficiency considerations and reveals polarization in rural societies. The Land Occupancy Survey (1977) carried out by the US-AID concluded that: (a) the ownership of land in rural Bangladesh is highly concentrated in a small percentage of rural households, (b) nearly half of all rural households are in functional sense landless, (c) most of the cultivable land in Bangladesh is not tilled by the owners of that land; instead a high proportion of the land is cultivated by tenants, owner-cum-tenant and hired labour. Tenants on a 50:50 share-cropping (somewhere the ratio is more than 50) assume full responsibility for the provision of all agricultural inputs.



There are a few studies which examine farming efficiency with respect to tenurial arrangements. Zaman (1973) classified farms according to tenure, measured their relative efficiency and concluded that the existing tenure systems are not only efficient but socially desirable. Consideration of Zaman's sharecropping arrangement was 'ideal'<sup>1</sup> type rather than 'traditional'<sup>2</sup> type - the latter predominates in Bangladesh agriculture. Jabbar (1977) carried out a study, based on sample farms of three districts in Bangladesh, to examine size-tenure effect with respect to underutilization of resources, labour productivity and slow adoption of technology. He found that though the owner-operator system is in a better position; agricultural operation did not achieve optimum level of efficiency in using resources from the point of view of society. "Relative inefficiency of tenure classes involving sharecropping (part-operators, part-tenants and tenants) implies that pattern of resource ownership and property relations are improper for attaining higher level of efficiency" (Jabbar 1977:28). To this may be added Qadir's (1960) finding of a village in which "60% of village households are not satisfied with the return from land and the present use of land" (Ibid:91).

The problem of underutilization of land is further aggravated by the continuous process of subdivision and fragmentation, of land resulting from the law of inheritance and liquidation process. Khan (1973) has shown the extent of fragmentation in Bangladesh agriculture by the number of farms and farm sizes to the effect that only 10% of the farms are non-fragmented, whereas 21%, <sup>17%</sup> 17%, 23% and 27% of farms are fragmented in the order of 2-3, 4-5, 6-9, 10 and above fragments, respectively. Farm-size fragmentation are more in larger,

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1 This refers to an arrangement by which cost of production is shared between landlord and tenant.

2 An arrangement in which the tenant bears all the costs of production.

medium sized farms 97% each, whereas for smaller farms the percentage is 83 (Ibid:42). Fragmentation not only renders difficulty in agricultural operation but also entails loss of cultivable land. Qadir (1963) in village Dhanisar found that the number of plots were 242 in 1878 stands at 453 in 1960, showing that it had nearly doubled in sixty-six years indicating a loss of over 33% of cultivated area in the village.<sup>3</sup>

Attempts to develop Bangladesh agriculture in the past have taken place in two fronts, each with historic importance. They are viz., (1) Land Reforms and (2) Mobilization of external resources through agencies like IRDP, Extension Services etc. The Land Reform and State Acquisition Act of 1950 (The East Bengal State Acquisition and Tenancy Act, -1950) are directed to abolish the landed aristocracy but it could not bring any change in the traditional agrarian structure. It was an attempted revenue administration. "The redistributive impact of the reform was quite negligible...it was moderately successful enabling the Government to centralise agricultural surplus into its own hands...the welfare of the rural poor was affected marginally, if at all" (Abdullah 1976:95). The rural social and economic structure remained in a static position with only change of revenue contract with the Government rather than with the zamindars.

In Bangladesh agriculture, penetration of the new seed-fertiliser-irrigation technology started in 1966; and onward in different phases and different nature. The HYV acreage in 1972/73 was about 2.6 million acres, 11% of the gross cropped area. In terms of output it accounted for about 23% of the total rice production in the country (Basic Agricultural Statistics, 1975). Both of these figures appear to be well below the potential expansion frontier. Moreover, irri-boro dominates the HYV acreages when the risk of damage is less. Available data indicate a wide range (between 13% and 363%) within which yield per acre under HYV exceeded that under

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3 The author measured all the ridges with an average width of 1.5' on the C.S. map and found that in every 96 acres, ridges occupy roughly 3 acres of land.

traditional variety. Such variation is possibly explained by differences in environmental (socio-economic and physical) factors and also in the management factor. One investigation (Ahmed 1973) in Bangladesh revealed that introduction of HTV had a positive impact on employment, productivity and profitability and it was also found to have smoothed the extreme seasonality in agricultural employment. But the technological development could bring only marginal change in the existing relations of production in agriculture. The increase in production and productivity... "are not expected to have a total sweep over the entire economy to beat back stagnation which is traditionally built-in within the given framework unless there is an effective transformation of existing production relations" (Saha 1978: 166). The introduction of HTV has not made any significant impact on the real wages of agricultural labourers and it seems to have been accompanied by a period of increasing inequality in rural income and landholding with increasing incidence of poverty (Alamgir 1974: 2).

The Co-ops-type service co-operatives introduced in the late 60's in the country, are open to all farmers interested in increasing their production and they are destined to benefit their members in proportion to the individual assets of each. These societies have shown remarkable evidence of the possibilities of increasing production through organisation of peasants, mobilisation of rural savings and provision of credit, supply of inputs for modernising the production process. These attempts have led to an increase in agricultural production, but there is little evidence to indicate that rural development is promoting equity in the distribution of either income or political power. "In fact, the agricultural programmes would appear to have lessened rural equity in no small measure, in the sense that the inputs have gone to the surplus farmers, as have the benefits of increased production, while the subsistence and landless labourers have had to be content with "trickle down" benefits, which here, as elsewhere, are meagre" (Mclair, undated). "Thus rather than counter-balancing the polarising

tendencies inherent in the uneven spread and differential transition to a more productive techniques, the IRDP co-operatives assist the process to the extent they remain channels of input distribution disregarding the disparate economic positions of its various recipients" (Abdullah et.al 1974: 128).

The above discussions indicate that the underutilized characteristics of land, particularly of agriculture, is related to different factors. Even the efficiencies of rural developmental attempts have been examined in their contributions to bring about change in rural societies. It is thus imperative for rural development to formulate policies to effect proper land utilization on which is based the well-being of rural population. It is with this end in view, the research intends to focus on the present land use pattern of an area in Bangladesh, to analyze the relative efficiencies that are concerned with variable levels within physical and socio-economic conditions; to examine the various possibilities that are existing to effect proper land utilization and suggest policies through which they may be realized.

### 1.2. Review of Existing Rural Studies:

Studies dealing with problems and prospects of rural development are of different orientation. For the purposes of review they may be grouped as follows:

1. Historical Studies.
2. Integrated Rural Development with spatial and functional considerations.
3. Micro-level studies.
4. Agriculture-oriented studies.

### 1.2. Historical Studies:

Research by Alamgir in Below Poverty Level Equilibrium Iran 1976 deals with problems of rural stagnation in historical perspective. It is particularly concerned with agriculture and low level of equilibrium. The basic tenets of rural stagnation have

been viewed in a historical context with a resulting conclusion that the present operation is a legacy of the past pattern of development, of the relationship between man and land in Bangladesh. Much of the study focuses on the analysis of the class structure and exploitive relations of production. The study identifies a "polarised structure of society in terms of control over productive assets as well as control over flow of income" (Ibid:89). The policy towards distribution of land and income in the direction of production co-operatives, is recommended as a means of reducing poverty in the rural areas. Abdullah's Land Reform and Agrarian Change in Bangladesh (1976) is another attempt to examine the complex interaction of the relationship between agrarian structure and development in the historical context of land reform policies. It examines the impact and success of two land reform measures viz., 1950 and 1974 in an attempt to review rural development of Bangladesh, in which the main characteristics of the backward agrarian structure...." are high man-land relations, tremendous fragmentation, a high degree of landlessness, predominance of production for subsistence, preponderance of mini-fundist "family farms" and primitive technology" (Ibid:67). The study reviews inadequacies of the reforms to promote growth and equity in rural areas. Abdullah proposes two policy alternatives for rural development viz., organising agriculture on a socialist basis and or increasing the efficiency of administration of IRDP co-operatives. In view of political limitations, he emphasises the second as the best policy which will "foster growth and weaken the last vestiges of semi-feudalism from our agriculture" (Ibid:96). Qadir's Village Dhaswar (1960) is a study made at the micro-level which focuses on the nature and extent of adjustment between man and land in three generations in one village of Bangladesh. Village-based studies reveals historic changes in the extent of fragmentation along with changing landownership and popular attitudes towards change which in one way or another limit the scope of rural development in a land-based economy like Bangladesh.

### 1.2.2. Integrated Rural Development:

The philosophy of integrated rural development is to initiate and bring rural people in national development programs through different agencies. In Bangladesh, the Comilla-program began in 1959 (later on it was extended through the IRDP) with the objectives of stimulating organisational activities and creating a cadre of developers who can help to supply more profitable factors of production to the farmers. Emphasis on the building of local organisations which can tie farmers into national service organisations is a bottom - top strategy rather than top - down strategy of development. Development of leadership and initiative is stressed to help create these new service institutions. In fact, the Comilla-programme concentrates on the creation of new organisations and institutional relationships intended to increase the availability of institutional services.

Realisation of Integrated Rural Development Programme (IRDP) in Bangladesh reflects a rural growth centre approach in the sense that the Thana has assumed importance in organizing the local co-operatives and disseminating information including supply of agricultural inputs. In this respect Thana-level administrative tier integrates spatial and functional concentrations to initiate rural development.

The growth-centre approach is basically a spatial-functional integration. Relevance of such an approach in rural development has been studied by Jahan (1978) in his study, Strategy for Integrated Rural Development in Bangladesh. The study aims to identify the level of spatial and functional integration through which rural development may be fostered. In this sense emphasis is given on the trading centres (markets) in which functions, viz. (1) agricultural services, (2) Employment and (3) Urbanization may be concentrated. We find another variant of growth-centre approach in a study, by Islam and Hossain (HABIBAT: 1976). They have studied urban rural relations and conclude that "the success of an agricultural revolution will depend to a great extent on urbanisation...." The urban centres acting as servicing stations for agricultural farms

and stressed that "urban centres must be developed and equipped to help boost production in the fields "(Ibid:75).

The market, as a growth-centre, has assumed importance also in other studies. US-AID, Bangladesh (1978) in Market town Development and Employment Promotion in Bangladesh has emphasized "a market town development and strategy which focus on strengthening rural market towns so that they may be simultaneously better contributors to rural development and centres for the generation of new off-farm employment, ideally in wage-good and rural services production activities" (Ibid: 1).

The market has been given added importance in social organization in one study, which followed a variant of the Central Place theory in the line of Skinner's work on China (1964) with emphasis on the integration of market centres and their interrelatedness through a hierarchy. Bertocci (1970) has applied Skinner's approach to evolve rural social organisation in one area of rural Bangladesh. His findings in the role of market centre in assuming a role of multiple social organisation - a 'micro-region' that variably constituted territorial communities composed of a mixture of traditional social groups.

### 1.2.3. Micro-Level Studies:

Village-based studies reflecting micro-level problems and prospects of rural development is of importance in representing micro-level relevance of land use structure. One such study is Hafiz's Rural Habitat of Mouza Pathalia (1978) which is based on a comprehensive physical and socio-economic study on the different aspects of land use problem as well as the geo-demographic condition of the area. The physical characteristics and existing land use conflicts enable the author to classify land into capability classes; an examination of which led to land use planning in the direction that high potential land should be used for agricultural practices while inferior quality of land should be used for settlement and other non-agricultural purposes.

In a different way, rural development has been reviewed in Haq's Village Development in Bangladesh - A study of Monagram Village. The village being an experimental area of Comilla program with strict supervision co-operative efforts have brought notable changes to the village of Monagram. Changes are visible in the shape of capital formation income, production - all through the cooperative society. The change agent co-operative has been liable to benefit the villagers in different ways "which only largescale farming can possibly have" (Ibid: 116).

The classic land use studies of Rampal Union (1961) and Fayadabad (1963) carried out by the Geography Department of Dacca University analyze a number of villages. These studies show broad land uses of the area and the amount of land occupied by each use. Both of the studies reveal high density of population coupled with traditional agricultural practices which is in Fayadabad a cause of food deficit. Rampal presents a past pattern of development as a horticultural area where settlements absorb more land than in Fayadabad. These studies represent classic rural land use studies without considering socio-economic aspects.

#### 1.2.4. Agriculture-Oriented Studies:

The present position of Bangladesh agriculture has been studied by a number of authors. Most of these studies are related to various aspects viz., productivity, employment, income and savings etc.

A series of studies undertaken by Alamgir cover both total and partial aspects of agriculture. In Some Aspects of Bangladesh Agriculture (1975), Alamgir reviews the performances of agriculture by examining the policies adopted for its development. His Aspects of Rural Savings and Investment in Developing Countries (1976) analyze methodologies used in measuring rural savings and income. Anandraman's Kaliganj Village (1973) is an economic survey relating to the use of land for agricultural purposes. Hussain's Study Farm size and Productivity in Bangladesh (1974) is an examination



of the relationship between farm size and agricultural productivity in Fulpur Farms. Zaman in his study Share-Cropping and Economic Efficiency in Bangladesh (1973) reveals the relative efficiency of share-cropping in one area of Bangladesh; whereas Jabbar's, Relative Productive Efficiency of Different Tenure Classes in Selected Areas of Bangladesh (1976) examines relative efficiency of using farming land by size-tenure. These two studies, in fact, consider tenurial impacts on agricultural efficiency.

The impact of technological changes in the form of seed-fertiliser-irrigation in Bangladesh agriculture has also been examined by some authors. Ahmed, I. (1972) in his article Employment Effects Of The Green Revolution (1976) has examined the comparative requirements of labour man-days between local and HYV crops. Irrigational effect has been analysed by Hoque (1968) and Alam (1974) in their articles Costs and Returns: A Study of Irrigated Winter Crops and Capacity Utilization of Low-Lift Pump Irrigation in Bangladesh.

The reviewed rural studies describe the physical and socio-economic realities of rural land use either in historic or the present context of micro or at macro level. Most of the studies consider farm-land uses; non-farm land uses have been neglected except the studies of Pathalia, Payadabad, and Rampal. The growing concern of population increase, settlement need, and that of increasing agricultural production need to be equally considered in planning for the improvement of the land use.

### 1.3. Review of Theory:

Theoretical issues purporting rural development at regional and local levels is of importance in the present research which includes attempts to establish land use policies. These theories could provide important guidelines as to the nature and content of rural development. As such a critical analysis of these theories particularly in terms of their relevance in Bangladesh is necessary.

#### 1.3.1. Concentric Zone Theory:

Von Thunen (1826) was the forerunner of the theorists to

evolve as economic model of the location of agricultural production. He attempted on the basis of practical experience to discover the laws governing the prices of agricultural products and the laws by which price variations are translated into patterns of land use. In his book The Isolated State he put forward a very simple model, consisting of one city and its surrounding region. All the agricultural products are sold in this single centre. The Isolated State is in this exposition a featureless plain with transport costs which increases radially from the town.

Von Thunen was concerned to explain two things - first, what type of crop will be cultivated at different distances from the town centre and second, what kind of rent the producer will pay to the landlord to use this particular location. To explain these things he brought market forces of demand through the reflection of price and the maximisation of return. The free price mechanism helped to develop two models - a locational model and a rent-model. Within a certain distance from the centre a particular crop will outbid the others, in a second area another crop will outbid the others and so on. Therefore, the pattern of land uses or the location of crops will be concentric. In this case the most intensive use of land will be near the centre and the rent or land values will decrease outwards. Thunen goes further and introduced some changes in the main concept, for example, he introduced a river along which the transport costs are much cheaper and therefore the pattern of land use extends in that level of less or equal cost.

The implication of Thunen's model is that intensive land use may be achieved by creating more urban centres (as has been emphasized by Islam and Hossain: 1976) and by opening up of trade with other areas in the classical manner of reaping comparative advantage. These possibilities would then help augment development of the area.

When evaluating the relevance of Thunen's model on rural Bangladesh several factors have to be considered. Thunen only considered farming land uses disregarding the impact of land being used

for settlement and other purposes. His contention of a perfect market condition to determine price and maximize profit is not relevant in rural Bangladesh where the market condition is imperfect and most of agricultural production is not for profit but for survival. Subsistence type of economy is not always explained by the market forces which guide production but rather by the traditional values which determine the types of crops to be produced. Also Thunen's model is inadequate because he does not consider the supply of agricultural inputs and disregards the physical and soil conditions which largely determine the intensity of land uses (i.e., he assumes them away with the featureless plain). With all these inadequacies, his theory is not however, totally without any value. The important feature is that urban centre will have some influence on the cropping pattern

the nearby lands; although most of rural land uses in Bangladesh are being determined by other forces which cannot be explained by Thunen's Theory. Still Dunge's theory could have an implication on the spatial organisation of rural development in Bangladesh should the primary constraints of agricultural production be eliminated to create conditions for surplus production and produce markets.

### 1.3.2. Growth Centre Theory:

Spatial contention of growth and its dissemination to other areas is the main consideration of the growth pole theory. The theory was first introduced by the French Economist, Francis Perroux in 1955 who observed that "growth does not appear everywhere and all at once; it appears in points or developmental poles, with variable intensities it spreads along diverse channels and with varying terminal effects for the whole of the economy" (Perroux, quoted in Choquill 1976:2). To Perroux, the growth pole was a centre in abstract economic space and the forces conceived were basically propulsive industries which were large and innovative to generate growth impulses in their environments.

Boudville strengthened the geographical content of the Perrouxian growth pole and emphasized the spatial character of

economic space. To Boudville, economic space is tied to geographical space through a functional transformation which describes the relevant properties of economic processes. He also considered only those centres to be poles which have propulsive firms i.e. large-scale technologically advanced, innovating and dominating, working within propulsive industries which exert a strong influence on their environment and are capable of generating sustained growth over a prolonged period of time. Boudville assumed that other factors, such as social change, are irrelevant to developmental process and can be achieved, if needed through industrial development.

Growth poles are the result of a self-sustained force. This economic force can be either a firm or an urban area or a market town. But whatever may be the space, it must combine in it some industrial activities, or firms, to stimulate economic growth in the regions in which they are located. Such a firm is almost always large and can be expected to employ relatively advanced technology in its production process, having forward and backward linkages. Economic growth would be expected to result from the direct and indirect linkages between the lead firm and other components of the economy.

The growth pole concept was evolved at a time (after the World War II) when France was facing a serious problem of economic development after the disastrous war. At the same time regional imbalances in industrial development were growing. The concept was evolved in an attempt to solve these specific problems. The western-bias of growth pole theory may render it less relevant for an underdeveloped country like Bangladesh. Mirra et.al (1978) have attempted to bring forth the inadequacies of growth pole theory with respect to underdeveloped countries:

1. The growth pole theory has not been a success in socially and economically backward regions; precipitated by lack of channels through which growth impulses can be diffused. This leads to a dual economy between core and periphery' (Friedmann).

2. The theory has its roots in western economic thought and have relevance to those countries whose economy has already reached the social transformation threshold needed for accelerated industrialization. The focus of growth pole centre around industrialisation. Structural changes in the economy are presumed to take place automatically once the growth pole starts functioning. Industrial development is indeed a major contributor to economic development, but in order to pervade every part of the country, it must have a dynamic institutional framework and economic structure to support it. In the absence of these, its impact at both the national and regional levels is bound to be limited and at times it may create more problems, than it solves.

3. This approach has a very limited value in regions where social and institutional constraints to development are great. Its utility is further reduced by the fact that it has little, if any, relevance to sub-regional and local planning processes - processes which are the only means by which people's participation in developmental programme can be secured.

In view of these inadequacies relevance of growth pole theory to provide guidance to rural development in Bangladesh seems to be of limited value because of the structural constraints of rural societies. Moreover, the resource-base for undertaking secondary industries is weak, and so also the need of propulsive industries. Some experts (Choguill 1976: 5) opine that in the context of rural area development in Bangladesh, growth centres might constitute the lower tier of the growth foci continua. These growth centres might be defined as rural centres which because of their agricultural orientation, serve as a focal point for the processing and refining of produce from their rural hinterland as well as servicing the common needs of the producers. "The rural growth centre would be expected to play the roles of retail and marketing centre as well as to become the location of whatever agro-industry might develop as a result of increased production "(Choguill 1976 : 5).

The requirement of a propulsive firm in the agriculturally related growth centre should not be a single firm but "a group of independent operators (although possibly linked by co-operatives) with modest output levels, as well as modest demands for productive factors" (Chopill 1976: 6). To effect such a possibility agricultural production should be above subsistence level with the surplus being used for the agro-industries. Existing production level leaves marginal surplus to feed such industries. One possibility is that these agro-industries by creating demand might enhance production. Evidence (for example sugar-mills in Bangladesh) suggest that agro-industrial need may not augment production under the clutches of subsistence nature of farming operations. This seems to suggest that increases in agricultural output should precede integrated planning of growth centres.

#### Social Transformation:

Development in a holistic view refers to social transformation i.e. the ways a traditional society passes over to a modern one. Such a view of development embodies both quantitative and qualitative changes, which emanates from the fact that "economic change cannot be adequately understood in isolation from the social framework within which it takes place" (Bretville 1971: 114) This is particularly true of an underdeveloped country like Bangladesh where economic organisation has a lower degree of autonomy than in the industrial societies of the west and is therefore more closely intermeshed with a variety of social institutions whose functions are partly economic and partly non-economic.

Economic activities involving the use of resources lead to mutual interaction of individuals whose rights and obligations are determined by the nature of ownership of productive assets; this is reflected in the social relations through which emanate socio-economic structure of society. The organisation of agriculture representing lower level of resource uses, is a resultant of differential access to resources such as land, credit and other inputs

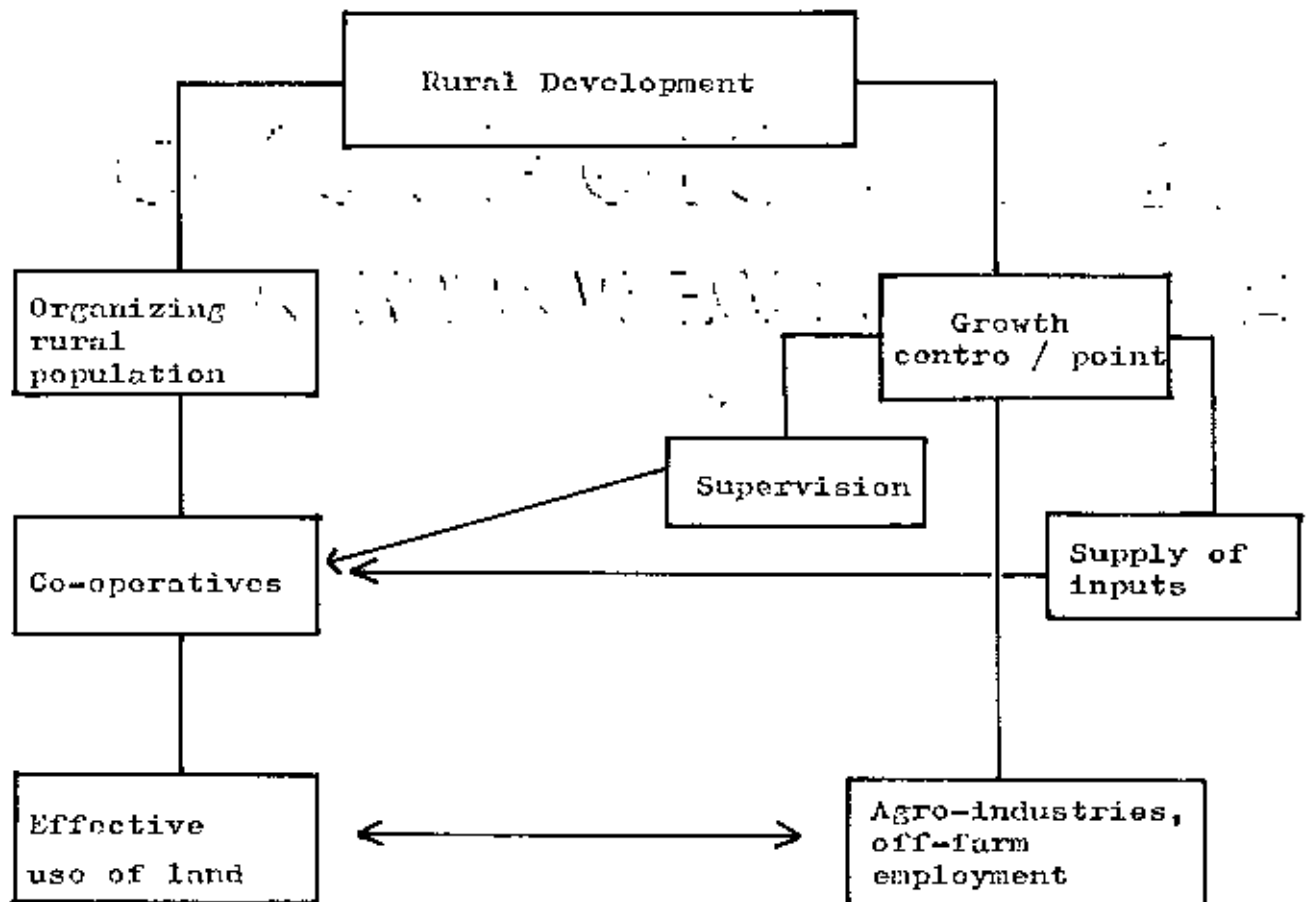
etc. In a backward country like Bangladesh, traditional modes of organisation being perpetuated by value premises are not only adapted to economic activities of agriculture but also have constraints of their own. Thus when an attempt is made to generate new economic activities these may be restricted by pre-established modes of organisation or the organizations themselves may have to be replaced. As such an assessment of existing organization is necessary to effect development in the society.

Policies to change traditional organization of agriculture may be (1) revolutionary or (2) evolutionary. The revolutionary attempt to change socio-economic structure may be through socialism or drastic land reforms. But this policy consideration requires an appropriate politico-social atmosphere. The other way traditional society may be passed over to modernisation is a gradual process in which existing institutions have to be added modernizing functions, so that a gradual transformation is achieved. Another way is the creation of new institutions through which modernizing elements may be slowly injected to achieve societal transformation. The organisational attempt is more effective in such a process leading to agricultural ( rural) development. The Integrated Rural Development Programme, in Bangladesh which is an attempt to extend Comilla-model, aims to achieve this end.

#### A Tentative Approach To Rural Development:

The tentative approach to rural development combines the agro-based growth centre theory and the social transformation theory. The former is supposed to have the following things viz., agro-based industrial complex to generate income and provide off-farm job, supervision of local co-operative, supply of agricultural inputs and service centres. Social transformation implies modernisation of rural societies through new organisation that tend to loosen traditional agrarian holds in the direction of efficient use of land. Effects of this change will help to ensure and perpetuate the industrial complex of the growth centre by supplying food and raw materials;

while the growth centre will generate supervision, income and support to growing rural landless by providing jobs. These two approaches should be mutually interacting with each other. With this approach, rural development requires organizing rural population to the efficient use of resources and the adoption of a spatial frame-work for the formulation and execution of appropriate policies. A model of rural development will therefore, combine two aspects-organization and growth centre/point, the contributions of each will be like the following.





## CHAPTER 2

### METHODOLOGY

Methodology refers to procedures followed to operationalise the research design to the collection and analysis of information in conformation with the research interest. The methods of study are not necessarily measures but they are techniques adopted to materialise investigative interests. Methodological issues consist of operational definition of concepts, procedures adopted to the collection of data and information. As such, methodology outlines the techniques for the collection of data and also the basic research and planning approach. A brief statement of the research interest should precede the methods of study.

#### 2.1. The Research Interest:

The proposed research intends to focus on the present rural land use pattern of one thana in Bangladesh that combines physical variations with respect to soil condition and land use association. The purpose is to examine the broad land uses and analyse the factors which are responsible for the gap between existing and potential capabilities of land by taking into consideration geographic, technological and socio-economic factors. Interest to rural land use study emanates from the fact that present use is not efficient as measured by any standard. Broadly speaking, rural land use may be categorized as farm and non-farm lands. Farm lands are mainly used for agricultural production; while non-farm lands are used for settlement and other related activities. It is accepted that there is underutilization of land due to unfavourable land man relationships, the organisations of agriculture. Existing pattern of land uses is not conducive to bring about agricultural growth in rural areas of Bangladesh. On the one hand, population growth has resulted in the absorption of land for settlement and wastage of land by fragmentation; on the other hand, agricultural production is low due to limited degree of farming constrained by socio-economic factors.

This state of affairs requires planning policies in the direction of rural development in Bangladesh, where the following exposition is true: present rural land use is considered inefficient

and resource use is not rational; this limits the scope of production and employment in rural Bangladesh.

An analysis of the above exposition brings out the following things which provide the present research interest.

1. The use of non farm land e.g. settlement, ponds etc., might differ spatially and according to peasant categorization based on landholding.

2. Variation in productivity, cropping intensity and employment are likely to be related with space and holding sizes.

3. An analysis of existing employment situation to reflect variation of work days between farming and non-farming which might have impact of seasons, space and holding sizes.

4. Technological impact and acceptance may have spatial limitations and variations among landholding groups.

5. The degree of land wastage may vary due to fragmentation and increased use of land as homestead.

### 3.2. The Research Design

<u>Land Category</u>	<u>Present Use</u>	<u>Investigation</u>	<u>Source of Information</u>
1. Non-farm	a) Settlement (homestead)	i) Population growth	Census data
		ii) Housing density by category of peasants.	Survey data
		iii) Village density of population	Plot Enumeration
	b) Ponds & Ditches	i) Present use	Survey data
		ii) Expected use to augment income and employment	-do-
	c) Others	i) Present Use in the form of bamboo groves, fallow etc.	-do-
			ii) Margin of extensive farming

<u>Land Category</u>	<u>Present Use</u>	<u>Investigation</u>	<u>Source of Information</u>
2. Farm land	a) Agricultural land	i) Types of crops grown	Survey data
		ii) Crop intensity	-do-
		iii) Average yield/rate for different holding size.	- do -
		iv) Ownership & tenure	-do-
		v) Fragmentation	Survey data & Plot Enumeration
		vi) Employment - labour usage	-do-

### 2.3. The Planning Interest:

An analysis of existing level of land use and of the possible factors responsible for present and future uses will be undertaken with the objective of identifying policies. The planning interest with respect to effecting proper utilisation of non-farm and farm lands stems from the likely possibilities which exist to further develop the area. The aspects of planning will include the following:

1. To assess the needs for efficient use of land for different purposes resulting from projected population growth.
2. To explore physical, technical and socio-economic potentials and constraints of agricultural production by different physical units.
3. To project future level of agricultural employment and its possible absorption in farming through the prospect of agricultural growth and to assess the need for the creation of non-farm employment opportunities by physical divisions.
4. To identify policies for the use of land by geographic areas which aim to optimise land use in accordance with realistic development perspective.
5. To identify locational priorities for rural development and for the development of alternative employment.

#### 2.4. Approach of the Study:

Land use study of a particular area may be attempted by adopting different methods which are allied to (in alliance with) different fields of specialisation and disciplines. Three approaches are available, to name them: (1) Soil Survey Method, (2) Geographic Method of plot to plot enumeration, and (3) Socio-Economic Method.

The Soil survey and analysis method seeks to identify, classify and describe the major kinds of soils existing in an area; and tries to evaluate the properties of the soils in terms of potential for optimum use. Such a method provides information on which broad policy decisions might be based regarding agricultural development by such means as irrigation, flood protection, drainage, use of fertilizers and introduction of alternative crops or methods of husbandry. It gives an overall picture of the area as well as of the more relevant factors which may affect either the present trend in agriculture or the potential for future development. But this method fails to give information on individual farm operations or the appraisal of the soil resources of individual fields or farms; nor can it give individual level of farming and return. These aspects are important in land use planning where individual operations have to be reviewed in terms of productive capacity and the constraints for increasing output per acre-elements of development.

The geographic method of land use study is related to the enumeration of different types of activities occurring on each plot of land through field survey. On a base map this method provides information of how land of an area is being used for different purposes such as housestead, shopping, industries, etc., from which it is possible to find out acreages of land being absorbed by different activities. With respect to rural land use, it gives information on the amount of land of an area being used for settlement, ponds and ditches along with the intensity of use for agricultural production. A temporal attempt of this type of survey will help to assess changes in the overall land use pattern of an area.

This approach, when compared with the soil conditions of an area, may provide broad outlines of land use policies of an area in the sense that agricultural potentialities of the area may be related with the actual cropping of different plots. But this method fails to take into consideration individual characteristics of farming operations with respect to productivity and land uses. Though intensified land use of an area may increase areal prosperities and the distribution of additional benefits and costs cannot be ascertained from this approach.

The socio-economics of land use of an area encompasses the individual operators and their interaction within a system. This approach penetrates into the social system in which economic factors are assumed to be fundamental determinants of social relations. In the rural context of Bangladesh, the important economic determinant is the ownership of land which has "positive correlations with income both total and per capita; and capital expenditure" (Alamgir 1975: 273). "Pattern of ownership of productive assets release a set of forces that determine the relations between various groups in the society which ultimately influence the behaviour of individual households; in this way rural societies are characterised by multiplex social roles, which influence nature of economic transaction and activities within it" (Alamgir 1975: 277). The approach combines the social and economic dimension which largely determine rural land uses. The method may also be related to physical divisions in which a breakdown of analysis may conform to spatial considerations.

The present approach of the study combines the important elements of the above mentioned methods. This is in conformation with the research and planning interest. The approach has a bias to the socio-economic method due to the fact that the "material" base of rural society (i.e. landownership) has been considered in the analysis in order to reflect variation of both non-farm and farm land uses in the thana. To this aspect one more dimension has been added, namely, that of spatial difference in the use of land and

its consideration in the policy framework. Even the element of geographic method has been accepted to types of plot-based rural activities, viz., settlement and pond & ditch locations so as to measure the amount of land and make historic comparison related to non-farm land uses.

### 2.5. Categorization of Peasants:

The emphasis on socio-economic approach in the study assumes that persons within the social spectrum have to be divided into groups in order to facilitate the analysis. Several criteria may be developed and adopted to categorize rural households, viz., tenurial status, ownership of productive assets (particularly land), lender-debtor relationship and caste. In rural Bangladesh, the multi-dimensional influence of land may be used as a yardstick for identifying groups in rural society. "If one were to prepare an index of power with suitable weights attached to economic, social and political dimensions, the rank ordering from top to bottom will possibly follow large, medium and small peasants...supporting evidence could be found from per capita income of different groups and representation of different groups in local institutions, e.g. union councils, cooperatives and social leadership groups" (Alamgir 1975: 279). For this reason the ownership variable is adopted as the basis of classifying groups that differ in the degree of access to economic, social and political power in the rural societies of Sharpur.

	<u>Category</u>	<u>Land ownership</u>
1.	Landless	Owning homestead land only but no cultivable land.
2.	Marginal	Upto 2.50 acres.
3.	Small	2.51 to 5.00"
4.	Medium	5.01 to 10.00"
5.	Large	10.01 and above.

This peasant categorization is expected to have policy implications. The inclusion of the marginal peasant in the category

is justified on the ground of liquidation process of growing poverty and pauperisation in rural areas.

### 3.6. Selection of the Study Area:

The study area is Shergpur, one of the thirteen thanas of the Northern District of Bogra, in Bangladesh. Certain considerations were adopted to select the thana as the study area. The first consideration of using a thana as a unit of study is its position at the lower tier of administrative organisation and decentralised policy decisions are emphasized whereby rural development may be initiated. Background information on Shergpur was collected before its selection. Other considerations attached to the selection were the following:

1. Three physical divisions of the thana existed comprising variations of soil condition (viz. flood plain, dissected and level barind tracts) and land use associations so that difference in policy prescriptions would conform with space.

2. An urban-rural relationship existed with an expanding urban population in the thana. This allowed the projection of future growth of urban influences and its relation with rural hinterland.

3. There existed an evaluation of the Development programmes of the thana, particularly the Rural Development Project-1 sponsored by the World Bank, the Zero Population Growth Programme and the Social Welfare Programme for the "disadvantaged group".

4. The thana is the "laboratory" of development experiment of the Rural Development Academy which is situated in the thana. The present research results and proposals could be utilized by the Academy.

5. There is easy access to the thana and an attempt to deal with rural problems of the neglected Northern part of Bangladesh.

These aspects together with the author's personal cognisance with life and living pattern of the thana were the factors which led to the selection of Shergpur.

## 2.7. The Sample Frame:

Investigation of the study area was carried out by adopting statistical techniques and sampling methods which facilitate study of a larger universe and allow to make broader generalisations.

### 2.7.1. Sampling Design and Sampling Procedure:

The survey thana Sherpur, consists of 10 unions (one urban area + 9 unions) with 204 villages and according to 1974 census, it has a population of 1,34,200 distributed in 23,517 households. A 10% sample of villages (i.e. 20 in number) was selected for the study of Sherpur. The sampling procedures adopted were as follows:

Since Sherpur is not homogeneous with respect to land structure, the entire thana was stratified on the basis of physiographic units by using the physiographic map of the thana, prepared by the soil survey Department, Dacca contained in the Reconnaissance Soil Survey of Bogra and part of Dinajpur Sadar Sub-Division Report of 1972. This demarcation of physical units was used to locate the villages in each division. Three physiographic divisions were available in Sherpur, viz., the flood plain, dissected and mainly level baried tracts. Initially, based on the physiographic map, villages were classified according to physical units. The villages of each unit were then listed showing number of households in each unit.

On the basis of unit size, the number of villages has been selected from each unit. Approximately 10% of villages were to be selected from every individual physical division but slightly more than 10% villages were selected from the physical division where the number of villages was small and proportionately less villages from the physical divisions where the number of villages was large. Though the selection of villages was made on a random basis, care was taken to limit the number of selected villages so that the total number of households in the selected villages represent about 10% of the thana households. The table below shows the number of villages



in every physical division vis-a-vis the number of villages selected for survey.

<u>Physical Divisions</u>	<u>Total Villages</u>	<u>Selected Villages</u>
Flood Plain (PD I)	76	7
Dissected Barind (PD II)	28	4
Level Barind (PD III)	100	9
Total	204	20

All the households of the selected villages were then enumerated (frame survey) for information on holding sizes (ownership) for subsequent stratification based on household sizes. The stratification of households was based on peasant categorization, viz., landless, marginal, small, medium and large. From each of the PD (physical division), households were then selected depending on number of households in respective stratum. From each category having a small number of households, greater proportions of the households were selected to make the sample more representative. That is, in selecting the sample of households for detailed enumeration approximately 10% households were taken from landless, marginal and small groups, whereas approximately 25% and 50% households were taken from medium and large groups respectively. On the basis of this technique, the total analysis of selected households for sample enumeration, was as follows:

Total Vill. of the Thana.	Selected villages	% of selected villages	Total H/H in the Thana	H/H in selected villages	% of H/H	H/H owned	Percentage
204	20	9.90	23,317	2,902	12.45	276	12.96

Physical divisionwise, the total number of households, number of selected villages, households therein, their distribution in different holding size groups and number of households selected for enumeration (given in parenthesis) for Sheerpur thana are given below:

Physical Division	Total No. of Vill.	Total No. of H/H	No. of Vill. selected	No. of H/H in selected vill.	HOUSEHOLD CATEGORIES				
					Land-less	Margi- nal	Small	Medi- um	Large
FD I	76	12,602	7	1241 (150)	226 (23)	579 (23)	208 (23)	90 (23)	28 (14)
FD II	28	3,095	4	765 (92)	293 (30)	307 (31)	102 (10)	46 (12)	17 (9)
FD III	100	7,620	9	894 (136)	219 (23)	352 (38)	176 (23)	99 (24)	49 (26)
<b>Total</b>	<b>204</b>	<b>23,317</b>	<b>20</b>	<b>2902 (376)</b>	<b>843 (88)</b>	<b>1239 (126)</b>	<b>486 (36)</b>	<b>235 (59)</b>	<b>94 (47)</b>

A total of 20 villages were selected from 204 villages distributed in the physical divisions I, II & III. The small physical division II contains only 28 villages; 4 villages were selected from that unit for better representation. 7 and 9 villages were selected out of 76 and 100 villages from PD I and PD III respectively. From 23,317 household of the thana 2,902 households were selected. A 10% sample of households were selected from landless marginal and small land-holding groups; whereas 25% and 50% sample households were selected from medium and large groups respectively. Schematically the steps adopted for the sample frame were as follows:

Selection of the Thana

∴  
∴  
∴

Listing of all villages with number of households in the thana

∴  
∴  
∴  
∴

Stratification of villages on the basis of physical divisions using physiographic map and preparation of lists of villages with holding sizes for each PD. Cumulative totals were made for systematic selection.

∴  
∴

Selection of sample villages with probability proportionate to H/H.

∴

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||  
||  
Listing of H/H with holding sizes and the  
size of family.

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||  
||  
Stratification of households on the basis  
of land ownership.

||  
||  
||  
Selection of 10% sample households from each  
ownership group

### **2.8. Organisation of Fieldwork and Collection of Data:**

The survey was organized by the presence of the author in the study area along with 10 field investigators, who were mostly college students of Intermediate and above Intermediate classes. The field investigators were trained at two stages viz., one for enumeration of total sample population with landholding and family sizes; and the other for collection of information by using questionnaire.

The author gave necessary instructions to the field investigators in such spheres like,

- (a) objective of the survey.
- (b) Motivation
- (c) Interview techniques
- (d) Questionnaire-coding and explanation of the terms used and the response judgement and format.
- (e) Technique of extracting and getting information from the respondents (cross-checking if necessary)
- (f) Respondent's psychology and how to deal with them.
- (g) Convince the rural people to cooperation.

There were field test and the field investigators had to fill up a number of questionnaires as a part of their training in the field. These tests were conducted to examine:

- (a) Wording of the question and respondents' understandability.
- (b) Response time and difficulty
- (c) Reaction of the respondent - hesitancy to reveal the truth.
- (d) Tendency to conceal as to give false information.
- (e) Whether the information is easily available.
- (f) Whether the question is suggestive or not.

On the basis of these observations, necessary improvements were made in the interview technique.

### 3.9. Questionnaire:

The survey was carried out with the help of a questionnaire in Bengali version. An English version of the questionnaire is given at the end. Questions for the survey were set in a manner so as to extract information relevant to the purpose of the study. Two steps were taken before the field enumeration, viz.,

- (a) The questionnaire was prepared and pre-tested and
- (b) The questions were modified to get them easy to understand by including local words instead of standard Bengali words.

The survey questionnaire covered the following aspects:

1. Household composition, age and literacy.
2. Occupation (main/subsidiary) and sources of income of the family.
3. Migration both in and out.
4. Housing condition with no. of rooms.
5. Amount of land devoted to different uses, including homestead, ponds, bamboo groves, fallow and arable.
6. Cropping intensity, cost of production and productivity.
7. Capital stock.
8. Details of employment: farming and non-farming.
9. Level of living.
10. Capability of present homestead land to accommodate further settlement.

12. Membership in the village co-operative and loan appropriation.
13. Attitude about present return from farming and potential of output increase.

#### 2.10. Other Aspects of the Survey:

With a view to enrich the survey, steps taken other than questionnaire survey, were the following:

1. Reconnaissance survey of the area.
2. Visits round the sample villages and discussions with the villagers about problems, prospects and possibilities of development.
3. Occasional trips to villages to find problems of field investigators and to check accuracy and reliability of data collection.
4. Discussion with thana level Officers about their operations and programmes and also the problems of rural development.
5. Use of cadastral survey map (mouzas) to identify plots being used for settlement, roads, pond/ditches and cultivation.
6. A sample of different size of plots was selected to examine the extent of fragmentation and sub-division.

#### 2.11. Definition and Measurement of Some Variables:

The concepts used in the dissertation, their operational definitions and measurements are given below:

##### Land Use:

The term land use has been used in economic sense viz., referring the use of land where efficiency criteria is concerned. Two broad land uses have been considered - farm and non-farm. Non-farm land mostly refer to land used for settlement, ponds and other. Settlement land is measured in several ways (a) amount of homestead

land per household, (b) Gross village residential density - total village land divided by the number of persons living and (c) Net village residential density-total amount of village land for settlement divided by the number of persons in the village. Devising some measure such as income by Taka and irrigation by acreages, help to assess the use of land for ponds and ditches. Farm land refers to arable land and is measured by farm land minus culturable waste. Arable land is measured in two ways-*de Jure* and *de facto*; the former applies to ownership holding and the later to operational holding.

#### Income:

The term income refers to all types of earnings. Income in the study is gross family income, which is a total of farm and off-farm income earned by every member of the family. In off-farm income is included wage-earnings, business-earnings, earnings from the sale of milk, poultry, livestock; earnings from service-type works. Attempts have been made to include all possible sources of family income. Farm income is the sum total of the value of crops produced with no account of consumption and cost of production. Per capita income is derived by dividing gross income with the number of family members.

#### Productivity:

Productivity is a measure of efficiency of land with respect to the operators. Productivity is used and measured in three senses, viz., land, labour and capital productivities. Land productivity on average is measured by total output divided the amount of land. Labour and capital productivities are measured - total output divided by labour man days used or amount of capital (Taka) used in production. Productivity measures the relative contributions of different factors of production to output.

#### Employment:

Employment, particularly in agriculture is measured by the local standard mandays. Agricultural employment has been examined

against seasonal variation of work opportunities. It has been surveyed according to three seasons viz. Aus, Aman and Boro, to assess variation of work, employment and wages. Both family and hired labour have been enumerated to seasonal variability. Non-farm work has also been related to seasonality. A measure like this will easily indicate the extent of under employment by season by comparing man-days being employed in each season.

#### Cost of Production:

Production cost consists of two elements viz., fixed cost (plough, bullock, etc.) and variable cost (labour, fertiliser etc.) The measurement of fixed cost reflect the market value of their operations. Whereas market prices have been assigned to costing of variable inputs. The costing has been made according to agricultural operations, particularly, irrigation, chemical fertiliser, pesticides for various crops.

#### Cropping Intensity:

Cropping Intensity refers to the times a particular unit of land has been put to cultivation. Household arable land and also barga land were examined to compare net cultivable land and total cultivable land. Separate estimates were made for cropping intensities of own land and barga land.

#### Capital Stock:

This is the pricing less depreciation value of agricultural inputs owned by each household, to assess and compare investment position of different landholding groups.

#### Land Capability:

It is an assessment of future output level in consideration with the present level and the requirements of inputs so that individual peasant could predict increase in production of different crops.

Excess Capacity of Homestead Land:

It refers to the capacity of present homestead land by farming groups to accommodate settlement in the future. This was attempted in order to ascertain the future prospect of land absorption by settlement. The variable is measured by the number of rooms that is possible to construct on existing homestead land.



## CHAPTER 3

### INTRODUCING THE STUDY AREA

The present study aims at analyzing the future courses of development of a particular area. The potentials, constraints and specific features of development are largely determined by the characteristics of the area which therefore need to be analyzed. Accordingly, chapter III deals with locational and physical features including economic and demographic aspects of the study area.

#### 3.1. Location and General Characteristics of the Area:

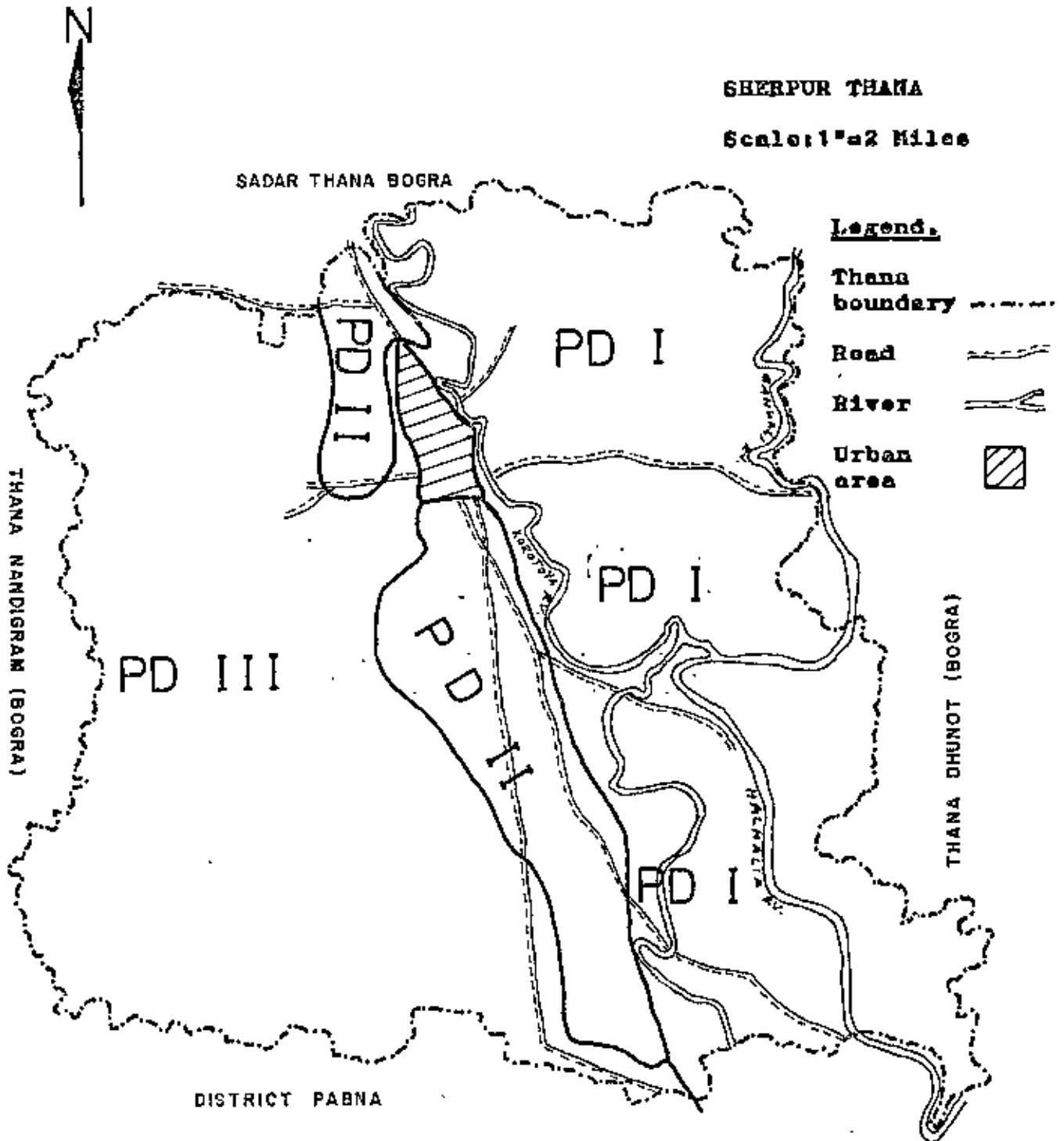
Sherpur is one of the 13 thanas within the Sadar sub-divisional jurisdiction under the northern district of Bogra, Bangladesh. The thana is situated on the right bank of the river Korotoya; its physical location is 13 miles to the south of the district Headquarter. The Dacca-Bogra trunk road passes through the thana and divides its territory in almost two halves conferring geographic implications. The global position of Sherpur is in  $24^{\circ}40'$  N latitude and  $89^{\circ}39'$  E longitude. The thana has the third largest population in the district and it is also of administrative importance and it is the most important area in terms of age and historical interest. The thana territory is bound on the north by Sadar thana (Bogra), on the west by Masdigram thana (Bogra), on the east by Dhunot thana (Bogra) and on the south by Raiganj thana of Pabna District. Only the above mentioned road link gives access to the thana, though during rainy season the Korotoya could be used for transportation.

Sherpur is predominantly rural with an area of 115 sq. miles of which only 3.5% is urban. The thana headquarters is in Sherpur Municipality which extends over an area of 4 sq. miles. Urban settlements are along the main road and the river. The Municipality of Sherpur has few urban facilities such as electricity, paved and unpaved roads and drains, and service latrines. Immigration is fostering the growth of the town centre which is basically commercial and administrative. Sherpur thana is administratively divided into 10 Unions of which one is urban and 9 are rural Unions. These Unions have further been divided into 234 Mouzas.

The broad land uses of the thana are as follows:

MAP NO. 2

PHYSIOGRAPHIC DIVISIONS OF SHERPUR.



PD I = Korotoya-Dangali meander floodplain.

PD II = Broadly dissected Barind Tract.

PD III = Mainly level Barind Tract.

Urban	4 sq. miles
Rural	108.5 " "
Water	2.5 " "
<hr/>	
Total: 115.0 sq.miles.	

Source: Reconnaissance Soil Survey of Bogra and  
Dinajpur Sadar Sub-Division, 1972: P-19.

### 3.2. Physiographic Features of the Area:

Sherpur has a rather simple spatial structure in terms of the physical qualities. Its physical landscape consists of three physiographic units, viz., (1) Korotoya-Bangali meander flood-plain; (2) Dissected Barind tract; and (3) Mainly Level Barind Tract. These physiographic Units of Sherpur are represented in map 3.

#### 3.2.1. Korotoya-Bangali Flood Plain;

The land to the east of the Korotoya river is level in a broad sense but contains old meanders and numerous sand ridges and basins formed by the Korotoya and Bangali river flood actions. Silts predominate on the ridges and clays in the basins. Sandy soils occur only patchily on ridges. This area of the thana is popularly known as Palli area. About 40% of the thana area is in the flood plain. Numerous perennial flooded depressions are there in this part and the general tendency of land is to slope down to the south east. So the land slope itself controls the flow of water from the east of Korotoya towards the Jamna and its tributaries (Bangali) "Elevations on the flood plain above mean sea-level ranges from a maximum of 57 feet in the north-east to a minimum of less than 35 feet in south-east" (Soil Survey 1972: 5). This part of the thana is regularly inundated and goes almost entirely under water during the rainy season. "Maximum water level varies from 1.5' to 3' " (IRDP RD-1 1976: 2). The area was annually flooded before the construction of Brahmaputra Right Embankment (1966). Since then introduction of flood protection has benefitted agriculture in this part of the thana. The cropping of the area has been altered towards the production of Irri-Boro crops. The ground water level in this zone is generally low

and consequently the development of irrigation facilities need to be based on the use of deep tube-wells.

### 3.2.2. Dissected Barind Tract:

Broadly dissected barind tract is higher than the level barind and occurs mostly in the eastern margin and north eastern part of the Barind tract of the thana area. About 12% of the total land of Sherpur is within this tract. "This area has been uplifted, tilted and broadly dissected by valleys, most of which are streamless, has relatively deeply weathered, well to moderately well drained red or brown soils" (Soil Survey 1972 : 8)

### 3.2.3. Level Barind Tract:

In the western side of Korotoya, land is partly elevated and partly level tract. "The level barind tract includes grey, variably mottled, slowly permeable soils overlying little-weathered Madhupur clay at a shallow depth" (Soil Survey 1972 : 1 P-7) Broadly speaking, the Barind area consists of old alluvial deposits. It is a plain inclined from the north-west to the south-east. The slopes in this part of thana divert the water flow through Shadai Khari towards the reserve of historical chain beel located in the districts of Faha and Rajshahi. Since this area is an old formation, the number of beels and depressions are few but ponds, fish catchments and ditches are very common especially near the settlements. They often are abandoned, neglected and are mostly derelict. Surface water availability is very low in this area during winter. The soil dries up and becomes rocky and unsuitable for cultivation in winter. Due to shrinking of clay soil big cracks and crevices are formed. "During the rainy season general inundation takes place and generally depth of surface water in this area varies between 1' to 2'5" " (IRIP-RDI 1976 : 1) "Elevations above mean sea-level range from a maximum of more than 97 feet in the north-west to minimum of 23 feet in the south-east" (Soil Survey 1972 : 5). In Sherpur thana this unit occupies about 44.4% of the total land.

This characteristic "Lincation" of the physiographic units is reflected in the broader land use associations of the thana. The eastern part of Sherpur being a flood plain alluvial is rich in agricultural operations both in terms of productivity and cropping intensity - two to three crops can be grown in a cycle year. The dissected barind tract on the margin of flood-plain and level barind, along the highway is flood free land where partly double crop and partly single crop are possible to grow. The level barind tract in the western part of the thana is liable to grow single crop with some inclination to grow double crop.

The relationships between physiographic divisions and agricultural land use associations of the thana are shown in Table 1 below:

T A B L E - 1

PHYSIOGRAPHIC DIVISIONS AND LAND USE ASSOCIATIONS OF  
SHERPUR THANA.

<u>Physical Division</u>	<u>Land Use Association</u>	<u>Descriptions</u>	<u>Area in sq.n.</u>
1. Korotaya- Bengali Floodplain.	Mainly double with some triple cropped area	Aus/Jute-T. Aus- fallow rohi crops ( 43% ) with some mixed aus & broadcast aus aus-fallow	46.0
2. Dissected Barind Tract	Single and double cropped area.	T. Aus-fallow & Aus-T. Aus-fallow ( 12% ) with some aus/mesta- rohi crops.	13.0
3. Mainly Level Barind Tract.	Mainly single with some double cropped area.	T. Aus-fallow with some Aus-T. Aus- fallow.	49.5 ( 45% )
<b>Total :</b>	<b>3</b>	<b>3</b>	<b>108.5 (100%)</b>

Source: Reconnaissance Soil Survey of Bogra and Dinajpur Sadar  
Sub-Division 1972: P-19.

It is clear from table 1 that about 43% land of the thana is well exploited due to physical advantages, leaving the remaining 57% a moderately but not at poor level of utilization. This broad land use picture needs closer examination at farm level operations in

order to establish planning policies which aim at full utilization of underutilized land resources.

### 3.3. Demographic Features of the Area:

Sherpur is a rural thana with only 12000<sup>1</sup> (7.6%) of its total population living in the urban area and the rest (92.4%) living in 234 villages spread over the thana territory. Population density of the thana according to 1974 census is 1167 persons per sq. mile whereas urban and rural densities are 2,000 persons p.s.m. and 1,170 persons p.s.m. respectively. Literacy rate of Sherpur was 14.5% (1974 Census) with urban and rural variations of 39% and 13.1% respectively. This variation indicates one aspect of the perpetual backwardness of the rural area.

Population growth in Sherpur shows an upward trend in both urban and rural components like at the national scene. The trend of population growth is represented in the table below:

T A B L E - II  
POPULATION INCREASE OF SHERPUR BY URBAN AND RURAL COMPONENTS OVER THE PERIOD BETWEEN 1951 TO 1979.

Components of population	1951	1961	1974	1979 <sup>1</sup>	Average yearly growth of population		
					'51 to '61	'61 to '74	'74 to '79
Urban	4,270	4,812	7,233	12000 <sup>1</sup>	1.27%	3.67%	13.1%
Rural	64,440	82,989	126,987	146036 <sup>2</sup>	2.67	4.08%	3.0%
Total	68,710	87,801	134,220	158036	2.77	4.06%	3.55%

Source: Village Censuses 1951, 1961 and 1974.

<sup>1</sup> Urban population has been estimated from Ration Card units.

<sup>2</sup> Rural population of 1979 is an estimate at 3% national growth rate.

Population increase in Sharpur Thana show an upward trend with yearly variation in the average rate. As evidence, population increased at a rate of 2.77% during the period of 1951 to 1961 but this rate is lower than that of the next period 1961-74, i.e. 4.06%. In 1974-79, the rate declined but still remains above the national average of 3.9%. These fluctuations in population growth may be explained with the context of national trend. The spread of life-saving drugs in the rural area might have depressed the death rate causing higher population increase in the period between 1961 and 1974; whereas the operation of population control measures may be accredited to a lower rate of growth during 1974 - 79. Moreover, rural population increase of Sharpur shows a consistent rising pattern. But Urban population growth has been very phenomenal. Starting with a modest rate, it suddenly jumped to 13.18% in the period between 1974 and 1979. This increase has not only been caused by natural population growth but also by migration (of population) from outside. The migration is a result of the process of land erosion by the river Jamuna that has compelled many people of Sariskandi and Kasipur thanas to move to Sharpur.

Population aspects need further elaboration in order to examine the relationships between population growth and geographic variations. This aspect is very important in a land use planning exercise. The three physical divisions of Sharpur have been compared with population growth and presented in Table III.

Table III gives the differential rate of population increase by geographic areas. Population growth by PDs during the period 1961 to 1974, shows that in PD I and PD III the rates are moderately above the national rate of 2.6% but in PD II, the rate is as high as 6.5%. Obviously this unit has experienced heavy immigration. It is also apparent from the Table that population growth has resulted in significant increases in population densities in different units.

T A B L E - I I I

INTERCENSAL GROWTH OF POPULATION AND H/H BY PHYSICAL DIVISION.

Physical Divisions	Population		House Holds		Ave. incr. - '61-'74 'case of popula- 'tion per <u>FHR</u> '61-'74	'Ave. yearly 'increase ' of ' H/H <u>'61 - '74</u>	'Area ' sq. ' mile
	1961	1972	1961	1972			
PD I	47,403	72,752	8,940	12,602	4.1%	3.2%	46.0
PD II	8,560	13,774	1,805	3,095	6.5%	5.5%	13.0
PD III	27,026	38,461	3,451	7,620	3.3%	3.1%	49.5
Total	82,989	126,987	16,196	23,317	4.1%	3.4%	108.5

Note: PD I, PD II, and PD III refer to floodplain, dissected barind and level barind tracts of Sharpur.

Source: Census Reports 1961 and 1974.

In 1961, population densities in PD I, II and III were 1031, 658 and 546 persons per sq. mile. respectively. In 1974, the densities have increased to persons per sq. mile 1502, 1213 and 777 for PD I, II and III respectively. The increase of population and also of densities has also been accompanied by increase in family sizes of the three PDs. changes of family sizes from 1961 to 1974 are from 3.3 to 3.8; 4.7 to 5.1 and 4.9 to 5.1 for PD I, PD II and PD III respectively. The main findings of the table suggest that the proposition that population increases are always accompanied by increase in sizes of families and residential densities but in good quality land areas the increases are relatively higher than in less good quality land areas.

On other aspects of demography of the area; information is lacking since the census report fails to provide data on aspects such as age composition of population. However, insight may be obtained from a Sample Survey of 2,306 individuals taken from the



three physical divisions. The sample sizes were 150 families, 93 families and 134 families corresponding to population of 984, 535 and 787 for PD I, PD II and PD III respectively Table IV represents the age composition of population based on the sample survey.

**T A B L E - I V**  
**DISTRIBUTION OF SAMPLE POPULATION BY AGE AND PHYSICAL DIVISIONS**

<u>Age Composition</u>	<u>PD-I</u>	<u>PD-II</u>	<u>PD-III</u>	<u>Total</u>
Upto 4	14.5	14.2	14.5	14.4
4 - 9	16.8	19.2	14.6	16.6
9 - 14	16.0	12.3	13.7	14.6
14- 19	9.8	8.6	9.3	9.4
19- 29	12.9	16.0	17.2	15.0
29- 39	11.5	13.2	11.7	11.9
39- 49	7.6	6.4	8.0	7.5
49 and above	10.9	8.9	11.0	10.6
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Source: Sample Survey, 1979.

Table IV presents the population composition of three physical divisions in percentage terms. The distribution is even and consistent among the physical units. About 30% of the population is in the young age group of below 9 years - more or less the same percentage is observed in the three physical divisions. The working age (9+) population is 69%, 67% and 71% for PD I, II and III respectively. There is no significant variation in the dependency ratios<sup>1</sup>, that is, for PDs I and II, the ratios are 2.7 and 2.6. The exception is PD III where the ratio is high i.e. 3.6.

Of importance in the demographic scene of Sherpur is the migration of persons from outside. Due to paucity of data, the sample population is analyzed with respect of migration characteristics and causes.

<sup>1</sup> Dependency ratio is equal to Total population minus working male population divided by working male population.

T A B L E - V

MIGRATION BY TYPE AND AREA OF SHEERPUR BASED ON SAMPLE POPULATION

Type of migration	PD I		PD II		PD III		Total	
	No.	%	No.	%	No.	%		
Ghor Jamai <sup>2</sup>	7	30	4	9.5	7	33.3	18	(21%)
Internal <sup>3</sup>	3	13	4	9.5	2	9.5	9	(10%)
Outside	13	57	34	81.0	12	57.3	59	(69%)
Out migration	1	0	1	0	Nil	0	2	(0%)
<b>Total</b>	<b>23</b>	<b>100</b>	<b>42</b>	<b>100</b>	<b>21</b>	<b>100</b>	<b>86</b>	<b>(100%)</b>

Source: Sample Survey, 1979.

Note: Figure of out migration has not been included in the total.

Taking the area as a whole migration from outside is 69%; the second important source is the social influence of Ghor Jamai 21% and internal migration is only 10%. Migration from outside the thana is predominant in all PDs, but the percentage is higher in PD II. The percentages of migration by Ghor Jamai is higher in PD III and PD I as compared with PD II. In comparison with the sample population the migration ratios are 2.2, 7.7 and 3.7 for PD I, PD II and PD III respectively. As evident PD II because of its geographic advantage attracts more migrants than PD I and PD III.

### 3.4 Economy:

Sheerpur has developed an agriculture-based, rural-oriented economy. Agriculture is the primary sector - the main source of income and employment of the people of Sheerpur thana. The traditional way of management coupled with unfavourable land/man ratio tend to lower the scale of return from agriculture and so also those living on it are mostly in the subsistence level of farming.

<sup>2</sup> Ghor Jamai is a social institution by which the bridegroom permanently lives in father-in-law house.

<sup>3</sup> Internal migration is village to village migration within the Thana boundary.

Lack of upto date information compels one to base the analysis of land uses of Sherpur to the year 1972-73, since recent land utilization statistics are available only for that year.

T A B L E - VI

LAND UTILIZATION STATISTICS OF SHERPUR THANA IN THE YEAR 1972 - 73

Area of the Thana	Area not available for cultivation.	Current fallow	Cultural waste	Single cropped area	Double cropped area	Triple cropped area	Net cropped area	Total cropped area	Intensity of cropping.
73,000	15,221	2,016	100	26,019	26,675	3,431	56,125	89656	154
(100)	(21%)	(2.7%)	(.2%)	(35.3%)	(36.2%)	(4.6%)	(76.1%)		

Source: Basic statistics of Bangladesh Agriculture 1975:46

Note : All figures are in acres.

From table VI, it is evident that 76% land of the thana is suitable for farming and a good amount of land (21%) is taken into settlement and water bodies. The proportion of fallow and waste is not at all significant. Compared with the national level, Sherpur has a slightly higher cropping intensity (Sherpur-154; National-131) which implies intense level of land use of the area. Of these total land available for farming (76% of the total) 46% are single cropped, 48% are double cropped and 6% are triple cropped. This implies that more than 30% cultivable land of Sherpur is used for growing two crops. With respect to physiographic divisions the triple cropped and part of double cropped areas belong to the flood plain (PD-I); part of double cropped and part of single cropped areas are within the dissected barind tract (PD II) whereas most of the single cropped areas are in the level Barind tract of the thana.

Paddy is the main crop which occupied 90% of the total cropped area and accounted for 67% of the total produce of the area in 1974-75<sup>1</sup>. This shows that agriculture in the area concentrates on

<sup>1</sup> As thana level figures are not available so they have been adjusted to district level operations.

production of rice which is the staple food of the country. Table VII shows the predominance of paddy cultivation in the economy of Sherpur. The figures are for the period 1972-73, since recent data are not available.

T A B L E - VII

PRODUCTION OF DIFFERENT TYPES OF PADDY BOTH LOCAL AND HYV OF  
SHERPUR THANA FOR THE PERIOD 1972-73

Type of Paddy.	Area (in acres)			Production (in maunds)			Yield per acre (in maunds)		
	Local	HYV	Total	Local	HYV	Total	Local	HYV	Total
Aus	23,000	16	23,016	213970	544	216514	9.39	34.03	9.40
Amn	40,242	6,000	46,242	402393	103543	505936	10.00	17.25	10.9
Boro	3,000	1,824	4,824	44413	38523	102976	15.00	32.08	21.24
Total	66,242	7,840	74,082	662816	142566	825382	10.00	21.00	11.14

Source: Basic Statistics of Bangladesh Agriculture 1973: Pages 94-95.

The preponderance of paddy cultivation in the total arable land is evident from Table VII. The total acreages are 86.2% of total cropped area of the thana. Other produce in the thana are viz., jute, wheat, potato, chilly, cereals, etc., - of which information is not available. It also appears from the table that yields per acre are low; and among three types of rice varieties, Boro seems to be in the best position. However, the overall yield rate is low; only 11.14 maunds per acre which is much lower than what land capability permits. "This low yield per acre in agriculture is due mainly to the backward technology used....there has been little change in technical means of cultivation and the overall technology today is only marginally different from what it was a century ago" (Khan 1973: 48).

Agriculture in Sherpur reflects low technological impact and its response to the new package deal is weak. From Table VII it appears that HYV crops occupy less acreage compared with the local varieties. The acceptances of HYV Aus, Amn and Boro are .07%, 25% and

4.18 respectively of total acreages of the production. HYV-Boro seems to be the most preferred HYV in the thana. Though these figures are not upto date, no spectacular change is likely to have happened in Sherpur agriculture during the last 5 to 6 years so far as physical constraints and the organization of agriculture are concerned.

Relevance of technological impact could be ascertained from some other indicators, viz., uses of irrigation, fertilizer and improved variety seeds. Data of improved seeds is not available for the thana. Total use of fertilizers in Sherpur in 1977-78 was 73,200 maunds (IRDP-Sherpur); per acre use of fertilizer stands at 1.5 maunds which is lower than the required dose. So far as the use of irrigation is concerned, the number of deep tube-wells in Sherpur is 9, of which 5 are in operation and 4 have been installed but not yet commissioned. There are 572 shallow pumps (each of one cusec capacity) in the thana, operated both by private sector and by co-operatives. The total irrigated acreage in Sherpur in 1978-79 is (IRDP-Sherpur source), 3,167.47 acres for Boro crops to which the approximate 200 acres irrigated by deep tube-well has to be added. No information is available about the area irrigated by shallow pumps in the thana. On the assumption that all the shallow pumps are in operation and that each has an average capacity to irrigate 6.67 acres, the total area irrigated by shallow pumps stands at 3,480.0 acres. On the basis of these estimates, the total irrigated area in Sherpur is 3,867 acres, only 6.5% of the total cropped area.

The low adoption of seed-fertilizer-irrigation technology and low return of agriculture in Bangladesh are related to the ownership structure of land. Per capita landholding in 1974 in Sherpur was .55 acres which is expected to have decreased to .47 acres due to 3% growth of thana population during 1974 to 1979. Making allowances for actual cultivable area and assuming that 30% of population are landless (average national figure), per capita landholding of Sherpur thana stands at .57 acre only. This per capita holding varies in different ownership groups. A sample of 2902 families of Sherpur stratified by three physical divisions (1241 from PD I, 765 from

PD II and 896 from PD III) are analysed in terms of size-ownership of land.

T A B L E - VIII

DISTRIBUTION OF LANDHOLDINGS BY SIZE GROUPS AND PHYSICAL DIVISIONS BASED ON SAMPLE SURVEY.

Land Holding (in acre)	PD I		PD II		PD III	
	% of H/H	% of land holding.	% of H/H	% of land holding.	% of H/H	% of land holding.
(Landless)						
.04	27.1	.6	25.3	.9	24.5	.04
.05-2.50	46.7	25.0	40.2	25.0	39.4	15.0
2.51-5.00	16.8	28.0	13.3	26.0	19.0	23.0
5.01-10.00	7.2	27.0	6.0	26.0	11.0	29.0
10.01-	2.2	19.4	2.2	22.1	5.5	32.6

Source: Sample Survey, 1979.

It is evident from Table VIII that there is spatial variation in the percentages of landless families. PD II has concentration of the landless which is above national figure. Landownership upto 2.50 acres predominates the rural scene. This group together with the landless comprise more than 50% of rural families in each geographic units; but they own together only 20 to 25% of total land. The group owning land between 2.51 to 5.00 is more or less same in each PD; only in PD II the percentage is slightly lower. This group occupies 22% to 28% of the total land. Landownership above 5.00 acres comprise 7.2, 6.0 and 11.0 percentages from PD I, PD II and PD III respectively; whereas they occupy 27.0, 26.0 and 29.0 percentages of total land. Large landownership seems to comprise small proportion of population but occupy larger share of total land as compared with other groups. Landownership is concentrated in the 5 acre group in all PDs; the percentage is lower in PD III compared with PD II and PD I.

Land concentration in three PDs may be compared with the help of Gini coefficients; they are given in table IX.

T A B L E - IX  
GINI CO-EFFICIENT SHOWING CONCENTRATION OF LAND OWNERSHIP

<u>Physical Divisions</u>	<u>Gini Co-efficients.</u>
PD I	.41
PD II	.34
PD III	.27

The Gini<sup>1</sup> measures the extent of inequality; equality of land distribution would imply when Gini=1; and deviation of Gini from 1 implies the extent of inequality. Concentration of landownership is evident in three PDs, with a relative degree of differences. The worst situation appears to exist in PD II and PD III-whereas PD I is in a slightly better position. In this sense PD I reflects lower degree of inequality compared with PD II and PD III.

The landownership structure which has a skewed distribution is related to the intensity of land utilization in the context that the small landholders use their land more intensively than the large landowners and that "an inverse relationship between farm size and rate of adoption of HYV technology exists, measured by the proportion of land devoted to HYV" (Alamgir 1975: 273). The production performance of large landholders is not satisfactory and "a good number of many of the larger owners rent out their land to be operated by smaller owners and to a very small extent by landless farmers" (Khan 1973: 41). The reason is that the opportunity cost of renting out land is higher than the marginal cost of cultivation so far as the large landholders are to use hired labour for farming operations.

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1 It is a comparison on the cumulative percentage of population with the cumulative percentage of land.

9.5. Urban Employment:

Besides agriculture, the other sources of income and employment venue of the thana are created in the urban centre which has been developed as a business complex and a market town, combining administrative, commercial and related activities. There is only one industrial venture in the headquarter; a Rice Mill employing some 100 to 150 workers, but its production is handicapped by seasonal variation as the main raw material paddy is produced seasonally. Types of employment generating activities in the thana headquarter are given in Table X.

T A B L E - X

<u>Type of activity</u>	<u>Number</u>	<u>Employment</u>	<u>Type of activity No.</u>	<u>Employment</u>
1. Husking Mills	27	191	9. Cafeteria & Hostels	22 100
2. Shops (various types)	176	358	10. Servicing	18 36
3. Medicine Supplies	28	56	11. Dealer	29 58
4. Milk Processing Units	27	81	12. Transport Owner	25 75
5. Business	21	63	13. Other Services	61 122
6. Carpentry & Furniture shops	13	65	14. Rickshaws Fullers	300 300
7. Bakery	18	54	15. Others	30 30
8. Jewellery	10	30		
<u>Total:</u>				<u>805 1612</u>

Source: Sherpur Municipality, 1979.

The employment structure of urban Sherpur does not include persons in service in the various thana level departments of the national development agencies. Local people employed by these departments is estimated to be approximately 200 persons. There are 14 employment generating units in the category "others" which include most of the self-employed ventures. In the employment figure self employment has been included. However, in urban Sherpur the ranking of employment providing activities are shops (various types),



rickshaw pullers, husking mills, Cafeteria and Hostels etc. The employment figure also include those who are not residing in the urban areas but commute from nearby villages, mostly from PD II.

Apart from this urban centre, two semi-urban centres exist in Sherpur. They are: (1) The Simabari Union Council Headquarters, and (2) The Mirzapur Union Council Headquarters. Mostly they have developed as market centres precipitated by good road linkages. Simabari has developed an important permanent shopping complex whereas Mirzapur combines a bi-weekly market with the Government godown of storing ration foodstuffs. These two centres provide employment to a number of people of the thana but no account is kept in the Thana Offices.

### 3.6. Rural Employment:

It is accepted that 75% of rural population is engaged in agriculture (First Five Year Plan: 63), in Bangladesh. This generalisation is probably based on farming as the main occupation. But in a poor country like Bangladesh where majority (83%) of farms are operated below 5.00 acres (Alamgir 1975: 266), which barely provide subsistence level income, people are rather compelled to accept subsidiary occupations. No account is available of Sherpur to reflect the rural employment structure. An attempt is made to examine rural occupation structure of different Physical Divisions of Sherpur on the basis of a sample of 376 families; 150 from PD I, 92 from PD II and 134 from PD III. The sample was further stratified to landholding groups including the landless. Table XI enumerates the findings in percentage terms.

It appears from table XI that farming is the main occupation of rural people with spatial variations. In PD III about 74% of households have farming as main occupation with 43% doing only farming; 20% both farming and business. In PD II 55% of households have taken farming as main occupation with 25% depending on agriculture and the rest do both farming, business and agricultural

T A B L E - X I

DISTRIBUTION OF SAMPLE HOUSEHOLDS BY PRIMARY AND SECONDARY OCCUPATIONS.

Type	SECONDARY OCCUPATION						Total
	'Farming'	'Business'	'Agricultural 'labour'	'Teacher'	'Begging'	'Service'	
Farming	36.0 (22.8) /41.9/	18.0 (16.0) /20.0/	11.0 (10.9) / 6.7/			2.0 (5.4) /4.3/	67.0 (55.4) /73.8/
Business	3.3 (3.3) /2.9/	3.5 (4.4) / - /	0.7 (7.6) /0.7/				7.3 (15.3) /3.6/
Agricultural Labour	7.1 (3.4) /3.8/	4.0	6.6 (15.2) /8.9/			(5.4)	17.7 (26.0) /17.9/
Teacher	3.3 (1.1) /3.8/						3.3 (1.1) /3.8/
Begging	0.7	0.7	0.7 /0.7/				2.1 (0.0) /0.7/
Service	2.6 (2.2)						2.6 (2.2) /0.7/
Total	53.0 (34.7) /53.4/	26.0 (20.7) /24.6/	20.4 (33.7) /17.01/			2.0 (10.8) /5.3/	100.0 (100.0) /100.0/

Source: Survey data, 1979.

Note: Figure stands for PD I, (figure) stands for PD II; and /figure/ stands for PD III.

labour. The same trend is found in PD I where though 67% do mainly farming, 26% depend on agriculture only, 18% on farming and business; 11% on farming and agricultural labour.

Lesser dependence on business in agrarian community is indicated by the 3 to 4 percent of H/W who do business only in PD I, PD II whereas in PD III it is nil. With respect to agricultural labour, PD II shows a concentration of 15% of work force serving as labourers as compared with 6.6% and 8.9% for PD I and PD III respectively. So there is spatial variation in complementing rural income with farming; these variations emanate from other factors like proximity of market, access to other areas, transportation. Yet diversification of households to undertake different subsidiary jobs shows spatial variation. They are 15 for PD I, 12 for PD II and 13 for PD III respectively. Moreover, land use associations together with population pressure contribute partly to the diversification of jobs other than agriculture. This is clear because PD I has high population pressure and its land quality being good, dependence on farming only is 26%; whereas PD II has moderate land quality and high population pressure, dependence on farming only is 23%, in PD III the land quality being not very good and population density being low 41% depend on farming only. So physical and demographic features contribute to formulate the structure of occupation in rural area of Sheerpur.

### 3.7. Transportation and Markets:

Vital to the economy of an area is the system of transportation and the nature and extent of transactions. Transportation infrastructures in Sheerpur is very poor. There is only a limited road network, no rail roads or airports and only two rivers, viz. Korotoya and Bangali. But the Korotoya remains navigable only during the rainy season and dries up in winter and other seasons. The location of the Bangali is to the extreme east of Sheerpur and could hardly serve the area due to the intermediate distance between river and other parts of Sheerpur.

Total road mileage in Sherpur is 143 miles, of which 14 miles are town roads maintained by the Municipality. Out of 14 miles about 4 miles are paved whereas the rest are Kuchcha (unpaved) roads. Excluding municipal roads, rural-urban roads network in Sherpur constitute 129 miles the breakdown being as follows:

Paved Roads	-	18 miles (arterial)
Kuchcha (unpaved) Roads	100	" (link)
Brick laid roads	-	3 " (arterial)

Roads by nature serve the functional hierarchy of settlements in Sherpur Thana. The primary roads (kuchcha) are the major mode to link the rural hinterland with the arterial roads and the thana Headquarter. These roads also provide access to the primary spatial temporal markets (about 10 are supposed to exist in the thana) and link them with the secondary market in Sherpur Town.

### 3.5. Rural Development Institutions:

Sherpur, like other thanas of Bangladesh, is at the lower administrative tier accommodating various government/ autonomous departments to initiate development of the Thana. With respect to rural development two institutions are of vital importance, viz. the IRDP(Integrated Rural Development Programme) and Social Welfare Office of Sherpur Thana. An evaluation of the programme of these departments is necessary in an attempt to review policies for rural development of the Thana.

The Sherpur IRDP has established a two tier cooperative system, based on the Comilla model. At the thana level is the TCCA (Thana Central Cooperative Association) and in the village level the KSS (Farmers' Co-operative Society). The TCCA is a coordinating body to integrate the local KSSs and to ensure the supply of agricultural inputs in a supervised manner. The local KSSs are assumed to initiate village development through co-operative efforts encompassing the use of inputs. At present in Sherpur there are 242 KSSs which surpass the number<sup>of</sup> mouzas in Sherpur (222).36 women's

women's cooperatives have also been established in some villages of the thana; the objective is to help to augment their income by training women mostly in cottage industry types of works. Recently Sherpur was included in the Rural Development Project-I of the World Bank Programme which has led to an extension of the IRDP. There is a strict control on the input supply of the thana with the provision that no input can be supplied by Government agencies without the sanction of the TCCA. A new cell for developing the ponds of the thana has been opened up under the IRDP.

Regardless of all these efforts the impacts of Sherpur IRDP are not upto expectations. The thana IRDP has conducted an evaluation programme to rank the village co-operatives (KSSs) in order of their performances. The criteria adopted was viz., regularity of holding weekly meetings, amount of shares and savings, regularity of attendance in training classes, and of repayment of loans. A total of 243 village co-operatives were ranked in the following order: A-65, B-72, C-42, D-25, E-28. Taking A, B, types it appears that about 50% of local KSSs are in a good performance scale. Another aspect was concluded in the discussion with thana level officers, namely, that internal power structure of KSS organisation has a bearing in the overall performance of the cooperative societies to the fact that the societies whose leadership is from large holding groups, show less efficiency compared with <sup>those</sup> whose leadership is from small landholders.

The Social welfare programme in the thana was launched to improve income conditions of the "disadvantaged group" in rural societies. About 40 villages are under operation (about 5 villages from each union) of the programme directed to train the women in cottage industries and to help poor families with loans so that they can start petty businesses. It is evident in the thana that IRDP and social welfare programmes are overlapping in some villages, which suggests that the better coordination among developmental agencies in the thana is needed.

CHAPTER 4

EXISTING LAND USE AND ITS DETERMINANTS

Land use of an area is determined by the action and interaction of physical, historical, social, economic and cultural factors. The physical factors are elevation, slope, drainage, soil, rainfall and temperature; historical factors are tenure and ownership; economic factors are costs and agricultural prices; social and cultural factors are values, habit of consumption, etc. In a country like Bangladesh, where settlements are old, "the present land use is the result of a few decades of trial and error; actual may be far from potential use" (Stump 1960:51). To what extent this statement is valid for Sherpur and what are the socio-economic factors related to its present levels of land use, are the subjects of review in land use planning exercises.

4.1. Changing Pattern of Land Use:

The present pattern of land use by major categories is presented in Table XII as well as the respective land use in the past (i.e. 1927) to allow to identify the past changes in the use of land, if any.

T A B L E -XII  
LAND USE DISTRIBUTION IN SHERPUR THANA IN 1979 AND 1927 BASED ON SAMPLE VILLAGES.

Type of land use	PD I		PD II		PD III		TOTAL	
	1927	1979	1927	1979	1927	1979	1927	1979
Homestead land	4.2	6.2	2.6	9.5	2.3	3.4	3.5	5.7
Water bodies	2.1	1.7	6.2	5.9	3.3	5.6	4.3	4.2
Drains	.2	.2	.06	.06	.3	.26	.2	.19
Roads	1.6	2.1	1.7	2.7	.9	1.3	1.3	1.9
Cultivable Area	60.5	64.2	53.6	75.1	84.4	86.5	76.6	83.2
Area not available for cultivation.	11.1	5.6	25.84	6.74	6.8	3.14	14.1	4.81

Source: Milan Khasra, 1927 and Sample Survey, 1979

1 The categories have been adopted after Hafez (1978) who has been practical in categorising rural land uses.

Sample survey results suggest that percentage of land under homesteads, roads and cultivation has increased whereas there has been a significant decrease in the amount of land not available for cultivation and a slight decrease in the land under water bodies and a very negligible reduction in the land area being used for drains over the period of past fifty two years. Reclamation of low lying lands and a growing awareness of extensive cultivation may be liable to explain the reduction in the amount of lands under water, drains and uncultivable waste. /

The changes which have taken place in the overall land use pattern may further be analysed by reviewing variations by physical divisions. Settlement lands have increased in varying degrees in all PDs; in PD II this increase is phenomenal, 272% over the period of five decades caused most likely by migration and by the rehabilitation of refugees from India; whereas in PD I and PD III the rates of increase are 47% and 48% respectively. Water bodies are predominant in PD II and in PD III, but over the said period water bodies decreased. Land used for drains as a proportion of the total land use remained more or less the same over the period in all the physical divisions. Instead land used for roads increased in all PDs over the period. This signifies improved accessibility and linkages with the Thana Headquarter. Also cultivable lands increased over the period at the rates of 4%, 40% and 2.2% in PD I, PD II and PD III respectively. A high rate of increase in PD II is explained by the availability of land yet not cultivated in 1927. Land in the category "other than cultivation" shows a declining trend over the period in all PDs caused primarily by the need for the extension of farming. Still the remaining high percentage of non-cultivable land in PD II in 1979 is accounted by the growth and concentration of institutions and offices viz., Forest Nursery, Fishery, Rural Development Academy and Warehouses that occupy a significant proportion of land in the area. At present the proportion of lands used for farming is 84% in PD I, 75% in PD II and 86% in PD III. In real sense, there is no more lands available for extensive cultivation. This means

that any increase in production will have to be based on the intensification of existing farm land.

The past trend in land use, particularly the increase of homestead lands is concomitant with the rising population of the area. The sample villages for which land use data have been established had the following population in 1974: 7,447 in PD I, 4,048 in PD II and 4,062 in PD III. When these figures are related to the homestead land use data, residential densities stand at 41, 37 and 35 persons per acre for PD I, PD II and PD III, respectively. No information on population of that time is available for the area to make density comparisons. The estimated<sup>1</sup> population of PD I, PD II, PD III, adjusted to the 1931 census of Bogra District, stand at 3743, 1580<sup>2</sup>, and 2043 respectively. The residential densities for that period come to 30, 29 and 27 persons per acre for PD I, PD II and PD III. These low densities had left considerable capacity to accommodate higher number of persons what explains a rather low level of land absorption for homesteads over the period of 33 years in the area. The only exception is PD II where larger part of increment has been accounted for migration and rehabilitation.

#### 4.2. Land Use in Relation to Different Social Groups:

The general land use pattern of the area needs to be further analyzed with respect to different types of uses by holding categories. Land uses may broadly be divided into two groups, viz., Non-farm and Farm. Non-farm land comprises lands being used for homestead, ponds and other related activities, whereas farm land includes mainly land for agricultural production.

##### 4.2.1. Non-Farm Land Uses:

In order to analyze non-farm land uses the following Table has been prepared which gives average size of landholding in relation to the average size of non-farm land which has further been disintegrated into homestead, ponds and ditches and others categories by three PDe and by five land ownership groups.

1 The estimate is based on the yearly increase of District population by 2.33 over the period (1931-1974).

2 Adjusted to migration rate between 1961 to 1974.



T A B L E XIII

DISTRIBUTION OF NON-FARM LANDS BY SIZE-GROUPS AND PHYSICAL DIVISIONS  
BASED ON SAMPLE SURVEY.

Category of landholding	'Ave. land holding (acres)'	'Ave. Non-farm land (acres)'	'Ave. Home-stead land & (acres)'	'Ave. ponds & ditches land (acres)'	'Ave. of land uses (acres)'
Landless	.09 (.09) /.10/	.07 (.06) /.08/	.06 (.06) /.07/	.0 (.0) /.0/	.01 (.02) /.01/
Marginal	1.07 (1.21) /1.37/	.23 (.19) /.26/	.14 (.13) /.13/	.01 (.01) /.03/	.05 (.05) /.10/
Small	3.71 (3.93) /3.69/	.41 (.39) /.36/	.19 (.22) /.18/	.08 (.05) /.13/	.14 (.12) /.05/
Medium	7.97 (7.02) /7.60/	.79 (.88) /.89/	.35 (.34) /.27/	.11 (.21) /.38/	.32 (.33) /.24/
Large	16.3 (15.21) /13.91/	1.52 (1.44) /1.24/	.42 (.42) /.35/	.14 (.21) /.48/	1.05 (.76) /.41/
Total of Fm.	3.74 (3.31) /3.23/	.43 (1.44) /1.24/	.20 (.18) /.19/	.04 (.06) /.18/	.19 (.15) /.16/

Source: Sample Survey, 1979.

Note: figure for PD I; (figure) for PD II; and /figure/ for PD III.

It appears from table XIII that non-farm land uses are positively correlated with holding sizes. In the three PDs consistency is found in non-farm land uses and in its size distribution among farming groups. The only exception is low average holding of ponds and ditches in PD I. Even the smaller in ownership is also related with holding sizes in the same manner as that in PD II and PD III. It thus appears that as landholding increases so does also the use of land for homestead, ponds and ditches and other related activities, the last mentioned use group being significant in the medium and large landholders.

The increased use of land for homestead by larger holding groups may stem from the large number of family members and of the need for land for post-harvest operation. An attempt is, therefore, made in Table XIV to relate average homestead land by holding-size groups to their family sizes.

T A B L E - X I V  
D I S T R I B U T I O N O F H O M E S T E A D L A N D S B Y H O L D I N G G R O U P S A N D F A M I L Y S I Z E S .

	FD I				FD II				FD III						
	LL	Mr.	S.	M.	L	LL	Mr.	S.	M.	L.	LL	Mr.	S.	M.	L.
Ave. Home- stead land (acres)	.06	.14	.19	.25	.43	.06	.13	.22	.34	.42	.07	.12	.18	.27	.35
Ave. Fami- ly size (acres)	4.6	5.6	8	9	8	4.2	6	5.7	7.7	8	4.4	4.7	5.8	7.0	7.3
Density (persons per acre)	76	49	42	36	19	70	46	28	23	19	63	36	32	29	21

Source: Sample Survey, 1979.

It appears from Table XIV that average homestead land and average family size correlate positively with holding-size, bearing only a slight variation over physical divisions. However, density in terms of persons per acre of homestead land is negatively correlated with holding size. The size of homestead land is traditionally considered as a sign of prestige and power - a manner which contributes to the absorption of more and more cultivable lands for settlement use in the future. The analysis also indicates that this type of socio-cultural characteristics of an area are not liable to spatial variation as reflected in non-farm land uses.

Fonds and tanks comprise another significant category of non-farm land use. An attempt has been made in table XV to examine the

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relative efficiency of the use of self-owned and jointly owned ponds by physical divisions.

T A B L E - X V  
DISTRIBUTION OF PONDS BY PDS, OWNERSHIP, INCOME AND USAGE  
FOR FISH CULTIVATION BASED ON SAMPLE SURVEY.

PDS	Category of peasants	SELF-OWNED PONDS				JOINTLY OWNED PONDS				
		Ave. pond area	No. of ponds	No. of fish Cult.	Per acre income	Ave. pond hold-ings	No. of tanks	No. of total own-cult. etc.	No. of fish cult.	Per acre income
PD I	Small	.40	5	4	1250/-	.10	1	7		2000/-
	Medium	.20	9	9	2411/-	.29	2	4	1	2142/-
	Large	.41	6	5	1883/-	-	-	-	-	-
PD II	Marginal	.04	1	1	2500/-	-	-	-	-	-
	Small	.15	9	2	4130/-	-	-	-	-	-
	Medium	.27	3	3	1463/-	.73	2	11	1	342/-
	Large	.50	1	1	1000/-	.75	2	10		Water
PD III	Marginal	-	-	-	-	.14	4	26		1071/-
	Small	.66	1		Stolen	.37	6	46		1600/-
	Medium	.90	9	6	965/-	.20	1	11		-
	Large	.57	8	7	1956/-	.71	10	92	6	622/-
Total		.47	46	38	1475/-	.49	28	207	11	775/-

Source: Sample Survey, 1979

Note: Marginal peasants in PD I own no pond.

From Table XV, it appears that of 46 ponds, the small, medium and large landholders own ponds with reasonable average sizes in all physical divisions. With respect to returns from ponds, small, medium and large peasants in PD I; marginal, small and medium in PD II; and large peasants in PD III have income per acre of pond above the average level. In case of shared ponds, return per acre of the marginal, small and medium peasants is above the average level. Considering all ponds together, it is found that self-owned ponds even if the average size is slightly smaller (.47 acre) give better returns Tk.1475/- per acre as compared with jointly owned ponds (average size .49) which give a return of Tk.775/- only. Moreover, 38 owners out of 46

cultivate fish in their ponds compared with only 11 out of 28 tanks in the case of jointly owned ponds. The multiple ownership of tanks obviously creates impediments for better utilization.

The above analysis of the use of land for homestead ( ) and ponds indicate variation by farming groups which is an important issue in any land use study.

#### 4.2.2. Farm Land Uses:

Use of land for agricultural production is the most important aspect of any rural land use study. Agriculture is the vital sector in rural Bangladesh which generates basic activities, provides income and employment. Moreover, it occupies a major proportion of land in individual holding. As such a critical analysis of farm land use is a necessity to determine the rationality and intensity of its uses.

##### 4.2.2.1. Cropping Pattern:

Cropping pattern of an area reflects the type of crop produced and the amount of land allocated for each crop. Types of crops are determined by market forces, consumption pattern and soil types. In a subsistence economy like Sherpur, cropping is mostly determined by consumption needs, yet physical advantages together with the supply conditions of inputs may influence cropping in some physical divisions.

Table XVI attempts to relate cropping by percentages of land and value added to agriculture by physical divisions, based on sample survey. Taking the area as a whole, it is found that paddy predominates in terms of land use and value added. However, a range between 14 to 16 varieties of crops in each division indicates that cropping is well diversified in favour of consumable produce. Only two produce are of cash crop type viz., jute and newly experimented cotton; both are significant in PD I and PD II.

Difference between land used and value added for a particular crop represents a crude measure of efficiency of land use for that crop. Using the measure, it is observed that Aus and jute appear to be the traditional crops giving low levels of return in each PD. On

the contrary, IRRI-Roro and wheat have higher value added in relation to their land area in all PDs. This tends to suggest that new varieties of crops have a tendency to contribute to value added in agriculture.

T A B L E - XVI

CROPPING BY TYPE, PERCENTAGE OF OPERATIONAL LAND, VALUE ADDED AND PHYSICAL DIVISIONS BASED ON SAMPLE SURVEY.

Type of Crops.	PD I		PD II		PD III		TOTAL	
	% land	Value added	% land	Value added	% land	Value added	% land	Value added
1. Aus	23.58	14.5	26.39	20.21	22.38	14.57	23.64	15.48
2. Aman	55.40	56.0	64.63	71.25	72.16	75.41	64.38	66.73
3. Jute	6.30	5.7	2.78	2.74	.61	.48	3.21	3.02
4. I.Roro	8.10	13.8	1.08	.93	2.5	6.60	4.76	8.6
5. Mustard	.74	.8	.59	.29	.03	.01	.41	.37
6. Chilly	3.1	6.5	1.23	2.63	.27	.67	1.56	3.40
7. Wheat	1.2	1.4	1.10	.65	.92	.70	.82	1.00
8. Pulses	.70	.30	.77	.23	.03	.03	.42	.17
9. Vegetables	.10	.16	-	-	.16	.05	.11	.08
10. Potato	.30	.22	.20	.19	.40	.41	.31	.28
11. Brinjal	.10	.11	-	-	.03	.02	.04	.06
12. Potoi	.06	.20	-	-	-	-	.01	.08
13. Onion	.12	.05	.10	.04	-	-	.06	.02
14. Garlic	Ng.	.03	-	-	Ng.	Ng.	Ng.	Ng.
15. Balsem	.10	.13	-	-	Ng.	Ng.	.03	.06
16. Cotton	.10	.10	.17	.07	-	-	.06	.06
17. Water Melon	-	-	.57	.72	.05	.56	.13	.36
18. Pumpkin	-	-	.03	.05	-	-	Ng.	Ng.
19. Banana	-	-	-	-	.04	.43	.01	.20
20. Sesamum	-	-	.15	.04	.02	.02	.04	.01

Source: Sample Survey, 1979.

4.2.2.2. Level of Farming Land Uses:

Level of farm land uses refer to the efficiency/rationality

of land used for agricultural production. Such efficiencies may be measured in two ways, viz., (a) physical, and (b) economic. The physical aspect of land use efficiency refers to the number of times a particular plot of land has been put to agricultural practices; whereas economic efficiency aims at maximization of return from land. The measure of physical efficiency in cropping intensity, and output per acre indicates an economic measure of land use efficiency. The possible relation between the two will depend on some factors like land quality, intensity of use of inputs etc.

Efficiency as to the use of land for farming may vary by geographic areas and by farming groups. Both are important aspects of land use planning. An attempt to examine efficiency variation by peasant groups and physical divisions of Shejpur is presented in Table XVII.

The table XVII shows concentration of land by peasant groups and their physical efficiencies in the use of land. It is obvious from the table that land is concentrated, irrespective of physical divisions, in the large landholding groups. In PD I 30% of Households own 69% of total land; in PD II 13% of Households own 67% of land and in PD III 36% of H/H own 78% of land. The degree of concentration seems to be more in PD II as compared with the other two. However, concentration of land in the hands of smaller percentage of peasants has led to growing landlessness in rural areas. In terms of physical efficiency of land use, there are significant variations over physical divisions. PD I has a total cropping intensity of 153 which is higher than in PD II (139) and PD III (131). With respect to peasant grouping cropping intensities are a declining function of landholding; the only exceptions are the landless groups in PD I and PD III. This suggests that those who own larger lands have lower cropping intensities which implies that some land in Shejpur are underutilised - a feature which has no spatial variation.

Physical efficiency expressed in terms of cropping intensity is of limited value in representing productivity of land. Instead,

intensity of land use should be expressed in terms of return. An attempt is, therefore, made in the Table XVIII to examine the productivity of land by PDs and by farming groups.

TABLE XVII  
DISTRIBUTION OF LANDHOLDING GROUPS BY PHYSICAL DIVISIONS,  
CULTIVABLE LAND AND CROPPING INTENSITY.

PDs	Category of Peasants	% total H/H	% Cultivable land	% Total Cultivable land	Cropping Intensity
PD I	Landless	23%	1.45	2.17	150
	Marginal	38	14.28	24.55	171
	Small	15.9	14.94	24.90	167
	Medium	15.9	31.07	47.10	152
	Large	9.4	38.31	54.39	142
Total:		100	100	152.92	153
PD II	Landless	32.6	1.17	2.02	173
	Marginal	33.7	19.10	37.58	144
	Small	10.8	12.85	18.90	147
	Medium	13.0	25.72	35.05	143
	Large	9.9	41.16	52.50	130
Total:		100	100	135.85	139
PD III	Landless	18.6	.69	.89	129
	Marginal	28.3	7.62	10.89	143
	Small	17.3	13.48	18.30	136
	Medium	17.9	25.25	33.08	130
	Large	17.9	22.66	67.67	129
Total:		100	100	130.83	131

Source: Sample Survey, 1979.

TABLE XVIII  
PRODUCTIVITY OF LAND BY CATEGORY OF PEASANTS AND PDs

Category of Peasants	Average Productivity of land (in Tk.) in acre		
	PD I	PD II	PD III
Landless	1933	1416	1696
Marginal	1950	1374	1549
Small	1887	1479	1809
Medium	1917	1835	1764
Large	1345	1308	1513
Total:	1783	1358	1623

Source: Sample Survey, 1979.

Table XVIII represents average productivity of land by physical divisions and peasant groups. Physical variation of soils reflects clearly in the productivity data of PD I having a higher rate of return compared with PD II and PD III. In the analysis of cropping intensities of physical divisions it was also found that PD I had a higher cropping intensity. Considering group performances, it is observed that in general smaller holdings that are coupled with good management and supervision, tend to maximise return from land. The table also reveals that sometimes cropping intensity fails to increase productivity (true for PD II and PD III and for some peasant groups).

From the above analysis it is clear that due to variation in cropping intensity and average productivity by holding groups a larger proportion of land in the three physical divisions are in a low level of use which limits the scope of production and generation of employment in the agriculture sector of Shearpur.

The present level of agricultural land use is inefficient and is far below the potential capacity. There is a gap between existing use of land and land capability in all the three physical divisions. The extent and degree of the gap is presented in table below:

T A B L E - XIX

PD-WISE COMPARISON BETWEEN PRESENT LEVEL AND THE POTENTIAL RETURN OF LAND BASED ON VILLAGES' PERCEPTION AND IERD PROJECTION.

PDs	Present Return (Tk.)	Villagers perception to potential return (Tk.)	Projection IERD (Tk.)
PD I	1783/-	Input - 3858 + Irrigation - 5400	Input - 3919 + Irrigation-3766
PD II	1358/-	Input - 3000 + Irrigation 4320	Input - 2354 + Irrigation-n.a.
PD III	1622/-	Input - 3150 + Irrigation- 4920	Input - 2678/- + Irrigation-5338/-

Source: Sample Survey, 1979/ IERD Report 2 of IX, 1972

Note: n.a. not available.



It appears from table XIX that the present level of return falls short of potential per acre return of land in each PD. Villagers' perception of the potential capacity of land corroborate the IHRD Projection. Also variation in return (P/A) appears to conform to the quality of land in each physical unit of Shergur.

Even the peasants consider that the present level of return from land is not satisfactory. The sample finding of attitudes towards the present yield of land is depicted in the table below.

T A B L E X X

OPINION BY PHYSICAL DIVISIONS ON THE PRESENT RETURN FROM LAND

Opinion onto Return	PD I	PD II	PD III	TOTAL
Satisfied	26%	17%	21%	23%
Not satisfied	63%	71%	65%	65%
No Answer	11%	12%	14%	12%

Source: Sample Survey, 1979.

Table XX presents the views of 122, 66 and 119 farm families from PD I, PD II and PD III, respectively on the present yield of land. On an average it is observed that 65% farm families are not satisfied with the present return of land. Negative response is 63% and 65% in PD I and PD III respectively, whereas it is 71% in pd II. From the table it is apparent that in areas where return of land is relatively higher as in PD I and PD III, negative response is relatively lower and positive response is higher as compared with the area where return is low, i.e. PD II.

4.3. Factors Responsible for the Gap Between Existing and Potential Use Of Farm Lands:

Many factors provide impediments for the efficient utilization and it is necessary to analyze and identify them in any consideration to formulate policies for land use planning.

**4.3.1. Physical Limitations:**

Physical limitation is related variously to the physiographic units of Shearpur. Flooding and shortage of water limit the scope of cultivation. The floodplain (PD I) remains under water with an average depth 1-3 feet for 2-3 months. Shortage of water during the dry season limits the scope of farming. In PD II and PD III which comprise the barind tract, the soil dries up during winter and become unsuitable for cultivation. Instead in PD I, the soil could retain moisture in winter to facilitate winter cropping. Particularly the basins of PD I could keep water during winter and consequently bare production could be possible in some parts of the area. The physical constraints that limit cropping in barind area of Shearpur may be obviated if proper irrigation facilities are introduced.

Drainage is a problem in all physical divisions of Shearpur, particularly during the rainy season when excess rains often wash away the produce. Table XXI attempts to ascertain the extent of crop damage by excess rain and flooding.

**T A B L E - XXI**

**PERCENTAGE OF TOTAL LAND BY PHYSICAL DIVISIONS LIABLE TO CROP DISASTER BASED ON SAMPLE SURVEY.**

PDs	% Land	Type of Disaster	No. of crop grown	Remedy
PD I	4.5%	Flood + Excess Rain	1.5	Drainage
PD II	10%	Excess Rain	1	-do-
PD III	4.14%	Excess Rain	1	-do-

Source: Sample Survey, 1979.

The sample survey reflects that 4.5% of cultivable land (total 497 acres) of PD I; 10% of PD II (total 268 acres); and 4.2% of PD III (total 633 acres) are liable to crop damage. The total crop disaster

land of sample survey is 75 acres out of 1,308 acres. If the same magnitude prevails in Sherpur, then 3,011 acres of the cropped area of the thana is liable to flooding. Obviously provision of drainage is needed to help boost crop production in Sherpur.

#### 4.3.3. Fragmentation of Holding:

The gradual process of fragmentation of plots resulting from the law of inheritance and liquidation process causes not only loss of land but also makes farming difficult on tiny plots. The extent of fragmentation based on sample survey of different landholding groups, has been measured by the average plot sizes (Table XXII)

T A B L E - XXII

DISTRIBUTION OF OPERATIONAL PLOT SIZES BY LANDHOLDING GROUPS.

<u>Category of Peasant</u>	<u>Ave. size of operational plots.</u>
Landless	.26
Marginal	.22
Small	.31
Medium	.34
Large	.33
Total (Ave.)	.31

Source: Sample Survey, 1979.

It is apparent from Table XXII that the landless and marginal peasants cultivate relatively smaller plots than the other groups. The medium peasants have bigger plot sizes as compared with the small and large. In general, it is obvious that operational plot size is an increasing function of holding size. As to the relation between plot size and productivity it is observed that the landless, marginal and small peasants who have higher productive efficiency, cultivate relatively smaller size of plots. The proposition then follows that those farming on smaller plots of land are relatively efficient - a view contrary to the fact that production loss or/in-efficient operational feasibility are associated with small plot of

cultivation. This has led to a further examination of the relations between numbers of plots operated and productivity of land by some statistical test (Table XXIII).

T A B L E - XXIII

DISTRIBUTION OF FARM SIZE BY PRODUCTIVITY AND NUMBER OF PLOTS.

<u>Ave. Productivity</u> <u>(Acre / Taka)</u>	<u>No. of Plots</u> <u>(per acre)</u>
1688	3.8
1624	4.3
1725	3.2
1678	2.9
1453	3.1
<u>Total:</u> 8170	<u>17.5</u>

Source: Sample Survey, 1979.

$\chi^2$  (Chi) = 2.37; degree of freedom, 3

A test of  $\chi^2$  (Chi), at 3 degree of freedom, to the null hypothesis that productivity is not associated with plot numbers, gives a calculated value of 2.37. The tabulated value of  $\chi^2$  (Chi) at 3 degree of freedom and .05 level of significance is 1.15. As the calculated value of  $\chi^2$  (Chi) is greater than the tabulated, the null hypothesis is rejected at 5% level of significance. This implies that there is possible relationship between productivity of land with plot sizes.

In traditional farming, therefore, it appears that the plot size distribution constraints production of land by rendering management and cultivation of tiny plots both uneconomic and inefficient, what account for the underutilization of land even if differential productivities of farming groups have a positive correlation with landholding. Moreover, fragmentation leads to loss of land from cultivation. Though informations on the extent of land fragmentation

of the study area is not available, the fact is admitted in several researches (Khan: 1973/Radir: 1960). This indicates that planning policies to condition efficient use of land should be directed to control the process of continuous fragmentation of land in rural areas.

#### 4.3.3. Response to Technological Adoption:

Another reason for low productivity of land in Sherpur is the lower rate of adoption of technology which has variation over physical divisions and farming groups. Table XXIV attempts to analyse variability in the use of fertilizer, irrigation, pesticides and HYV seeds among farming groups and physical divisions.

It is apparent from the table that among the three PDe, PD I has a higher adoption rate in terms of the use of chemical fertilizer, percentage of mechanised irrigated land, use of pesticides and percentage of land using HYV seeds. The second position in terms of technological response is PD II whereas PD III shows a lower response to new technology.

With respect to farming groups, the landless, medium and small peasants of PD I have higher use of fertilizer over marginal and large groups. In PD II the use of chemical fertilizer seems to be concentrated in the large and small group as compared with other groups; whereas in PD III small, medium and large groups show greater use of chemical fertilizer compared to others. Mechanised irrigation occupies relatively greater percentages of operational holding of landless, medium and small groups in PD I, greater percentages of land of marginal and medium peasants in PD II and that of large and small groups in PD III have used irrigation. Pesticide use seem to concentrate on medium, landless and small farmers of PD I, large, medium and marginal peasants of PD II and small and large groups of PD III as compared with other groups in each physical division. Small, medium, marginal and even landless peasants of PD I have tendencies to use HYV seeds whereas in PD II marginal, medium and large peasants have higher response to HYV cultivation. In PD III small, marginal

and large peasants have higher acreages to HIV compared with other peasant groups.

T A B L E - XXIV

DISTRIBUTION OF FARMING GROUPS OF EACH PD BY USE OF FERTILIZER, IRRIGATION, PESTICIDES AND HIV LAND.

Category of Peasants	Fertilizer Use		% of total land irrigated		Pesticides use	% of total land in HIV use.
	Taka	P/A	Indigenous	Mechanized	Taka P/A	
Landless	89 (45) / 92 /	91 (24) / 97 /	.8 (0) / - /	18.0 (-) / 1.5 /	19 (1) / 3 /	11.0 (5.3) / 2.0 /
Marginal	81 (118) / 114 /	64 (33) / 44 /	4.0 (.9) / 6.7 /	18.0 (3.0) / 2.0 /	14 (6) / 4 /	17.0 (9.0) / 10.0 /
Small	83 (104) / 131 /	77 (41) / 68 /	.9 (4.0) / 1.02 /	17.0 (-) / 3.1 /	16 (2) / 14 /	20.0 (5.0) / 15.4 /
Medium	78 (78) / 115 /	92 (30) / 62 /	.8 (1.3) / 3.6 /	18.0 (4.0) / 1.5 /	24 (3) / 4 /	19.0 (7.5) / 2.6 /
Medium	78 (78) / 115 /	92 (30) / 62 /	.8 (1.3) / 3.6 /	18.0 (4.0) / 1.5 /	24 (3) / 4 /	19.0 (7.5) / 2.6 /
Large	50 (104) / 82 /	32 (43) / 36 /	.2 (.4) / .5 /	8.4 (2.2) / 5.9 /	11 (9) / 6 /	8.0 (6.4) / 8.0 /
Total	70 (99) / 101 /	71 (37) / 58 /	1.15 (1.3) / 2.0 /	13.6 (2.5) / 4.0 /	16 (6) / 7 /	15.0 (7) / 8.0 /

Source: Sample Survey, 1979.

Note: figure for PD I; (figure) for PD II; /figure/ for PD III

Group responses to new technology irrespective of physical divisions indicates that small and medium peasants have tendencies to greater use of chemical fertilizer; marginal and small groups use more indigenous irrigation; medium, small and landless peasants have relatively more land in mechanized irrigation as compared with large and landless peasants whose irrigated lands are relatively low but not insignificant. The use of pesticides seems to be greater

among small and medium peasants compared with the large and the landless ones. On the whole, it is observed that marginal, small and medium farmers have relatively greater response to new technology compared with the large and landless who have low adoption rates. This implies that a larger amount of the land of big landlord is still away from the new technological impact. Only 7.3% and 10% of total operational holding are being used for irrigation (mechanized) and HYV cultivation, which if accepted to be true for Sherpur implies that only 4000 and 5000 acres of cropped area of the Thana, out of 56,119 acres, are being utilized for irrigation and HYV crops, leaving a large proportion of crops under traditional system which, however, have low returns per acre.

#### 4.3.4. System of Land Tenure:

Tenurial arrangements of land determine the way or ways that the distribution of production takes place. The classical economic theory indicates that tenure is related to inefficient use of land where tenants have no incentive to increase production because part of it will go into the pockets of the landlord. The traditional system of tenure in which the share-croppers or tenants have to bear all costs of production but have to give half of the produce as rent is prevalent in Sherpur. The efficiency of using land in tenurial arrangements needs an analysis which may be dealt with by extent of the arrangements among farming groups. An attempt is therefore made in Table XXV to show the relationship between tenure and farming size groups.

From the table XXV it appears that 32% of farming households of the area are owner-operated, 30% owner-cum-sharecropper, 6% are sharecropper, 4% Barga lessee and 28% are owner operator cum barga-lessee. In terms of farm-size, it is found that 63% of the landless sharecrop others land while owner operated are only 17%. A greater percentage of marginal farmers also share crop others land; the reason appears to be that their holding sizes are not enough to permit subsistence of the family. Owner-operated farming declines in

percentage terms from the small farmers to larger one; similar is the trend in sharecropping whereas percentage of boraga leasing increases onward after small peasants. The trend indicates that as holding size increases peasants tend to lease out a part of their land on sharecropping and opportunity cost goes in favour of lease rather than own cultivation based on hired labour.

T A B L E - XXV

DISTRIBUTION OF FARMING GROUPS BY TENURIAL STATUS

Tenurial Status/ Farm Size	Owner-Operator	Owner-cum-share-cropper	Share-cropper	Boraga- <sup>1</sup> leaser	Owner operator-cum-boraga leaser.
Landless	17%	-	83%	-	-
Marginal	33%	>43%	-	3%	1%
Small	64%	32%	-	-	4%
Medium	61%	24%	-	5%	10%
Large	43%	13%	-	6%	34%
All Group Total	52%	30%	6%	4%	8%

Source: Sample Survey, 1979.

This tenurial aspect of boraga land may have differential impact on the land use efficiency. Table XXVI attempts to deal with the physical efficiency of land users in terms of own land and boraga land farming.

It is observed from Table XXVI that the marginal farmers have a need (out of landholding) to cultivate more of boraga land compared with other groups. Obvious in the table the fact that Boraga land cultivation is a declining function of landholding except for the landless group who often do not have sufficient working capital for farming. On the other hand cropping intensities both own and boraga are also a declining function of landholding with the exception of

1 One who rent out land on sharecropping.



the large group whose cropping intensity of barga land show a rising trend. However, the gap between cropping intensities between own and barga lands reflects the degree by which barga land is utilized in tenurial arrangements. The amount of sample barga land is 131 acres in relation to 1,398 acres of own land which gives a ratio of 1:11 acres. If this ratio holds true for the whole of Shergpur, it implies that 4,677 acres of land on barga arrangement are poorly cultivated. They could have been better cultivated if they had been under owner operation.

T A B L E - XXVI

DISTRIBUTION OF SAMPLE PEASANTS ON BARGA OPERATED IN COMPARISON WITH VARIATION OF CROPPING INTENSITIES BETWEEN OWN AND BARGA LAND.

<u>Peasant Categories</u>	<u>% Barga land Operated</u>	<u>Cropping Intensity on own land</u>	<u>Cropping Intensity on Barga land.</u>
Landless	11%	200	143
Marginal	46%	163	137
Small	18%	153	122
Medium	16%	150	104
Large	9%	133	115
Total	100%	142	128

Source: Sample Survey, 1970.

#### 4.4. Socio-Economic Condition of Farming Groups:

Socio-economic condition of farming groups refers to the position of different groups in the social and economic structure in rural areas. These positions are positively determined by ownership of productive assets viz., land, income and capital which tend to determine differential accesses to external resources leading to concentration of well-being of some groups and perpetuation of poverty of some other groups in rural areas. In the context of Shergpur, the aspects of control over income, land, capital and

access to external resources are assumed important ingredients to determine reward structure in rural areas.

The positive correlation between landholding and income is assumed to determine capital position and so also their concentration in some farming groups as is reflected in Table XXVII.

T A B L E - XXVII

DISTRIBUTION OF INCOME (PER CAPITA & AV. H/H) AND CAPITAL STOCK BY FARMING GROUPS, BASED ON SAMPLE SURVEY.

<u>Peasant Groups</u>	<u>% total H/H</u>	<u>Av. family (Tk.) Income</u>	<u>Av. capital stock (Tk.)</u>	<u>Per Capital income (Tk.)</u>
Landless	23.4%	1,874	236	567
Marginal	39.5%	4,570	2,606	842
Small	14.9%	10,717	5,436	1,592
Medium	13.7%	19,544	8,845	2,339
Large	12.5%	20,236	12,394	3,656
All Groups	100%	10,162	4,699	1,730

Source: Sample Survey, 1979

The sample findings in Table XXVII, indicate that family income, H/H capital position and per capita income is an increasing function of ownership of land. Even variation of family sizes in favour of larger landholding groups could not depress their per capita income. The reward structure favours the larger peasants even if their efficiency is relatively low. Comparing all the group averages, it is found that the landless and marginal peasants being a larger group (57% of total) are virtually in a worse position in respect of family/per capita income and capital position. The table also suggests that income and capital seem to be concentrated in the hands of 43% of total households belonging to large landholding groups.

The ownership structure of the fundamental means of production is also related to the differential access of farming groups

to change-motivated institutions and external sources of resource. Table XVIII gives the distribution of members of peasant categories and appropriation of loans of the KSSs ( Local Level IRDP cooperative Societies).

T A B L E - XVIII

DISTRIBUTION OF KSS MEMBERSHIP AND LOAN APPROPRIATION BY PEASANT CATEGORIES BASED ON SAMPLE SURVEY.

Category Peasants	% Number-ship out of total	KSS MEMBERS				LOAN APPROPRIATION			
		General		Executive		G. members		E. Members	
		No.	%	No.	%	No.	%	No.	%
Landless	15	13 (10)	-	-	2 (0)	-	-	-	-
Marginal	40	43 (33)	7 (22)	12 (30)	3 (15)				
Small	61	30 (23)	4 (12)	13 (40)	2 (11)				
Medium	61	28 (22)	8 (25)	4 (12)	6 (32)				
Large	62	16 (12)	13 (41)	2 (6)	8 (42)				
All Groups	243	130 (100)	32 (100)	23 (100)	19 (100)				

Source: Sample Survey, 1979.

The above table represents the access of different peasant groups to the village cooperatives (peasant co-operative Society), the Bengali abbreviation is KSS, in terms to membership both general and executive; and the appropriation of loans. It is observed in the table that percentages of membership from each category is an increasing function of landholding implying the tendencies of larger landholding groups to reap the advantages of resources. In general membership, the marginal, small and medium peasants predominate over other groups; whereas in executive membership the predominance of large peasants is accompanied by the medium and marginal groups whereas the landless group has no place in it. Out of 130 general members only 25% received KSS loans whereas the percentage of executive members is 59 which implies greater access of executive members to obtain KSS loans. In the total loan appropriation, small and marginal peasants in general category, large and medium peasants in the executive category, have predominance over other peasants.

This suggests that NSS membership, particularly the executive positions and loan operation relatively favour large landholding groups.

Apart from village co-operatives, other institutional sources of credit represent interests of big landholders who have access to them whereas the poor landholders have a variety of use of the non-institutional sources of credit. Table XXIX presents the receipt of loans from both institutional and non-institutional sources by peasant groups.

T A B L E - XXIX

DISTRIBUTION OF SAMPLE FARMING GROUPS ACCORDING TO LOAN RECEIVED FROM BOTH INSTITUTIONAL AND NON-INSTITUTIONAL SOURCES.

Peasant Groups	Institutional Sources				Non-Institutional Sources		
	Bank	BADC	Taccavi	Social Welfare	Relati- ves	Friends	Mohasans
Landless	-	-	-	2 (67)	19 (21)	1 (100)	21 (35)
Marginal	2(13.3)	1(2)	2(100)	1 (33)	37 (40)	-	24 (39)
Small	-	1(20)	-	-	15 (16)	-	9 (15)
Medium	5(23.4)	1(2)	-	-	16 (17)	-	3 (5)
Large	8(54.3)	2(40)	-	-	5 (6)	-	4 (6)
All Groups	15(100)	5(100)	2(100)	2(100)	92(100)	1(100)	61(100)

Source: Sample Survey, 1979.

Note: (figure) represents percentage.

The sample findings about institutional and non-institutional sources of credit use by different peasant groups, presented in Table XXIX, indicate that access to sources of credit like Agricultural Bank, BADC is largely a function of landownership. Taccavi loan was once given in 1974 and has no regular flow in meeting yearly needs of farmers; social welfare loans are strictly supervised loans to favour the low income families. Use of non-institutional credit is frequent among landless and marginal in comparison with other groups. This tends to suggest that larger percentages of landless and marginal groups have to use various loans where interest rates often exceed

100% and even the relatives charge interest ranging between 5% to 50% because alternative scope of credit is limited to these groups. This picture derived from the sample finding, if taken to be true for Sherpur, suggests that for more than 50% of farm families prevailing credit machinery contributes to the state of poverty with the result that the productive assets are being liquidated.

The process of liquidation emerges clearly from land transfer. Table XXI gives the balance (net result) of sales and purchases of land and the level of mortgages.

T A B L E - XXI  
DISTRIBUTION OF FARMING GROUPS BY TRANSFER OF LAND (SALE/  
PURCHASE/MORTGAGE)<sup>1</sup>

Peasant Groups	LAND TRANSFER (ACRES)			LAND MORTGAGE (ACRES)		
	Purchase	Sale	Balance	Taken	Given	Balance
Landless	.28	.33	- .05	1.31	.56	+ .75
Marginal	8.69	16.21	-7.52	9.44	13.94	-4.5
Small	6.22	3.67	+2.55	3.46	8.71	-5.25
Medium	20.76	3.71	+17.05	7.88	12.06	-4.18
Large	20.69	10.54	+10.15	16.16	14.65	+1.51

Source : Sample Survey, 1979.

It is apparent from the table that transfer of land through sale/purchase operations has a positive balance of different degrees in the small, medium and large peasants, whereas the landless and marginal groups have a negative balance. This suggests that land is being transferred from the two lowest groups to the three higher groups. Land mortgage presents a different scene from that of sale/purchase. Marginal group has negative balance in land mortgage, similar to that of sale/purchase balance, while the landless have a tendency to compensate loss of land through sale to the acquisition of mortgage land. Large peasants have positive balance of mortgage land, whereas the small and medium groups have a negative balance of mortgage land which when compared to land purchase indicate that purchase of land has caused to mortgage out land temporarily to the

<sup>1</sup> Only transfer of the First five years are included.

fact that permanent acquisition and right should be preferred to temporary loss of right through mortgage.

The above discussions show that in the sample survey, more than 50% of rural families of Sherpur have lower income, capital and access to external resources. This tends to suggest that more than 50% of rural families are at a income level which perpetuates poverty in rural areas, and the liquidation process through mortgage, sale of land and unwise loan operations. In this sad situation the large land-owners have command over resources that tend to increase year after year leading to polarisation of income, land and capital. In respect of social relationships these groups combine among them leadership, social and political power - a manner through which elitist interest may be perpetuated. This social structure retards rural development where the reward structure favours a few at the cost of the large. As such development policies have to be devised and implemented in such a way that society undergo changes. Restructuring of rural socio-economic structure is a need to initiate rural development of Sherpur.

#### 4.5 Rural Employment of Sherpur:

Any study of rural development which aims to specify broad policies, should also consider rural employment position. In rural Bangladesh, the major employment generating activity is agriculture. The national estimate is that 69% of the total labour force at present is employed in agriculture. The forces which determine the level of rural employment are the demand-supply interaction in which the supply side comprises population growth along with growth of labour force and the demand side consists of the nature and extent of farming along with the rate of adoption of technology and the scope of off-farm jobs. These two factors determine the level of rural employment and the income of the rural landless.

In Sherpur, traditional management of agriculture predominates the rural scene, whereby owner/operated farming is significant. In such a situation, family labour is devoted for cultivation, the

scope of using hired labour is limited unless additional increment to production takes place. Even in this case of family labour preponderance, it is of importance to analyse the present level of employment that might require policy considerations in planning.

The size of labour force is related to population age structure and the size of working force gives the extent of employment. The difference between the two determines the level of unemployment. Table XXXI attempts to present the employment situation of Sharpur based on sample population.

T A B L E - XXXI

EMPLOYMENT SITUATION OF DIFFERENT PDS

	<u>PD I</u>	<u>PD II</u>	<u>PD III</u>
Population (10 + )	69%	67%	71%
Labour Force <sup>1</sup>	51%	49%	51%
Working Labour Force	46%	47%	45%
Unemployed	7%	2%	6%

Source: Sample Survey, 1979.

Table XXXI gives the figures in percentages of total population of the three PDs. It appears from the table that in terms of working labour force PD II is in a relatively better position as compared with PD I and PD III. The extent of unemployment is relatively small in PD II (2%) compared with PD I (7%) and PD III (6%). Low unemployment in PD II may be explained by the opportunities resulting from its location nearer the urban centre and along the main road which might have increased the scope of non-farming employment that tend to reduce the percentage of unemployment.

The employment level given above, however, does not reveal to what extent people of each PD are fully/or under-employed. The national activity rate estimated by SAO (1974) experts, when

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1 Labour force includes male persons and the number of housewives among the female on the assumption that they take part in post harvest operation.

Figure 1.

VERTICAL BARS SHOWING VARIATION OF WORK DAYS BY TYPES, SEASONS AND PHYSICAL DIVISIONS.

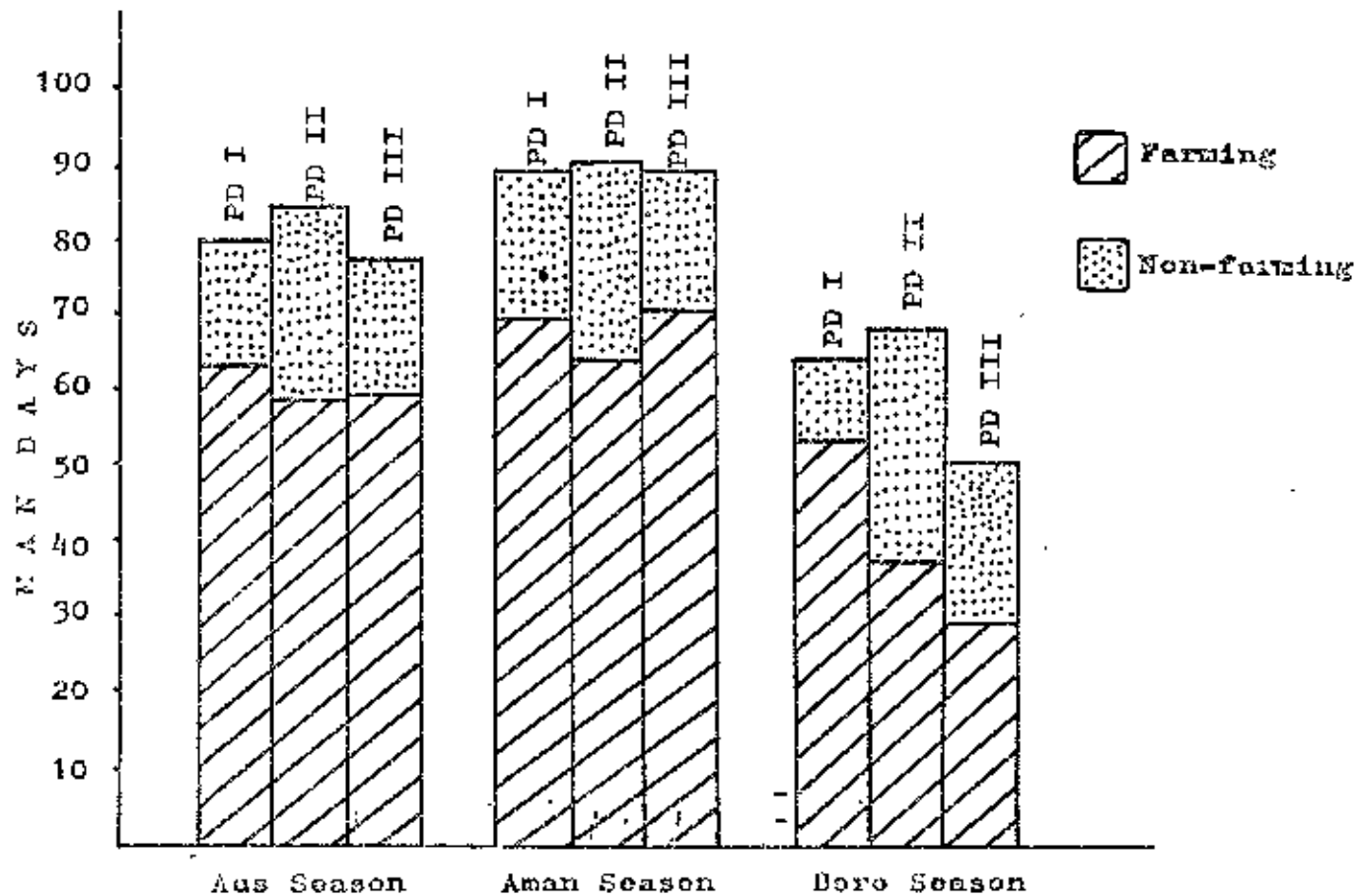
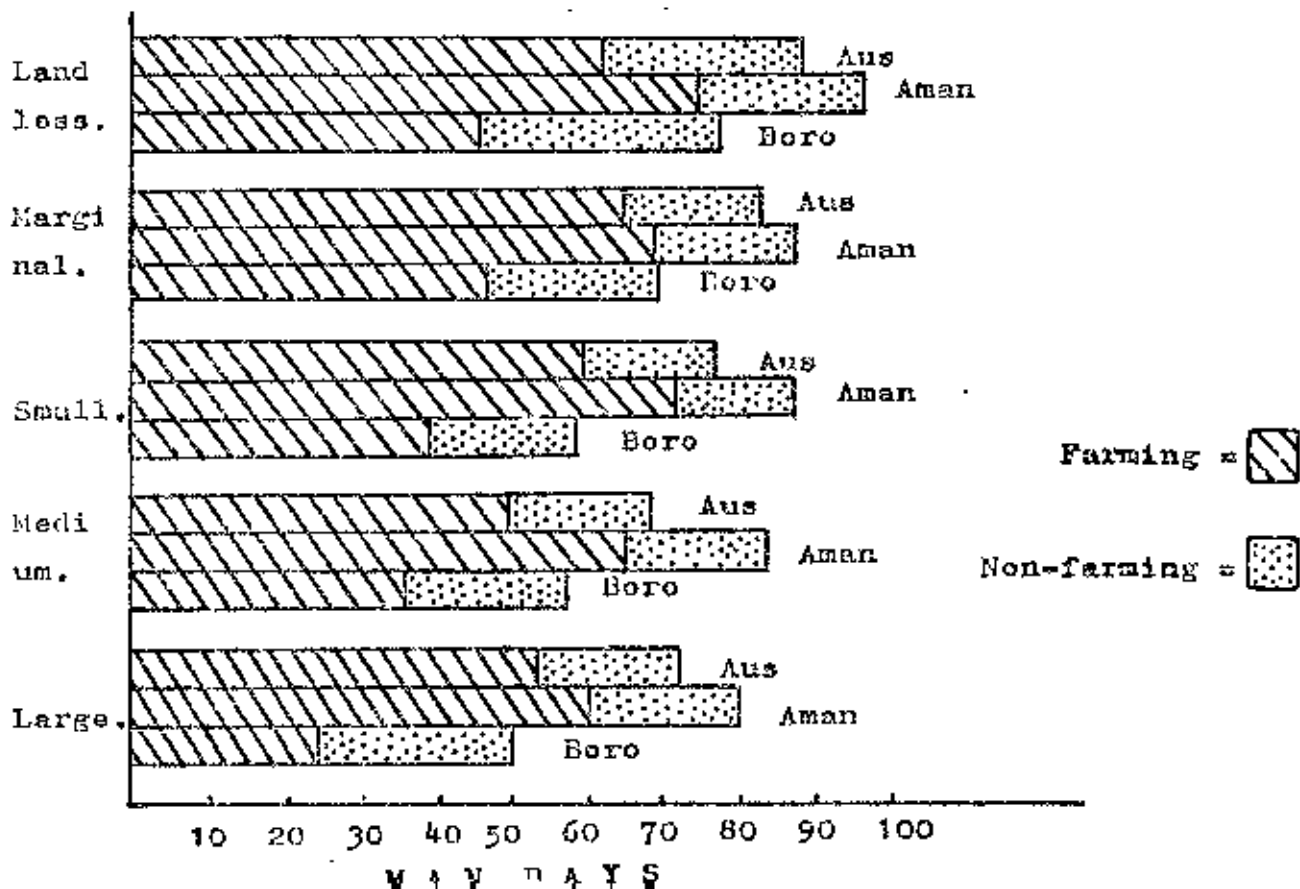


Figure 2.

HORIZONTAL BARS SHOWING VARIATION OF WORK DAYS BY SEASONS, TYPES, AND FARMING GROUPS.





compared with Shearpur situation indicates varying degrees of under-employment in the Pds. However, the extent of under employment should rather be determined in an analysis of working days that might have variation over seasons and the scope and extent of off-farm opportunities.

The vertical bar-diagram (Fig.1) attempts to relate variation of farming and non-farming workdays by physical divisions and seasons. Seasonality represents more or less similar variation of workdays in each PD. The general pattern is that there are more mandays of work during Aman season compared to Aus and Boro seasons when average man-days go down to 60 and 40 in a four months period. Farming days are relatively higher in PD I in all seasons, viz., 65, 70 and 50 days in Aus, Aman and Boro seasons respectively as compared with PD II and PD III when workdays are 58 and 58; 63 and 69, 38 and 29 for Aus, Aman and Boro, respectively. Off-farm workdays are relatively higher in PD II in comparison with PD I and PD III in all seasons. This is due to the area's proximity to urban centre and transportation linkages that have led to a degree of diversification of work from farming to that of non-farming. Total average man-days of non-farming work are 49, 66, 57 for PD I, PD II and PD III respectively. This implies that good quality land leave less scope to do non-farm work as is the case with PD I whereas less good quality land releases people to do non-farming works to supplement income for subsistence.

The relationship between peasant groups by workdays and seasonal variation has been depicted in the horizontal bar diagram (Fig.2). Seasonal variation seems to be neutral in offering man days of work to all groups; the general tendency is more workdays in Aman season than in Aus season; whereas in Boro season workdays fall drastically. This reflects to increase job opportunities during Boro season. Variation of work days mostly in all seasons have a negative relation with landholding in a manner that the propensity to work falls gradually as landownership increases. The landless and marginal peasants have a relatively higher man-days of work (farming and off-farming) which implies that their survival needs as many days of work as possible to do.

T A B L E - XXXI

A TENTATIVE MEASURE OF UNDER EMPLOYMENT BY SEASONS AND FARMING GROUPS.

Category of peasants.	Average non-days without work by seasons			
	Aus	Aasn	Boro	Total
Landless	12	5	23	40
Marginal	17	12	31	60
Small	23	15	41	77
Medium	31	17	43	91
Large	27	19	50	96

Source: Sample Survey, 1979.

Under the assumption of 300 working days<sup>1</sup> a year, it appears from the above table that extent of underemployment has both seasonal and group variation. The total number of days of underemployed has a group variation in favour of larger landholding groups, which suggests that working days are a declining function of landownership. A similar trend is found in seasonal analysis. The number of days of unemployed increases gradually with landholding sizes apparent in all season, except the medium peasant in Aus and the large in Aasn where the increasing trend is reverted. The worst situation of underemployment is found in Boro season as compared with Aus and Aasn; the number of days remaining unemployed increase by each peasant group yet the proportions are not same. The extent of under employment reduces income of landless and marginal groups and still more to note, it causes waste of potential productive capacity of human resource. The observation from sample, if it prevails in Sharnur would imply thousands of people unemployed or underemployed during different seasons of the year.

From the above discussion it is apparent that opportunities of work will have to be increased in all seasons, particularly in Boro season. This may be attempted through efficient use of land by increasing acreages of HYV cultivation and creating venues for off-farm employment.

1 It is estimated that 300 working days of employment are required for a landless family consisting of 3 members to survive, considering that the wages vary by seasons.

## CHAPTER 5

### DEVELOPMENTAL PROSPECTS AND POSSIBILITIES

The present land use pattern of Sherpur as reflected in the analysis of sample survey indicates inefficient utilization of land for purposes such as homesteads, ponds and farming, irrespective of physical variation. The underutilization of land is precipitated by physical, socio-economic and cultural factors. This causes a lower level of output, and employment in the area. From the social viewpoint it appears that the present organization of resources on which is based the rural social structure, acts in one way or another to limit the best possible utilization of land. As such the developmental need for formulation of policies to effect an efficient utilization of land should explore the possibilities of change that are possible within the given socio-economic set up or the alternative prospect of bringing about change. Whatever the policy adoption objectives are, the start should be from an account of physical, economic and other potentials of Sherpur and an exploration of these possibilities.

Planning always encompasses policies for the future. As such forecasting is vital in determining the need for proper land utilization of an area. "It can provide information about the types of future development that are possible, provide a probabilistic assessment of the likelihood of each development and also influence the direction and pace of development" (Roberts 1974 : 85). Population is the fundamental determining force of the need for development and so population forecasting should precede other types of forecasts.

#### 5.1. Population Projection and the Possibility of Absorption of Land for Homestead in Sherpur;

Population may be projected by adopting different techniques to obtain desired level of accuracy. For the sake of simplicity, the compound growth projection with national growth rates of population has been adopted to forecast the population of Sherpur by sample villages. Tables XXXIII gives the population figures for 1989 and 1999 from the compound growth projection by physical divisions.

T A B L E - X X X I I I

PROJECTION OF POPULATION OF SAMPLE VILLAGES BY PHYSICAL DIVISIONS.

PDs	P o p u l a t i o n		
	1979	1981	1991
PD I	7,507	9,895	12,791
PD II	4,143	5,460	7,058
PD III	4,789	6,312	8,159
Total:	16,439	21,667	28,008

Source : Sample Survey, 1979.

Note: Population for 1979 is an estimate by raising factor of Sample figures.

The above table represents the population projection by sample villages which has been aggregated for the physical divisions. Population figures for 1979 are an estimate of sample household population adapted by raising factors. The figures of projected population for 1989 and 1999 in each PD are based on the growth rates<sup>1</sup> of 2.8 and 2.6 for the first and subsequent ten years. To the variation of the rate is an assumption of success of the family planning program designed to achieve lower rate of population growth.

This population projection is vital concerning the use of land for homestead. If the existing system of homestead land use (residential densities) continues over the next twenty years, then the proportion of land to be taken for settlement will increase in a linear rate averaging the impact of socio-economic groups but reducing cultivable land respectively.

Table XXIV gives the percentages of total land of each PD to be absorbed for residential uses over the next twenty years if the 1979 residential densities are maintained in the future. The worst affected will be PD II; then PD I as compared with PD III in the loss of cultivable land.

<sup>1</sup> The assumption of a higher growth rate other than national is associated with a reasonable increasing rural population growth.

T A B L E XXXIV

PROJECTION OF ABSORPTION OF LAND FOR HOMESTEAD BY PDS ASSOCIATED WITH INCREASE OF POPULATION (HOMESTEAD LAND AS % OF TOTAL LAND AREA).

PDs	1979	Residential Density in 1979	1989	1999
PD I	6.12%	41	8.10%	10.46%
PD II	9.52%	26	12.49%	16.15%
PD III	3.40%	40	4.60%	5.94%
All PDS	5.67%	36	7.52%	9.72%

Source: For 1979, plot enumeration for village Homestead lands, 1979.

This projection suggests that residential land use will create conflict with farming land uses in the face of rising population unless and until farming is intensified to mitigate the subsistence need of rural dwellers.

However, the degree of projected land absorption may not necessarily be unavoidable. An exploration of excess capacities for settlement in terms of vacant space for room building by PDS are presented in Table XXXV based on sample survey.

T A B L E - XXXV

CAPACITY OF PRESENT HOMESTEAD LAND TO ACCOMMODATE SETTLEMENT BY NUMBER OF ROOMS IN EACH PHYSICAL DIVISION.

PDS	% of H/H having excess capacity	Capacity (number of room per H/H)
PD I	69%	1.68
PD II	67%	1.66
PD III	51%	1.43
All PDS	62.5%	1.58

Source: Sample Survey, 1979.

It appears from table XXXV that PD I and PD II are relatively in a better position compared to PD III with respect to percentages of H/H having excess capacity and average number of rooms per H/H. This implies that about 100% increase of H/H in each PD might be absorbed, if the manner so permits on existing homestead land<sup>1</sup>. In any planning this possibility should be explored<sup>85</sup> as a short-run objective in policy formulation relating to homestead land uses.

An analysis of excess room capacity by farming groups is attempted in table below:

T A B L E - XXXVI

EXCESS ROOM CAPACITY IN EXISTING HOMESTEAD LAND BY FARMING GROUPS BASED ON SAMPLE SURVEY.

Farming Groups	% of H/H having excess capacity	Average number of rooms per H/H
Landless	48	.94
Marginal	75	1.67
Small	68	1.68
Medium	59	2.0
Large	55	1.85
All Groups	63	1.58

Source: Sample Survey, 1979.

It is observed in the Table XXXVI that a relatively higher percentages of marginal and small peasants have excess room capacity compared with the other groups, medium 59%, large 55% and landless 48%. The worse condition appears to be the landless. Contrary to this capacity variation by holding groups, room space has a positive relation with holding size, indicating that landownership is associated with greater proportion of land for homesteads and so also capacity for further accommodation. This suggests that if the excess capacity could be utilized, projected increase of settlement might have a moderate degree of land absorption.

<sup>1</sup> This is based on an assumption that homesteads could be redivided among households when necessary.

The effective use of present homestead land may be set against some standard, viz., that of raising residential densities to a reasonable level to accommodate more persons per acre of land. Hafiz (1978) in his study of a single village, has proposed a homestead land of .10 acres for one housing unit of an average family size of seven members. His consideration of structural and economic elements in a proposed unit consists of two bedrooms, one kitchen, one Baitak Khana, one Corahed, one seed store, one latrine and one hay stack with a logical arrangement so as to have an open courtyard in the centre for post-harvest operation, may be accepted as a standard of housing unit for Sherpur. This standard of .10 acres for homestead land would imply that the present homestead lands for PD I, PD II and PD III can accommodate 12,786 persons, 11,199 persons and 6,190 persons respectively. This would mean the accommodation of the projected population for 20 years with a few persons less in PD I but more than the projected persons in PD II and PD III. The sample finding, if it is true for the whole of Sherpur, would imply that for 20 years ahead the present land for settlement is enough to accommodate the increased population. The need is for formulation of policies for rural housing and homestead reorganization and their implementation through organizational measures.

### 5.3. Potential Use of Ponds:

The sample finding indicates that the present level of use of ponds gives small (average) returns to the tune of Tk.1,205/- per acre of which significant variations appear for the self-owned pond (Tk.1,476/-) and jointly-owned ponds (Tk.774/-). The extent of variation of returns between self-owned and jointly-owned ponds reflects a relative degree of inefficient use of the resource implying underutilisation of ponds as a whole in Sherpur. This corroborates Smith's (1973) contention of low pond production caused by (1) shared use of tanks between production and household water uses; (2) divided ownership of tanks; and (3) fish marketing difficulties.

The efficient use of tanks in Sherpur may be conditioned by diverting household uses to tube-wells so that they may be used for fish culture and irrigation. There are three alternative ways for efficient use of ponds viz., (1) Pisciculture and no irrigation, (2) Irrigation and seasonal use for fish cultivation, (3) Mix of fish and irrigational uses; considering the stock of water retained by the ponds in dry season. Determining the best choice of alternative uses will depend on spatial advantages and the community's need of use of ponds.

Using Dumont's (1973) estimate every acre of tank in good state with good management can give 22 maunds of fish or may be used for 3 acres of irri-boro or 5 to 6 acres of rohi crop irrigation; these alternatives in case of sample villages of Sherpur are presented in Table XXXVII.

T A B L E - XXXVII

DISTRIBUTION OF POND ACREAGES BY PHYSICAL DIVISIONS AND THEIR POTENTIAL RETURNS FROM ALTERNATIVE USES.

FDs	Pond Acreages	Alternative Use Potentials		
		Pisciculture (Tk.)	Acres of Irri- boro Irrigation	Rohi Irrigation
FD I	49.15	3,93,200/-	147.45	245.75
FD II	85.02	6,80,160/-	255.06	425.10
FD III	185.28	14,82,240/-	555.84	926.40
All FDs	319.25	25,55,600/-	958.35	1,597.25

Source: Sample Survey, 1979.

Note: Fish price is estimated as (22 maunds x Tk.400/- = 8,800); 800/- used.

The above table shows the distribution of pond acreages by physical divisions and three alternative estimates using Dumont's contentions. It is apparent that pond acreages are highest in FD III, higher in FD II, than in FD I. Together they occupy 4% of the total area of the sample villages.



The income potential of the use of ponds from pisciculture is to the tune of 2.6 million taka, the distribution of which is associated with PD's acreages. The ponds have a potential to irrigate 15% for 26% of total cropped area of sample villages, for kxri-boro or robi crops. A mixed use for fish cultivation and irrigation for winter might increase the overall return from the use of ponds, by providing nutrition and irrigation for Sherpur. The sample findings if generalised for Sherpur as a whole would indicate the income and irrigational potential of the area for which appropriate policy measures are necessary. Smith's suggestion appears to be valuable in this context: "A vigorous program to secure underutilized tanks and to assign them to cooperative societies with landless fishermen as members will be necessary to resolve tank ownership disputes and the resultant stagnation in tank development" (Smith 1973: 305).

#### 5.9. Possibilities of Increasing Agricultural Output:

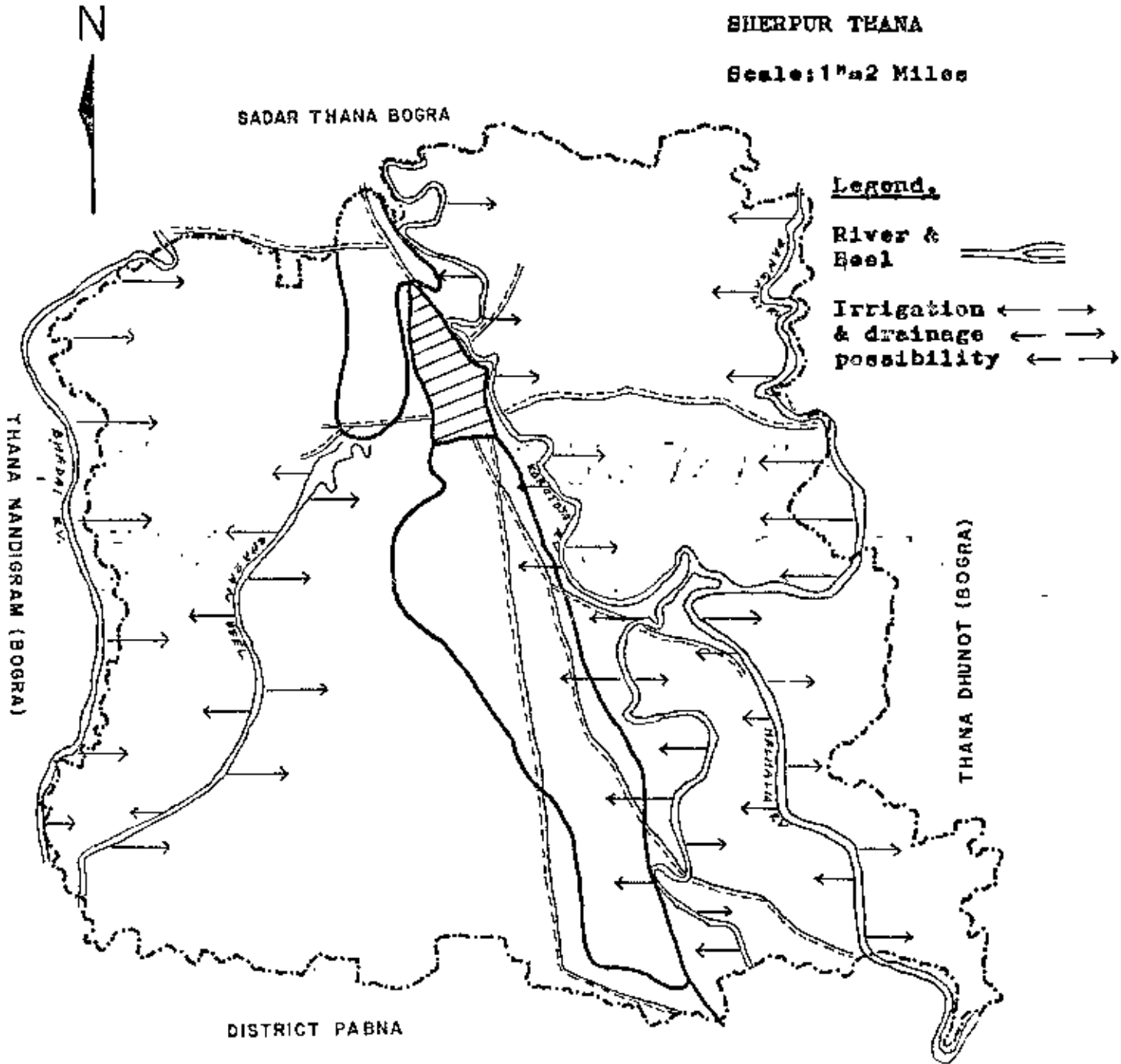
The findings of agricultural production related to physical and socio-economic conditions of the sample survey indicate that PD I has a relative physical advantage over PD II and PD III in the production and productivity of a variety of crops whereas socio-economic groups based on land ownership represent a higher productivity of small landholding groups but total gains of farming go in favour of larger groups. This implies that since large landholders have relatively lower productivity though land concentration takes place among them; means that larger part of farm acreages are not effectively used as in the case of small landholders. An increase in the productivity of Sherpur is of vital concern for land utilization in the face of rising population. Modernisation of agriculture should be undertaken through irrigation and increased use of HYV seeds and chemical fertilizers.

##### 5.9.1. Exploration of Physical Advantages:

In the sample survey, it is found that irrigation and drainage are vital to increase production. In a quarry of which is the most important need to increase production, almost all peasants, except a few owning pumps, gave priority to the need of irrigation whose importance

MAP NO. 3

IRRIGATION AND DRAINAGE POSSIBILITIES OF SHERPUR.



is revealed by the fact that if irrigation is provided to the peasants, with no other improved inputs, production could be doubled even with the traditional inputs. Sberpur has the physical advantages of (having) two rivers and a number of beals which if properly managed and used can provide irrigation to the area. The following possibilities of irrigation and drainage may be explored in Sberpur and their location and implications are represented in Map No.3.

1. Digging of Bhdal River, (at the outside west boundary of Sberpur), so that it can retain water for winter irrigation and increase drainage in PD III.
2. Desiltation of Korotopa (digging) so that it can provide drainage and irrigation to parts of PD I and PD II areas.
3. Increase irrigation from Bangali River, at the far east of Sberpur, to benefit the areas of PD I.
4. Digging of Charan beal, at cross point of PD II, PD III to mid-west of Sberpur, to increase drainage and explore the possibility of irrigation from it.
5. Increased use of deep tube-wells in PD I for irrigation.
6. Increased use of shallow pumps in PD III; deep tube-wall is not feasible in this area.

These scheme would surely increase irrigation acreages of each physical division. However, such work will depend on the supply of shallow deep pumps, and in the way they are organized for the benefit of rural population of Sberpur.

#### 5.3.2. Increased Use of HYV Seeds and the Supply of Other Inputs:

The sample findings accounts 217.41 acres, 10% out of a total of 2125.07 acres of land are being used for HYV Crops, with a variation between 7 to 15 percentages among the physical divisions. It indicates a lower acreages to HYV that has to be increased in consideration with increasing population growth of Sberpur. The 90% bias to production of traditional varieties limits the scope of output increase, income and employment among the physical divisions.

The HYV impact on output and employment is represented in Tables XXXVIII and XXXIX.

T A B L E - XXXVIII

COMPARISON OF OUTPUT PER ACRE BETWEEN LOCAL AND HYV CROPS.

Type of crops	Output per acre (Maunds)		Percentage of increase
	Local	HYV	
Asa	18	30	66
T. Asan	21	30	43
Boro	24	48	100
Wheat	-	25	-
All crops	63	133	71.4

Sources: Sample Survey, 1979 and IERD Report 1972.

T A B L E - XXXIX

COMPARISON OF LABOR (MAN-DAYS) REQUIREMENTS BETWEEN LOCAL AND HYV PRODUCTS.

Type of crops	Labour requirements (man-days) per acre		Percentage of increase
	Local	HYV	
Asan	66	82	24
T. Asan	87	104	20
Boro	80	115	38
Wheat	-	60	-
All crops	233	361	29

Sources: Sample Survey, 1979 and IERD - Report 1972.

A switch to HYV Production from that of local varieties will not only increase output level but also require more labour man-days. From table XXXVIII and XXXIX it appears that HYV impact on output is on an average 71% increase with a variation between 43 to 100 percentages on crop types while that of average labour requirement increase is 29% to be associated with crop type variations between

20 to 30 percentages. The intensities of labour requirements are measured by Employment Elasticities which stand at .90, .46 and .30 for *Amra*, *Amra* and *Boro* respectively. These possibilities point out that increased use of HYV in Sharpur might even turn the deficit marginal farmers of the area into surplus farmers, while that of conferring benefit of increased employment to improve conditions of the landless families.

To these possibilities may be added Ahmed's (1976) findings of some farms in *Omilla* which reveals that (1) HYV rice provided between 30% to nearly 50% greater employment to traditional rice, (2) Fertiliser application, weeding, plant protection, threshing operations account for the bulk of the increased labour utilization, (3) increase in employment was accompanied by doubling of yields per acre.

Thus a successful transition of Sharpur Agriculture towards HYV production or even gradual transition policies to HYV use is concomitant with the provision of irrigation facilities and the supply of inputs. The physical possibilities of irrigation have to be realised with appropriate use of devices and techniques. The present level of use of fertiliser and pesticides though it has group variation on an average basis is low on the whole. Policies are needed to execute proper distribution of inputs.

Increase of agricultural production in Sharpur is interwoven with physical and socio-economic aspects. The physical aspects are the possibilities of irrigation and drainage of the area. The socio-economic aspect is related to (1) creating conditions favourable for adoption of new technology and (2) increasing the ability of all farming groups to use HYV inputs. The former implies organisational and distributional measures (policies) by which use of irrigation (mainly) should be conditioned, whereas the latter is concerned with individual abilities which may be expediated in two ways - (a) Increase income of low income groups by providing off-farm jobs which in the present context need an analysis of the spatial potentials; (b) organise the peasants in some form of co-operative through which their access to the supply sources of inputs may be strengthened even in the

existing social structure.

5.4. An Estimate of the Possibilities of Sherpur to Employ its Growing Labour Force:

Projection of labour force over a period of time depends on population projection and on the assumption of the prospect of change in the structure of population. Shortage of information on the possible temporal changes in the composition of population, compels to base projection on the present trend of labour force growth of an area. On the assumption that spatial percentages will not change in the projected period, labour force will grow at a constant rate assumed. In Sherpur, the assumed rate of labour force growth is 2.7 (nearer to Clay's (1977) estimate 2.0 from 1975 to 85:12) from 1979 to 1999. This rate, however, is not likely to be exaggerated considering the large new age groups which are entering the labour force. Also growing numbers of landlessness will increase the labour force which Clay (1977) estimates to grow at the rate of 5%. Taking 2.7 as the growth rate of labour force which is likely to be a low assumption, projected labour force in each PD would be as follows :

T A B L E - X L  
PROJECTION OF LABOUR FORCE INCREASE BY PDs  
AT CONSTANT RATE OF GROWTH (2.7%)

PDs	Labour force	Labour force as	Projected Labour Force	
	in 1979	percentage of total population	1989	1999
PD I	3,829	51	5,047	6,324
PD II	2,030	49	2,676	3,459
PD III	2,443	51	3,219	4,161
All PDs	8,302	50.5	10,942	14,144

Source: Sample Village Survey, 1979.

Table XL presents projection of labour force of the sample village aggregated for physical divisions. The constant rate of growth of labour force is in disregard with working labour force which

indicates the level of future employment needs. However, the possibilities of increases in the size of working labour force will depend on the potential growth of agriculture and the opportunities for off-farm employment in each physical division. On the assumption that the existing agricultural situation will prevail during the projected period, the absolute number of unemployed will increase radically. For this reasons, it is necessary to modernize agriculture, increase the output growth and the employment opportunities during the projected period. Table XLI attempts to assess employment potential of Sherpur agriculture by considering its growth and employment elasticities based on two different assumptions.

T A B L E - X L I  
AN ASSESSMENT OF THE GROWTH OF AGRICULTURAL PRODUCTION  
AND EMPLOYMENT BY EMPLOYMENT ELASTICITIES.

% Increase of Labour force between 1979-80,		Agricultural growth rates,	%Increase of agri.output	Calculated $E_s$	Estimated $E_s$	Difference.
All PDs	70.38	2.1	51.54	1.97	.20	1.17
		4.0	119.11	.59	.40	.19

Table examines employment possibilities of projected labour force at different growth rates of agriculture. The national trend growth rate of agriculture, 2.1 (Clay et.al. 1977:26), if it continues in Sherpur, agricultural output over the projected period will increase by 51.54% which to condition for increased employment of the labour force of that period would require an  $E_s = 1.97$ . But the estimated  $E_s$  to obtain that output increase is only .20 (HERRI estimate of 1975-76). This means that 86% of the increased labour force will remain unemployed or could not be absorbed in agriculture. A growth rate of agriculture as high as 4.0 would increase output by 119.11% over the period for which calculated  $E_s$  would be .59 to provide full employment of increased labour force of that period. But the estimated  $E_s$  is .40 (Clay et.al. 1977:28) to attain the high output increase of agriculture. This would imply that 33% of the increased

labour force could not be absorbed even if agriculture grows at a highest rate. An agricultural growth of 4% is an optimistic assumption whereas that of expecting 2.1% is pessimistic to assume present technological penetration to remain the same. The actual rate may, however, be expected to fall in between the two assumptions. So to quote (Clay et.al. 1977:25). "In reality there is a broad continuum of changes from slight increase in the use of chemical fertiliser or a gigantic improvement to the introduction of a whole package of new practices." However, employment situation projected at different employment elasticities imply that employment in all PDs even "under the most optimistic assumption of agricultural growth will scarcely keep pace with the expansion of agricultural labour force.

This finding from the sample, if taken to be true for whole of Shropshire, would imply that agriculture will fail to provide actual required employment in rural areas. The prime need of creating opportunities for non-agricultural works in rural areas is therefore an important aspect of rural development even if agriculture would grow at a rather fast rate.



## CHAPTER 6

### CONCLUSIONS AND POLICY RECOMMENDATIONS

Land, besides population, is the main resource in almost all the themes of Bangladesh, on the use of which the present and future well-being largely depends. But the use of land at least in Sherpur Thana, as pointed in the study, is surprisingly well below its potential in terms of intensity. The reasons for that comprise of complex interactions of physical and socio-economic factors. Future improvement in the use of land will depend on the success of the policies to have impact on the determinants of land use in terms of eliminating constraints and capitalising on the potentials. In this respect an effort is made in the present chapter to formulate effective policies for the improvement of land use on the basis of planning and detailed knowledge gathered on the constraints.

Land Use Planning seeks to establish a right and balanced allocation of land to meet different needs of a community. Needs may appear to compete with each other, yet they may be balanced for various interests. D.L. Stamp (1961) proposes three rules by which a balance may be obtained, viz., (1) the optimum use of land, (2) multiple purpose of use of land, and (3) elimination of any waste land in the sense that there should be no land which is not serving some purpose useful to the community.

In rural Bangladesh, requirement on the elimination of waste land is less relevant since practically all waste lands are already being utilised and there is not much scope to extend agricultural land use. The prospects of multiple use of land are limited and existing perception of the rural population is not favourable. But there is a need to motivate people to such uses. The optimum use of land appears to be the most important aspect on which policies have to be focused. However, the direction of such policies should be based on an examination of present agrarian structure of Sherpur.

An analysis of agrarian structure of Sherpur from the sample survey indicates the following main features to be prevailing :

1. More than 50% of rural households irrespective of physical divisions are landless and marginal whose per capita income and capital position are very low. But they have relatively high residential

densities (50 to 70 persons per acre) and virtually don't own any water bodies.

2. Land is concentrated in the hands of small number of peasants (24% to 30% , medium and large groups ) who are surplus farmers and have higher per capita income and capital stock. These peasants have low residential densities and also own ponds/ditches that have low returns per acre, are concentrated among them.

3. In cropping intensity and productivity scale smaller peasants are relatively more efficient than the larger ones. This indicates that greater percentage of land owned by the larger landowners are not properly utilized.

4. Tenorial conditions are in favour of large peasants who to a lesser degree practise farming and have less percentage of own-sharecropping but greater percentage of barga leasing and own-operation cum barga leasing as compared with the smaller peasants. This implies productivity differentials and reward structure in favour of large landowning groups at the expropriation of the later,

The implication of the agrarian structure on the land utilization of Bherpur is that the smaller peasants utilize land more effectively perhaps for reasons of survival. The larger peasants fail to be at par in resource use efficiency as probably they don't need to do so, with the result that large proportion of rural land is out of efficient use even at the existing technology. This stands to suggest that a change in the agrarian structure is necessary to effect more efficient land utilization and to postpone growing landlessness in rural areas.

There are two policy alternatives which could bring such a change, viz., (1) Drastic Land Reform; and (2) Legal measures. The former implies sudden major change whereas the later seeks a gradual process of transformation.

#### 1. Drastic Land Reform:

Land reform of a sweeping nature would imply drastic attempt to negate individual right of ownership and bring all land into a collective type of farming which essentially means replacing decision making at farm level by decision making at the level of an appropriately

defined collective unit. Land utilization in this atmosphere can be efficient since there would be an absolute control to obtain desired direction. To suggest such a policy for Bangladesh would be utopian, because it would require a major change in the present development policy of Bangladesh. Moreover, it would clearly result in disruption and resistance which a country like ours could hardly tolerate. "Trying to recommend this as a policy is pointless exercise. One can at best try to estimate the probabilities of such a development" (Abdullah 1976:96)

## 2. Legal Measures:

Legal measures may be directed to moderate land reform policies by imposing ceiling on landholding and to distribute additional land among the landless and marginal peasants. The argument for the transfer of land from the large to smaller groups is based on the assumption that the latter have greater productivity compared with the former and consequently land utilization will be intensified at least on the land which have been transferred. Such legal measures may also be directed to achieve other aims of land use :

1. Regulation of the use of homestead land by imposing ceiling.
2. Ceiling on cultivable acreages.
3. Law as to effect proper utilization of ponds.
4. Law to postpone fragmentation by encouraging transfer of plots.

Proper recording to landholding area both farm and non-farm will need trained manpower to do cadastral maps and to assess the amount of land available for distribution. The question remains whether the available amount to be distributed among the landless could increase per capita and holding to a reasonable extent. The Land Occupancy Survey (1977) carried out by the US-AID team estimated that if a ceiling of 10 acres per family were perfectly implemented and the excess land redistributed among the landless, each family would receive less than .40 acre. A more drastic four-acre ceiling would yield enough surplus to provide each landless and near landless

family with a total of .86 acre. "But even if such a radical reform were implemented, overtime lands would be subdivided among children, and for one reason or another some peasants would end up selling out to others, so that eventually a landless groups would reemerge" (Martmann and Boyce 1979:39).

However, related laws to regulate land uses are already existing. The ceiling of 33.33 acres (P.O. 98: 1972) has not yet been realized due to the gap between policy and implementation. The Damang Tank Improvement Act of 1939 has a provision to allow requisition of a derelict tank. If the owner fails to respond to a Fisheries Officer's request to culture fish in a derelict tank then the Deputy Commissioner may turn it over to interested pisciculturists nominated by Circle Officer (Development). But there are problems in enforcing the law, as Smith (1973) has cited an example of some ponds in Coimbatore, that had been transferred to some interested persons who failed to take possession of the ponds. The State Acquisition and Tenancy Act of 1950 encourages amalgamation of various parcels of land held by one tenant within one village (Section 116:111) which is hardly practised.

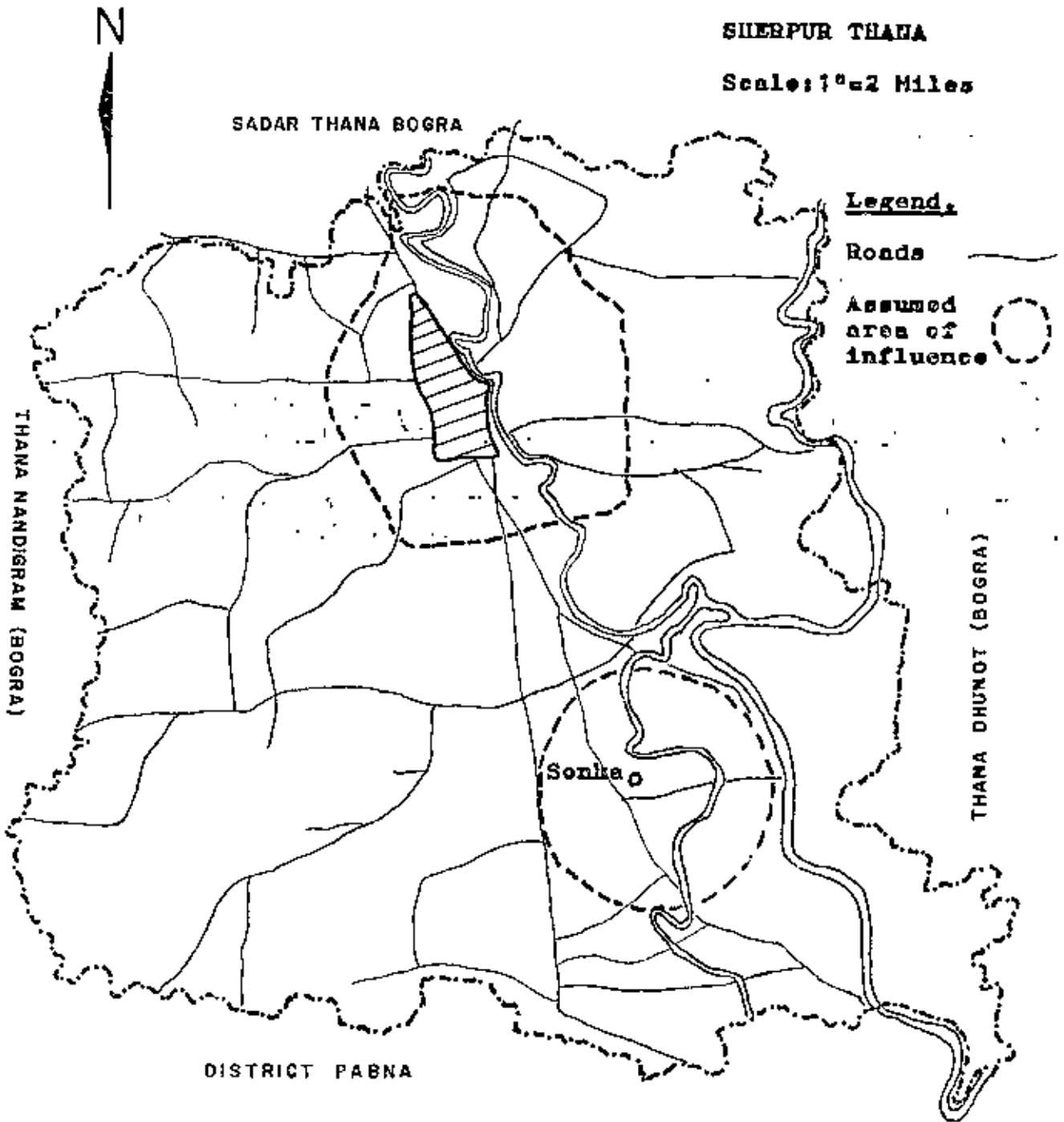
Even, it has been questioned whether the smaller peasants with relatively increased holdings would maintain the present level of productive efficiency. Other important consideration is the size of marketable surplus which might decrease when landless and marginal peasants' consumption increases with prosperity reducing the supply to urban areas.

All the above mentioned factors make it rather difficult to decide on where to base land use policies. Institutional approach to change existing social structure may be attempted by bringing new institutions in the rural areas. The change agent in this respect will possibly be the village co-operative societies, through which increase in agricultural production, technology transfer and proper utilization of ponds may be effected. Such co-operation will embrace the following aspects :

1. Co-operatives should be directed to emphasize production rather than input supply;

MAP NO. 4

LOCATION OF THANA CENTRE AND PROPOSED SUB-CENTRE.



2. Greater number of members to increase the level of participation;
3. To emphasize leadership of co-operatives from among the small and marginal groups;
4. Effective administration and strict supervision of the local co-operatives;
5. Extension of co-operation to the use of ponds;
6. Dissemination of knowledge among the members on how to economize the use of homestead land;
7. Extension of co-operation to multiple or common use of land.

At present the IRDP co-operatives are service-oriented and large peasant-biased. This needs to be changed in order to orient the co-operatives to production, and to leadership from smaller holding groups.<sup>1</sup> Small and marginal peasants are, in fact, gaining control of the co-operatives as a result of "de-classing", due to population increase and fragmentation of large holdings by the law of inheritance by which descendants are becoming small and marginal groups. This is apparent in the sample survey in which 32% of KESs' executive members are from marginal group. Together better supervision of local co-operatives assumes increased staffing of the thana level IRDP.

Parallel to the need of increasing efficiency of land utilization exists the need for the creation off-farm employment, in services, agro-industries and in the supply of inputs. For this development some section of the thana have comparative location advantages. At present one sub-centre (the location of Sonka on Map No. 4) may be emphasized considering its good accessibility and radial advantage. The success of this sub-centre might lead to the creation of other centres as has been suggested by Mahtab (1973) who examined the service-centre tiers of Shekpur and Bagra, leading the lowest tier to union council headquarter.

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<sup>1</sup> Two village co-operatives (KES), Kalna and Tunipara, within the Thana, have shown outstanding performances in organizing the peasants and in raising production level. The major part of their success are accountable to the selection of leaders who are mostly drawn from small and marginal groups.

The above analyses lead to the conclusion that rural development policies will have to be directed to, (a) the organization of production co-operatives to intensify use of land for different purposes, and (b) the creation of opportunities for non-farm employment. This means that the overall development should be redirected to effect efficient utilization of land and increasing employment in rural areas upon which will depend the well-being of rural population.

Appendix - I

The Questionnaire

QUESTIONS RELEVANT TO THE INVESTIGATION OF LAND USE PATTERN  
AND SOCIO-ECONOMIC CONDITION OF SEERPUR THANA.

Name of Respondent(H/H)..... Sl.No.....  
 Father's name..... Name of Interviewer...  
 Name of the village.....  
 Number of Physical Unit..... Date.....

1. Demographic features, level of education and occupation:

1.1. Family members by age, sex, level of education and occupation.

Sl. No.	Name	Relation with H/H	Present Age	Sex	Education level	Occupation
				'male-1' 'female-2'	'level'	'primary' 'secondary'

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.

Education Code:

No education - 0  
 Only sign name- 1  
 Primary - 2  
 Secondary - 3  
 Matric - 4  
 Higher secondary-5  
 B.A. / M.A. - 6  
 Doctor/Engineer- 7

Occupation Code:

Farming - 1	Barber - 8
Business - 2	Driver - 9
Tailor - 3	Doctor -10
Teacher - 4	Kaviraj -11
Fisherman - 5	Isam -12
Blacksmith - 6	Digger -13
Sweeper - 7	Others -14



1.2. Has anyone of your family left the village ? Yes / No.

1.3. If, yes, give details .

<u>Name</u>	<u>Relation with H/H</u>	<u>Period of stay</u>	<u>Reason</u>
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1.4. Have you moved into the village from outside ? Yes / No.

1.5. If yes, give reasons (from where, why and when).

2. Sources of Income:

<u>Details of Income</u>	<u>Period</u>	<u>Appx. Earnings.</u>
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1.

2.

3.

4.

3. Housing Conditions :

3.1. Number of rooms ; 1 / 2 / 3 / 4 / 5 .....

3.2. Construction of main room :

Floor : Paved / Unpaved / Wooden

Wall : Paved / Tin / Mud / Thatch

Roof : Paved / Tin / Thatch.

3.3. Latrine : No / Kachcha / Paved.

3.4. Source of drinking water : River / Tank / Tube-well / Well.

4. Land and Farming Details :

4.1. Total Cultivable	:	Own Cultivable	:	<u>Foreign Land</u>		
Land	:	Land	:	Taken	:	Given

4.2. Total Cropped Land :

<u>Amount of land (cropped)</u>	<u>Own Land</u>	<u>Borga land</u>
Single Cropped		
Double Cropped		
Triple Cropped		

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4.3. Do you cultivate land (own) outside your own mouza ? Yes / No

4.4. If no, why ? Distance / Disadvantage / Give) borga / .....

4.5. Details of Non-farm land :

<u>Purpose of use</u>	<u>Amount of land</u>	<u>Present use</u>
Homestead land		
Orchards		
Pond / Ditch		
Cultivable waste		
Permanent waste		

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4.6. Agricultural Implements :

<u>Details by type</u>	<u>Number</u>	<u>Value</u>
Tube-well		
Pump (irrigation)		
Ballock		
Buffalo		
Cow		
Calf		
Plough		
Ladder		
Wheeler		
Sickle		
Spade		
Cheni		
Harrow		
Dao		

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4.7. Land Transfer (Sale / Purchase/ Mortgage) :

Amount of land	'Sale/ 'Purchase/ 'mortgage	'Price	'Reason	'If temporary' (years)	Remarks.
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4.8. Present loan : Total Tk. ....

Sources	'Amount 'Tk.	'Year of 'Loan	'Purpose	'Loan 'used	'Rate of 'interest	Remarks.
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4.9. Are you a member of the KSS ? Yes / No.

4.10. If yes, state your position : General / Executive member

4.11. When has the KES been established in your village ?

4.12. How many times could you avail the loans ?

5. Crop Damages:

Amount of land	'Type of 'disaster	'No. of crops 'possible	'How to avoid 'the disaster	Remarks
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6. Details of Fish Cultivation:

Sl. No.	'Pond 'area	'Ownership 'single/ 'joint	'Fish cultivation?' (Yes/No)	'If no 'why	'Yearly 'income (Tk.)
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7. Employment Details :

7.1. Details of employment of family members.

Season	Relation 'with H/H'	'Age'	'Own farming 'work days	'Non-farming 'work days	'Labour sold 'no. of days'	'Wages
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Aug	1.					
	2.					
	3.					

Aug	1.					
	2.					
	3.					

Dec	1.					
	2.					
	3.					

(For the landless)

- 7.2 Do you find work throughout the year ? Yes / No.
- 7.3 If no, how many months you remain unemployed, ..... months.
- 7.4 If you do not find work, do you want to move elsewhere ?
- 7.5 Do the women of your family take part in any operation of farming ? Yes / No.
- 7.6 If yes, what type of work, for example, seedling / irrigation (tube-well) / post-harvest operation.
- 7.7 What are the purposes of their participation; such as -  
shortage of labour / cannot afford hired labour / income increase / poverty .....

8. Level of Living :

Do you possess ?

Yes (✓) / No (X)

Bicycle

Boat

Bullock cart

Motor bike

Handak

Handicane

Lamp

Wrist watch

Wall clock

Transistor radio

Kerosine cooker

Dal / motka (storage)

Storage made of tin

Storage made of bamboo

Utensils (Ceramic)

Utensils (Aluminium)

Utensils (Kansa)

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9. Attitude:

9.1. Are you satisfied with present yield per acre ? Yes / No.

9.2. If no, what things do need most to increase production ?  
Irrigation/fertiliser/pesticides/flood control/loan...

9.3. If you are supplied all the required inputs, how much could you increase production (per acre) of the following crops :

Ans

Ans

Ans

Ans

9.4. Do you live congested ? Yes / No.

9.5. If yes or no, how many rooms could it be possible to construct on your existing homestead land ?

9.6. What is your opinion about planned residence ?

Good/Bad/No opinion/does not like.

Comment on the H/H's response :

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