

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

AN APPROACH TOWARDS PHYSICAL PLANNING OF UPAZILA REGION: A CASE STUDY
OF SONARGAON UPAZILA

A THESIS

BY

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THESIS

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A Case Study of Sonargaon Upazila.

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ABSTRACT

Physical planning is an essential element in the whole development process of an area. Without this, rational distribution of socio-economic activities within a development unit becomes problematic. In the case of Bangladesh, the upazilas are at present functioning as development units. Therefore, necessity of physical planning approach in the development process of upazila is of utmost importance.

Sonargaon upazila is historically important and located on an important national highway. Although, it is historically important and has an unique geographic location, it lacks in physical and socio-economic opportunities. The Upazila Shahar itself is in a dilapidated condition and all other sub-centres are also not physically connected by improved transportation links. A major part of the upazila is seriously flood affected.

The physical constraints of the upazila create obstacles to the development of physical and socio-economic infrastructure. But for a balanced development of services within the whole upazila to expedite the economic development process and improve the quality of life, physical infrastructural planning is firstly necessary. This will expedite the process of other developmental activities.

The present study has outlined a general guideline for a physical planning approach in Sonargaon upazila. It emphasizes that transportation linkage between the major service centres especially the upazila headquarters is

very essential to increase the accessibility in the rural areas. Along with it, development of the major service centres linking the rural hats and shopping centres will become easier.

The development of agriculture in the upazila will be expedited obtaining increased inputs and other services from the local service centres.

Thus, the development of physical infrastructure will be a cause to the development of economy and social life at local union and village levels.

Thesis Title : An approach towards physical planning of upazila region : a case study of Sonargaon Upazila.

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Fig. 1

BANGLADESH
ADMINISTRATIVE UNITS (UPAZILA)

Scale - 1"=32 Mile

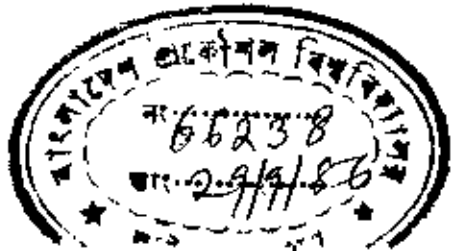
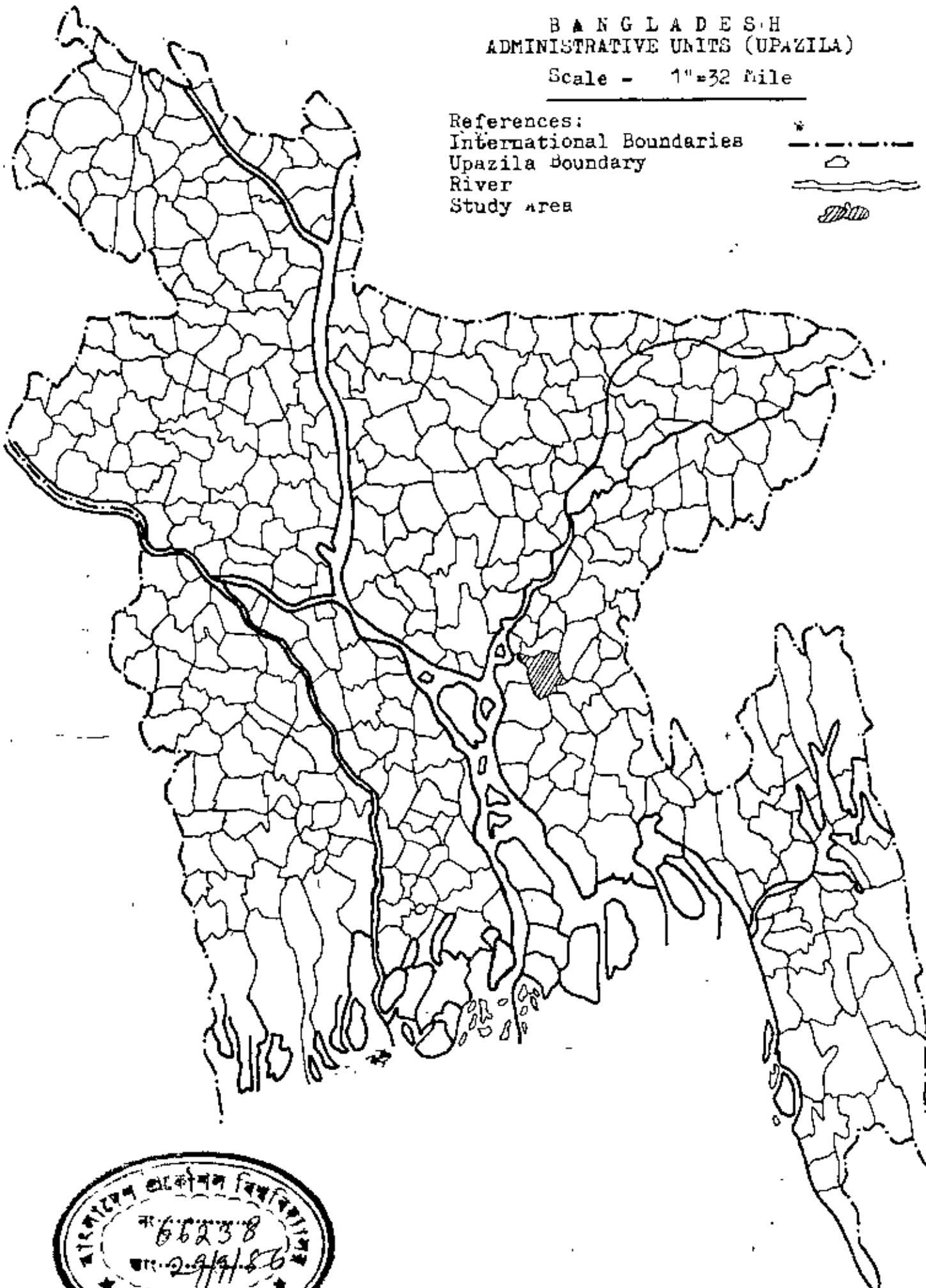
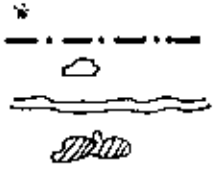
References:

International Boundaries

Upazila boundary

River

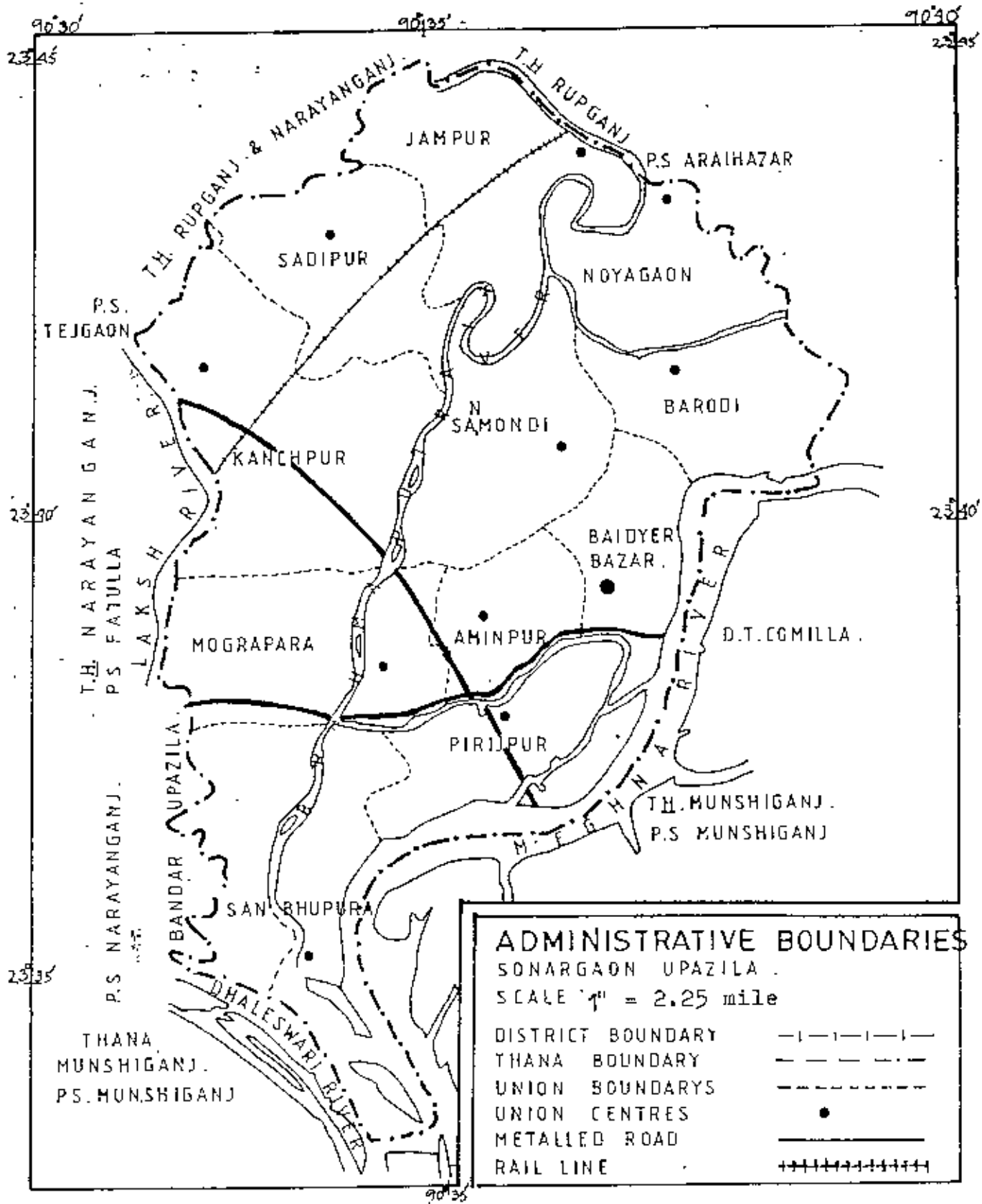
Study area



CHAPTER - 1

1. INTRODUCTION
- 1.1 Definition of the concept
- 1.2 Development efforts of the past
- 1.3 Strategy for physical planning approach
 - 1.3.1 Central place Theory
 - 1.3.2 The Growth Centre Concept
 - 1.3.3 Vonthunen's Model
 - 1.3.4 Growth Pole Concept
- 1.4 Scope of the present study

Fig.2



1. INTRODUCTION

Sonargaon is located at a distance of 14 miles from Dhaka City. Geographically, it lies between 90-30' to 90-40' East Longitude and 23-35' to 23-45' North Latitude. The river Meghna flows on the south and east of Sonargaon. Rugganj and Araihaajar Upazilas are on the North, Bander and Fatullah Upazilas are on the west.

"At the time of Renell, Sonargaon was a large city and the provincial capital of the Eastern Division of the Bengal before Dhaka was built" (Dr. Hasan M.S. October 1982, Sonargaon, P-3). But for a long time it has been a declining city, most of the historical structures being neglected and ruined. Although some attempts have sometimes been made by Government and other Non-Government agencies to develop Sonargaon City, the efforts have not been up to the requirement.

Formerly, Sonargaon was under Baider Bazar Upazila. It's status has now been upgraded through changing the name of the Upazila as Sonargaon Upazila. So, the historical city Sonargaon is to serve the whole Upazila with necessary facilities. The responsibility has further been extended by the decentralization of administration through Upazila system.

Thus the present study is an attempt to look in to the matters of physical planning approach for integrated development of the whole Upazila region under Sonargaon.

1.1 Definition of the Concept

Conceptually, the term physical planning has a significance in the context of area or regional development. In a country like Bangladesh, serious and formidable problem in the rural area are -

- i. Rapid increase of population
- ii. Fulfilment of basic needs and
- iii. Employment opportunities

To check these serious problems, Government has upgraded all Thanas as Upazilas to increase direct and indirect opportunities both in the short and long run for the poorest rural community by undertaking different physical infrastructures and development activities through the Upazila Administration. Because, it is now realized that integrated development at the area or regional and even sub-regional or small area level is essential for carrying the benefits of development to the more backward section of the community and also for increasing agricultural production and strengthening rural economy.

Thus the Upazila system of Local Administration may build a process at grass root level i.e. village level for basic physical infrastructure development to guide the economic activities with a systematic approach of planning under the Upazila Parishad.

The problem outlined, so far, puts a heavy strain on the living and working condition of the people of Sonargaon Upazila. This can be solved to a great extent by providing well planned, integrated new communities enjoying necessary amenities of education, health and recreation along with proper distribution of employment scope in the Upazila.

The major aspects which evolve from the existing situation for physical development of Sonargaon Upazila are as follows:-

- i. Potentials of Sonargaon Upazila Headquarters as a Township to serve the whole Upazila with a rational distributive manner through improved transportation and communication linkage.
- ii. Functional linkage of Sonargaon Upazila with surrounding or neighbouring Upazilas.
- iii. Factors responsible for spatial variation of service facilities within the Upazila.
- iv. Potentials of the whole Upazila region to be integrated through improvement of physical transportational linkage and necessary service facilities.

Also, an uniformity may be duly considered in the context of distributive service facilities within the whole Upazila through the adoption of appropriate planning principles in the development goals of the Upazila Parishad.

1.2 Development efforts of the past

Sonargaon as a historical town had a glorious past. The central, northern and western parts of the present Sonargaon Upazila were developed since 14th century till the division of Indo-Pak subcontinent due to river port facilities. These parts of the Upazila were the immediate hinterland of the ports on Lakhya and Meghna rivers. The Sonargaon town and the village settlements adjacent to these ports were well flourshed obtaining the opportunities of the river ports. Political, administrative and socio-economic situation of Sonargaon were thus prominent in the past.

After the division of Indo-pak subcontinent, there was no special attempts from Government level to retain the prestige of this historical city. As a result, stagnancy came in the economy of the city itself and the rural settlements within the Upazila as well. Thus the Upazila region which was once famous for magnificent "Muslin" cloth lost it's past glory. Also after the independence of Bangladesh, the picture did not change.

However, by the recent decentralization of administration through the Upazila Administration, a system is possibly going to take place for a rational physical planning approach in the development activities of the Upazila. Therefore, the future development of this historical region within the Upazila Sonargaon will depend on the performance of the Upazila Administration for a balanced development of the Upazila through the provision of required physical infrastructure facilities.

1.3 Strategy for Physical Planning Approach

Physical planning is important in the context of an area development with the provision of planned physical infrastructures, landuse, transportation and communications, utilities and so on. It has also significance in the regulation and control of development. These theoretical issues purporting rural development at regional and local levels are of importance in the present research which include attempts to establish some recommendations for physical facilities in the Upazila. The following theories may provide important guidelines as to built up the conceptual framework and suggest the recommendations in the present study. An analysis of these theories particularly interms of their relevance in Bangladesh is given below:-

1.3.1

Central Place Theory

The notion of Central Place Theory is linked with the name of Walter Christaller who in 1933 constructed a general purely deductive theory to explain the size, number and distribution of towns (Brian J.L. Berry & Frank E. Horton, 1970, Geographic Perspectives on Urban System). The crystallization of mass about a nucleus is part of the elementary order of things. Centralistic principles are similarly basic to human community life. In this sense, the Upazila town centre in the present context is a centre of Upazila regional community and the mediator of this community's different service and functional needs including administrative and even judicial ones.

Central Place vary in importance, those of higher order dominate larger regions than those of lesser order, exercise more central functions, and therefore have greater centrality. For all, however, the some of the distances which rural residents travel to the central place is the smallest conceivable sum.

On the above context, all the Upazila centre may be termed as the centre of highest order functions within the Upazila.

The area between the Upazila town centre to villages or vice versa may be called the complementary region. Under the concept of Central place theory, the working, administrative or transport principles may serve the purpose to distribute the central places in an ideal pattern to facilitate services for the villages or settlements. But it is difficult to find such an ideal pattern of distribution of central places within the Upazila for it's diversified physical and environmental characteristics. However, under the present Upazila administration the administrative influence is apparent to be higher than other principles of central places.

1.3.2 The Growth Centre Concept

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 France Economist, named Francis Perroux in 1955 who observed that "growth does not appear everywhere and all atonce, it appears in points or developmental poles with variable intensities. It spreads along diverse channels and with varrying terminal effects for the whole of the economy". 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.

Boudeville strengthened the geographical content of the Perrouxian growth pole and emphasized the spatial character of economic space. To Boudeville, 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. Boudeville assumed that other factors such as social changes 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 Centre Approach is basically a spatial-functional integration. Relevance of such an approach in rural development has been studied by Jahan S., 1978, (Strategy for Integrated Rural Development in Bangladesh, Un-published M.U.R.P. Thesis, BUET, Dhaka) in his study. 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. i) Agricultural services, ii) Employment and iii) Urbanization may be concentrated. We find another variant of growth centre approach in a study by Islam and Hossain (HABITAT : 1976). They have studied urban - rural relations and conclude that "the success of an agricultural revolution will depend to a great extent of urbanization..." the urban centres acting as servicing stations for agricultural firms and stressed that "urban centres must be developed and equipped to help boost production in the fields".

The market, as a growth centre, has assumed importance also in other studies. USAID, 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 town. 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.

1.3.3 Von-Thunen's Model

The relevance of Thunen's Model on rural Bangladesh have to be considered several factors. Thunen only considered farming landuses 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 determines the type 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 social conditions which largely determine the intensity of landuses (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 on the nearby lands, although most of rural landuses in Bangladesh are being determined by other forces which cannot be explained by Thunen's Model. Still Thunen's Model could have an implication on the spatial organization on rural development in Bangladesh should the primary constraints of agricultural production be eliminated to create conditions for surplus production and produce markets.

1.3.4

The Growth Pole Concept

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's less relevant for an under developed country like Bangladesh (Misra, R.P. et. al, 1974, Regional Development Planning in India) have attempted to bring forth the inadequacies of growth pole theory with respect to under-developed countries:-

- a) The growth pole theory has not been a success in socially and economically backward region, precipitated by lack of channels through which growth impulses can be diffused. This leads to a dual economy between core and periphery (Friedman J., 1974, A Spatial Framework for Rural Development: Problems of organization and implementation).
- b) The theory has it's roots in Western Economic thought and have relevances to those countries whose economy has already reached the social transformation threshold needed for accelerated industrialization. The focus of growth pole centre around industrialization, 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, it's impact at both the national and regional levels is bound to be limited and at times it may create more problems than it solves.

- c) 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 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 guidelines to rural development in Bangladesh seems to be of limited value because of the structural constraints of rural societies. More-over, the resources base for undertaking secondary industries is weak, and so also the need of propulsive industries.

Some experts (Choguill C.L., 1976, An assessment of growth centre policy as a method of achieving development in Bangladesh, the Local Government Quarterly, Vol. 5, No.1 & 2, P.5) opine that in the context of rural area development in Bangladesh, growth centres might constitute the lower tier of the growth foci continuum. The 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 centres would be expected to play the roles of retail and marketing centre as well as to become the location of whatever agro-industries might develop as a result of increased production" (Choguill C.L., 1976, An assessment of Growth Centre Policy as a method of achieving development in Bangladesh, the Local Government Quarterly, Vol. 5, No.1 & 2, P.5).

The requirement of a propulsive firm in the agriculturally related growth centre should not be a single firm but "a group of independent operator (although possibly linked by co-operatives) with modest output level, as well as modest demand for productive factors" (Choguill C.L., 1976, An assessment of growth centre policy as a method of achieving development in Bangladesh. The Local Government Quarterly, Vol. 5, No. 1&2, P.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 this 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 increase in agricultural output should precede integrated planning of growth centres.

1.4 Scope of the present Study

The purpose of the present study is to develop a methodology for Upazila level physical planning that could be used in bringing about integrated development of Sonargaon Upazila. This physical planning approach followed at Upazila level including union level plans or micro-area plans within it could be practised earlier for the development of the Upazila.

Further more, under the Upazila development plan, different local or special plans may be included. For example - village or locality level plan, service basis plans such as plans for an area of influence of a particular rural market or service centre (may be rural hat/bazars, road side shops etc.) and so on. This may be necessitated due to the variation of physical conditions within the Upazila.

To solve the overall problem of development at Upazila level, there is need for a systematic approach by the policy makers and planners. Such physical planning approach should work beyond political compulsion and any state problems and should be useful for short-run and long-run solution. This may provide a basic framework to operate on a fairly long-term basis gradually leading to structural changes in the Upazila economy. Thus the present study has a wide scope to look into the development problems and potentials of Sonargaon Upazila viewed under the concept of physical planning approach.

CHAPTER - 2

- 2. OBJECTIVES AND METHODOLOGY
- 2.1 Objectives
- 2.2 Methodology
 - 2.2.1 Selection of the study area
 - 2.2.2 Data collection
 - 2.2.3 Household Questionnaire
 - 2.2.4 Questionnaire on general information of Upazila
 - 2.2.5 Literature survey
 - 2.2.6 Data analysis

2. OBJECTIVES AND METHODOLOGY

The objectives and methodology of the present research have been followed on the basis of the definition and conceptualization of the problems of the study. The objectives have been set in the light of the discussion in chapter one and the methodology has been followed to fulfil the objectives of the study.

2.1 Objectives

The objectives of the study broadly focuses on a rational physical planning approach for the development of Sonargaon Upazila. In doing so, the study tries to identify the problems and potentials for development and recommends some development guidelines. Specifically, the objectives are as follows:-

- i) Analysis of existing physical and socio-economic conditions of Sonargaon Upazila.
- ii) Identification of hierarchy of settlements and their zone of influence in terms of population and services available.
- iii) Analysis of the existing pattern of physical transportation and communication linkage among the service centres e.g. rural markets or growth centres.
- iv) Recommendations for future development.

2.2 Methodology

A generalized methodology has been followed in the study. The specific methodologies which have been followed are stated below.

2.2.1 Selection of the Study Area

To choose the study area, limitation of time and resources has been considered. For this the Upazila Sonargaon has been chosen deliberately considering the scope of easy communication to the Upazila facilitating the collection of data and information for the study. Map no. 1 shows the location of study area.

2.2.2 Data Collection

Data has been collected through field survey with the help of Questionnaire, on the basis of selected samples. A 5% sample of the total household in the Upazila has been considered for questionnaire survey. Again, this 5% samples consisting of 10% villages i.e. 1515 households have been distributed in 32 villages of 4 unions.

In the first instance, a comprehensive inventory of resources of the Sonargaon Upazila was made. Records relevant to the present study maintained by the various technical and administrative departments of the State Government and unions were collected and used.

Maps prepared by the Survey of Bangladesh and the Geological Survey of Bangladesh were also utilised for analysing the physical situation of the Sonargaon Upazila. Interviews with Technical Officers of these agencies were also solicited for explanations and analysis of data.

The main areas of collection of data and informations were on the behaviour of the people of Upazila regarding space preferences, economic, social activities etc. A questionnaire used for this purpose was divided into two parts:-

- Part A - Household Questionnaire
- Part B - Questionnaire on general informations of Upazila

The respondents for the household questionnaire survey were randomly selected. For this, a list of village-wise household leaders was prepared and with the help of random number table the sample households were selected. Upazila Officials, village leaders such as the Chairman, school teachers and other prominent persons of the unions and villages were personally interviewed to understand the general condition of the Upazila for physical planning approach for development.

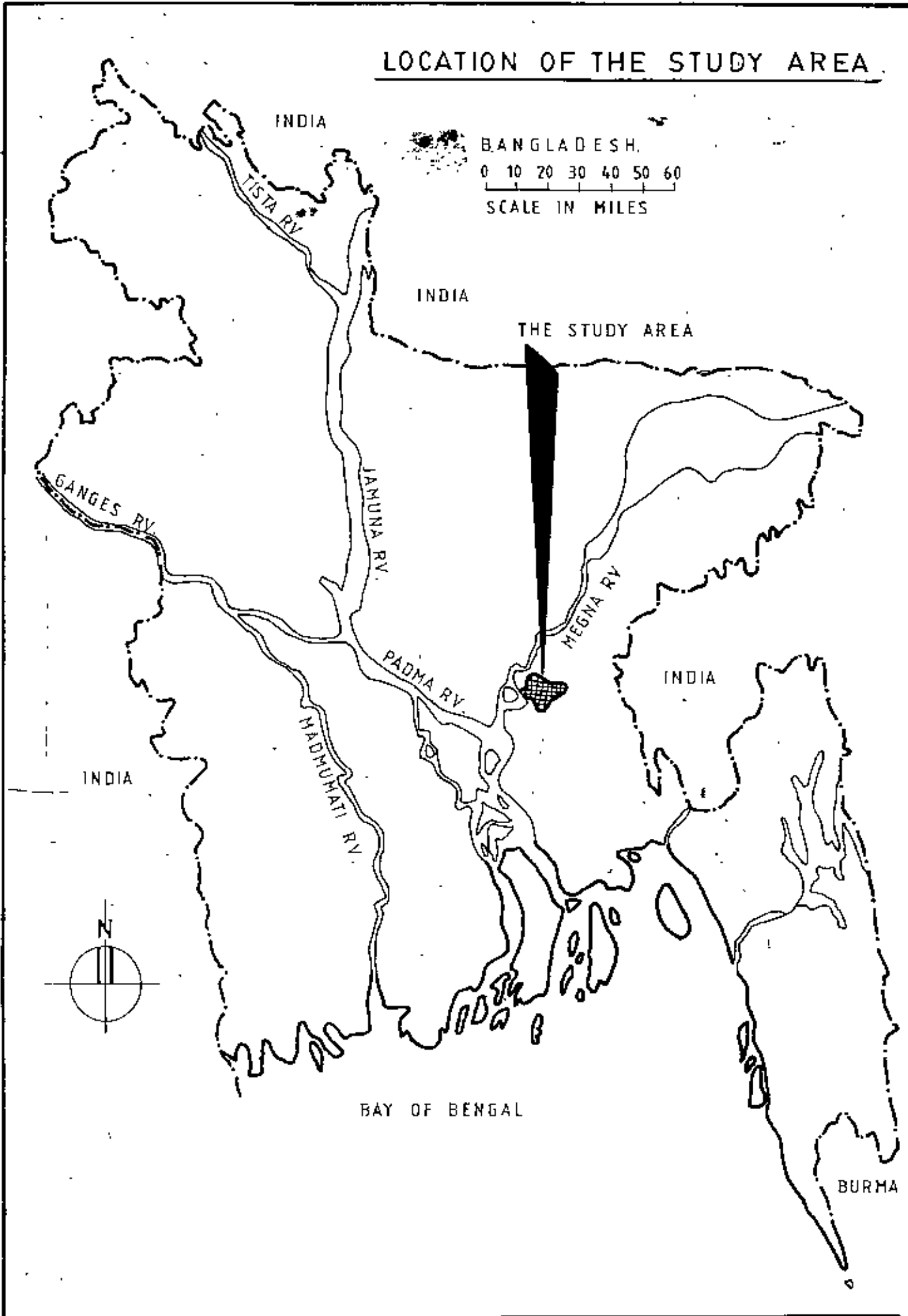
2.2.3 Household Questionnaire

The first level of the questionnaire survey was the household questionnaire survey. To maintain an uniformity between developed and undeveloped area, service facilities were considered from upazila centre to the union level. The household questionnaire was designed with a view to collecting information from sample households in the selected unions. Questions on different aspects of socio-economic condition and service facilities have been included. Only the Male Head of a family was interviewed at this stage.

2.2.4 Questionnaire on General Informations of Upazila

Second level of questionnaire survey was designed to collect informations on the development activities of the Sonargaon Upazila. Data were collected for 10 categories of functions. There are--distributive services, markets, finance, extention services, food processing industries, education, health, transportation and communication and specialized services. This helps to identify a hierarchy of Central Places and their related communities.

Fig. 3



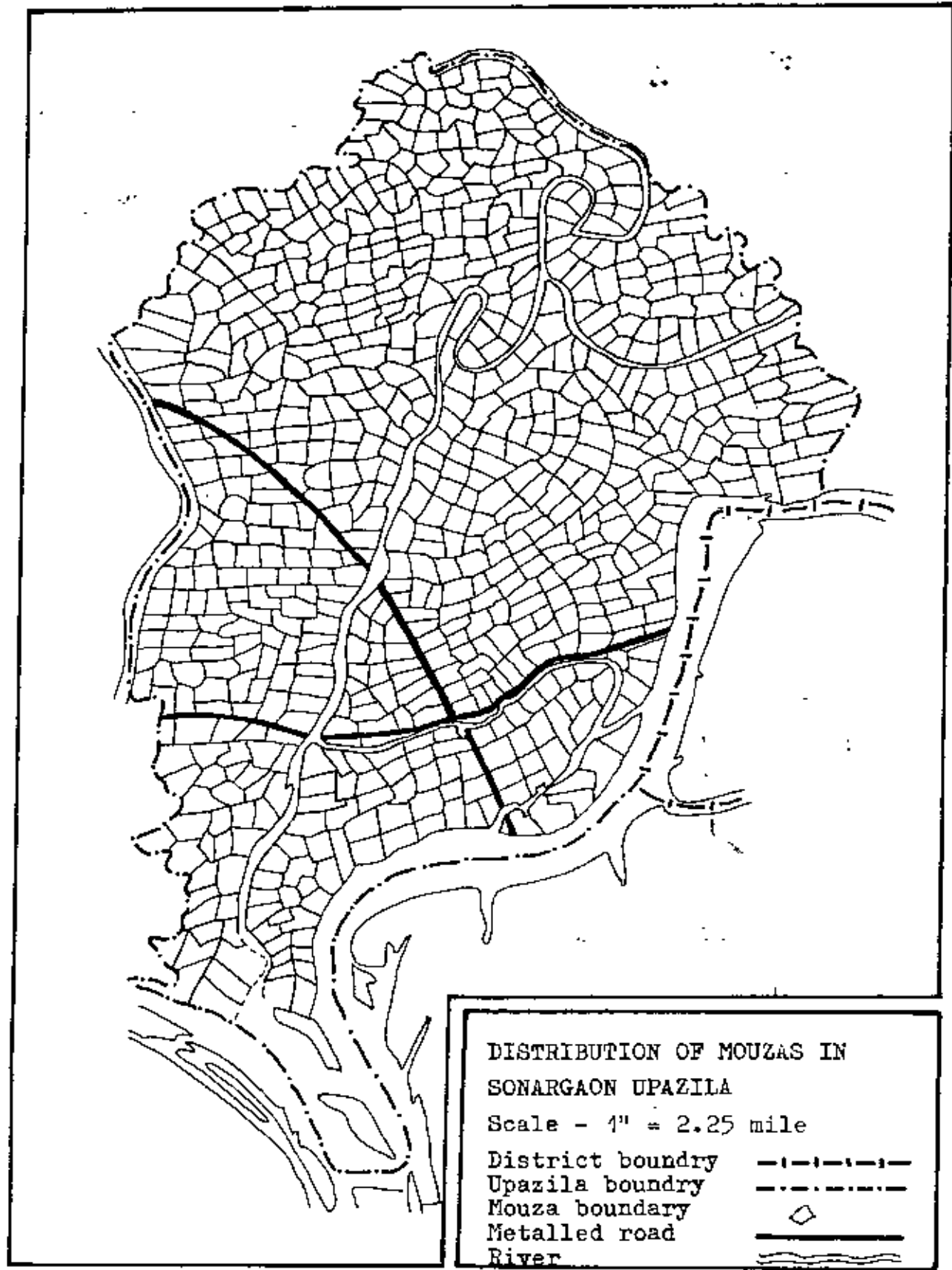
2.2.5 Literature Survey

A survey on literature related to the problem has been taken during different phase of the study. This has been undertaken for the proper orientation of the problem and build up the theoretical concept of the study. Books, periodicals, journals, thesis etc. have been used for the purpose.

2.2.6 Data Analysis

The study thus has been followed both qualitative and quantitative approaches in the analysis. Data collected from field survey and secondary sources has been presented in tabular forms. The data and information have also been presented with the help of different cartographic methods. Maps and charts have been usually used for the purpose.

Fig. 4



CHAPTER - 3

- 3. THE STUDY AREA SONARGAON: Analysis of physical and socio-economic conditions
 - 3.1 Historical background
 - 3.2. Sonargaon and it's status in the region
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3. THE STUDY AREA SONARGAON: Analysis of physical and socio-economic conditions

Sonargaon, historically known as "Swarnagram" literally meaning "Golden Village". In common parlance it is also called "Gold Town" which proves that the terminology "Swarnagram" must have indicated it's ancient Pre-Muslim antiquity.

There are only a few fragments of hindu works now left to attest the fact which indicates that it must have been the Capital of Hindu pryncipality anterior to invasion of Muhammad Bin Bakhtiyar Khalji. In the words of Rennell, "Sunargong" or "Sunnergaum" was a large city and the provincial capital of the eastern division of Bengal before Dhaka was built but it is dwindled to a village".

3.1 Historical Background

As stated earlier, Sonargaon traces it's origin from Pre-Muslim period. It is obvious that a flourishing Hindu Dynasty must have ruled the entire region in the early part of the 13th Century A.D.

However, the earliest authentic record of the city can be traced in the Tarikh-i-Firuz Shahi by Zia Uddin Barani, who mentioned about the friendly relation between Rai Danuj, a king of Deva Dynasty of Sonargaon and Sultan Ghiyasuddin Balban, the mighty shave ruler of Delhi. During the reign of Balban, the Governor of Bengal Mughisuddin Tughriq unfurled the standard of revolt and retreating beyond S-nargaon. Balban entered into an agreement with Rai Danuj to the effect that the Hindu King would extended all

possible help to trace the rebel chief Tughril. Thus it is crystal clear that in the year 1281 A.D. Sultan Balban put the rebels to the gallows and brought the entire region of Sonargaon within the fold of his suzerainty. Sonargaon today is devoid of any Pre-Muslim antiquities, although it was once a famous seat of Hindu Kingdom and culture.

The most reliable and authentic history of Sonargaon began in the later part of the 13th century A.D. and Balban himself brought the whole region under his imperial control by crushing the rebel governor Tughril. After his death, the house of Balban ruled Bengal independently from 1286 A.D. to 1228 A.D. Bughra Khan son of Balban and his successors ruled over Bengal with clearcut divisions, Lakhnauti, Satgaon, Sonargaon and Chatigaon(Chittagong). From this time Sonargaon came into prominence not only as a seat of Government but also a rendezvous of saints and missionaries. It is therefore evident that during the rule of the House of Balban and more particularly Nasiruddin Bughra Khan, Sonargaon came to be recognized as the most important Governorship.

Barani states that on the eve of Sultan Ghiyas Uddin's invasion in 1324 A.D. Bengal was divided in the three political units such as Lakhnauti (Gaud), Sonargaon and Satgaon.

In 1324 A.D. Bahadur Shah was defeated and captured by the imperial army and taken to Delhi from Sonargaon. Bengal thus again became province of Delhi with Nasiruddin Ibrahim and Bahram Khan in charge of the Governorship of Lakhnauti, Sonargaon and Satgaon regions.

For about ten years there was no political disturbance in this province. But after the death of Bahram Khan in 1338 A.D. at Sonargaon, Bhuluwa tried to conquer Sonargaon.

Sultan Fakhruddin Mubarak Shah ruled over Sonargaon until 1330 A.D. as attested by his innumerable coins issued from Sonargaon mint. Bengal at that time was parcelled out to three independent chieftains. The Western part of Lakhnauti under Haje Ilyas, who was forced to be contended with Southern Bengal or Satgaon.

During the Ilyas Shahi rule (1353 A.D.) Sonargaon more or less was dwarfed in importance to Gaud and Hajrat Pandua, the twin metropolitan cities of Bengal. It was no more than a seat of principality or Governorship. But we learn from history that Sultan Sekander Shah, builder of the greatest mosque of Bengal, the Adina Masjid, banished a noted saint by the name of Alaul Hug from Hazrat Pandua to Sonargaon as his tremendous popularity roused the Sultan's suspicion.

The Golden Age of the Muslim History of Bengal dawned with the occasion of Sultan Hossain Shah in 1493 A.D. It was an age of peace and prosperity which witnessed development of Art and Culture. In the field of architecture, the period was the most remarkable as attested by the innumerable inscriptions found in the Sonargaon region alone. Of these, the most significant are : the epigraphy, dated 1505 A.D., relating to the erection of a tomb, identified as that of Haji Baba Salih in Bonder area, beyond Lakhya river, opposite to Narayanganj that of Khawja Khan who built a mosque in 1513 A.D. in Muazzampura area. That the tradition of mosque building gained further momentum during the reign of Sultan Nusrat Shah, son of Hussain Shah, is evident in some inscriptions such as the Sadipur record indicating the erection of mosque along with a drinking house by one Taqui-uddin in 1522-23 A.D. Another inscription dated 1519 A.D. relating to the erection of Galdih mosque by one Mullah Hazaber Khan.

The independence of Bengal as a Sovereign State of about two hundred years from 1338 A.D. to 1538 A.D., came to an end with the occupation of its capital Gaud by Suri Ruler of Delhi, Sher Shah. The Afgan suzerainty over Bengal, however, brought social and economic changes in remote Bengal. The most remarkable work undertaken by Sher Shah was to build a wide and very long road, popularly known as Sarak-i-Azam or Grand Trunk Road which stretches for about 1500 miles from Sonargaon to the Industry.

The Mughal conquest of Bengal was attained by Emperor Akbar during whose august reign Sonargaon was known as "Hazrat Jala] Sonargaon".

The District of Dhaka with particular area around the dwindled villages of Sonargaon belonged to Bhati and Ishah Khan had entrenched himself at Sonargaon against Mughal invasion.

Ishah Khan died in 1599 A.D. and was succeeded by his eldest son: Musa Khan in the Zamindari of Sonargaon. During his rule Sonargaon developed into a flourishing centre of trade and a hub of community life. It was not only fortified but due to its situation at the confluence of the Meghna, Lakhya and Brahmaputra, it served as an important river port.

The Golden city of many decades, the period of many princes, lost all charms under the dispensation of the Mughals, who made Dhaka or Jahangir Nagar as the Capital of the Subah of Bengal. In other words the pomp and grandeur of the historic city of Sonargaon - popularly of mosque and Muslim fame eclipsed by Dhaka, and dwindled into an insignificant and desolate city. No trace of the building of Ishah Khan and his successors could

be traced in Sonargaon which is more than a mere vestige of its former magnificence.

3.2 Sonargaon and its status in the region

Sonargaon is situated about 14 miles to the South-East of Dhaka City and about 3 miles west of Narayanganj. It has an area of 66sq. miles and is located at the confluence of three big rivers - the Meghna, the Lakhya and the Brahmaputra. During the rainy season one could go by boat or launch down the river Lakhya, the Meghna and up the small rivulet the Brahmaputra. One can also go to Sonargaon by a motorable road which flanks out from the Dhaka-Chittagong Highway at Mograpara crossing.

The celebrated city Sonargaon was once not only a great Metropolitan Capital but also owing to its favourable geographical location, a thriving centre of trade and commerce as well as the seat of learning art and culture. Its situation on the bank of the mighty river Meghna gave it an added opportunity for its development as a flourishing inland port-town in Medieval period connecting Bengal by sea with Middle and Far Eastern countries. Its strategic location enabled foreign merchants to trade with the local people and also paved the way for the visit of global trotter Ibn Batuta as well as the Elizabethan envoy Ralph Fitch to Sonargaon. Lastly, Sonargaon was the most celebrated centre for the manufacture of finest woven cotton cloth called "Muslin". Now, Sonargaon is an upazila under the district Narayanganj.

3.2.1 The National - Regional Context

Sonargaon with its historical background is a well known place to the people of Bangladesh. It is a newly formed Upazila under the district of Narayanganj and is now being given consideration to develop the Upazila as a spot of tourists attraction. Again, being located near the capital city of Dhaka and the large industrial area Narayanganj, it has an importance in the region as a catchment Upazila of the largest metropolitan area of the country.

3.2.2 The Sub-Regional Context

In the sub-regional context, Sonargaon is substantially important to render services to the area within the Upazila and the surrounding areas and places depending directly or indirectly on the Upazila town. Besides this, as a place of historical interest, Sonargaon Upazila has an especial importance to the sub-region to bring sociological and cultural changes among the rural communities of the area. In this context, it may have a leading role for developing the life pattern of the rural people of the sub-region.

3.3.3 The Physical Environment

The physical environment of the Upazila centre is going to be more deteriorated day after day, with poor quality ground water supplies without sewerage or drainage facilities within the Upazila township, inadequate transport and other service facilities in the Upazila region.

The river Lakhya, Brahmaputra and Meghna limit the boundaries of built up area. The commercial activities around eastern edge along the river Meghna and concentration of residential area is in the central part, also consist of widely distributed settlements in the out-skirts.

3.3.1 The Physiographic Characteristics

The shape of the Sonargaon Upazila is conical with the river Meghna, Lakhya and Dhaleswari forming its southern, eastern and western boundaries respectively. The lowest contour of these rivers is 100 ft. The area is almost level plane, gently sloping in the south and south-eastern direction. The remaining area has slopes either west or south-west direction. There are also a large number of water bodies and natural lakes which are the predominant feature of the topography of the area (fig. 5). Some of them may be developed as recreational areas. The most significant feature of hydrology is the seasonal flooding which affects approximately 65 percent of the total area. A portion of the Upazila (fig. 6) may reasonably be excluded from land development since it shows a history of serious flooding. The area is traversed by a number of natural streams and the adjoining areas strongly slope towards them.

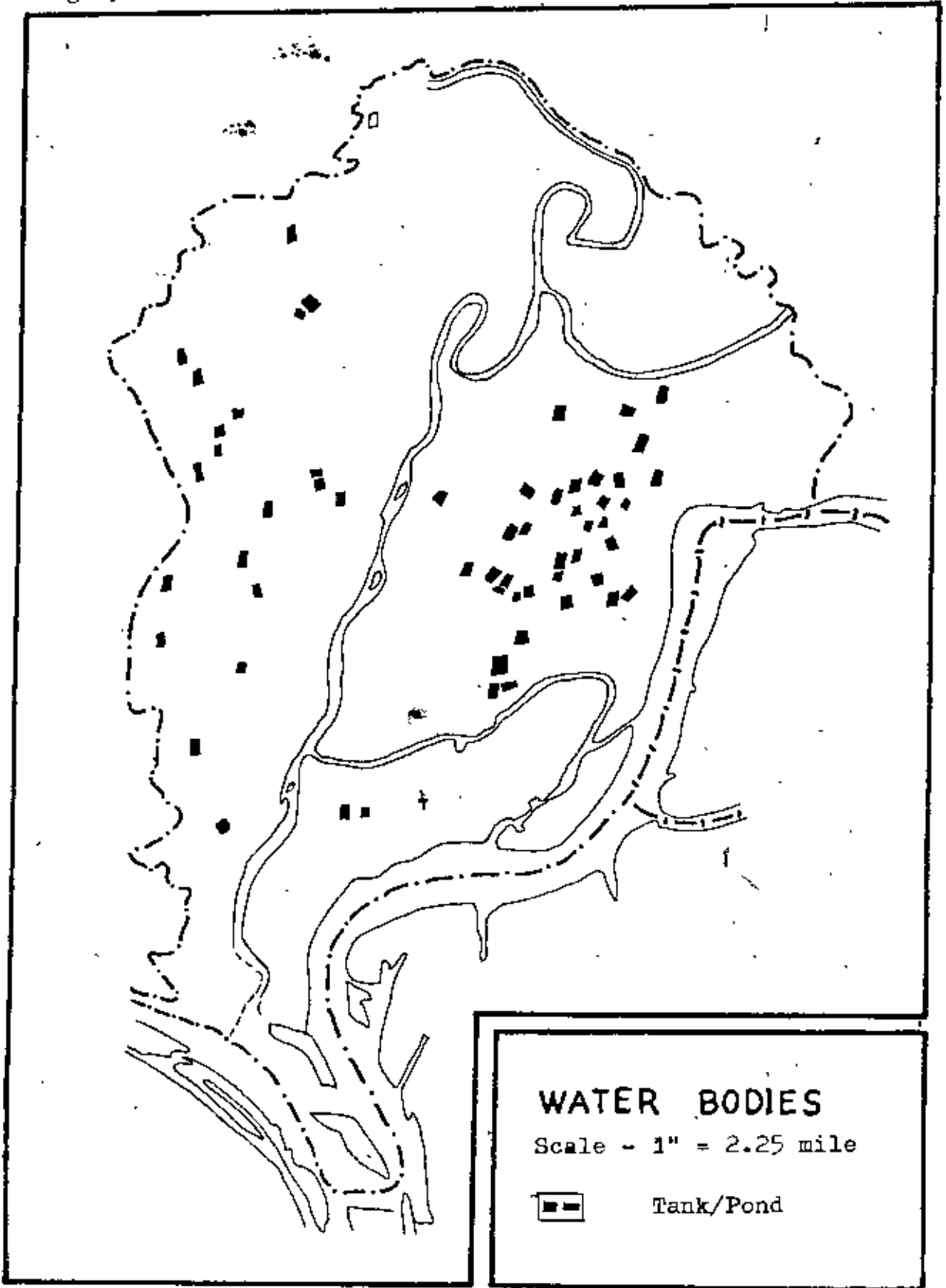
Broadly speaking, the Upazila may be divided into two physiographic units :

- i) The low areas of the south and eastern part
- ii) Gently sloped areas of the Central and northern part.

i) The low areas of the south and eastern part

Land bordering the rivers Meghna and Lakhya may be defined as the low areas. These areas are valuable for agricultural use, producing mostly rice and jute. Figure-7 indicates cultivable lands in the study area and the figure-8 shows the area producing different crops. About 45 percent of the land is occupied by low lying agricultural fields.

Fig. 5



ii) Gently sloped area of the central and northern part

This includes areas in the central and northern part which are between 50 ft. to 80 ft. This is the most important zone within the Upazila and commands 30 percent of the total area. Many historical structures and architectural interest are available in this built up area.

Fig. 6

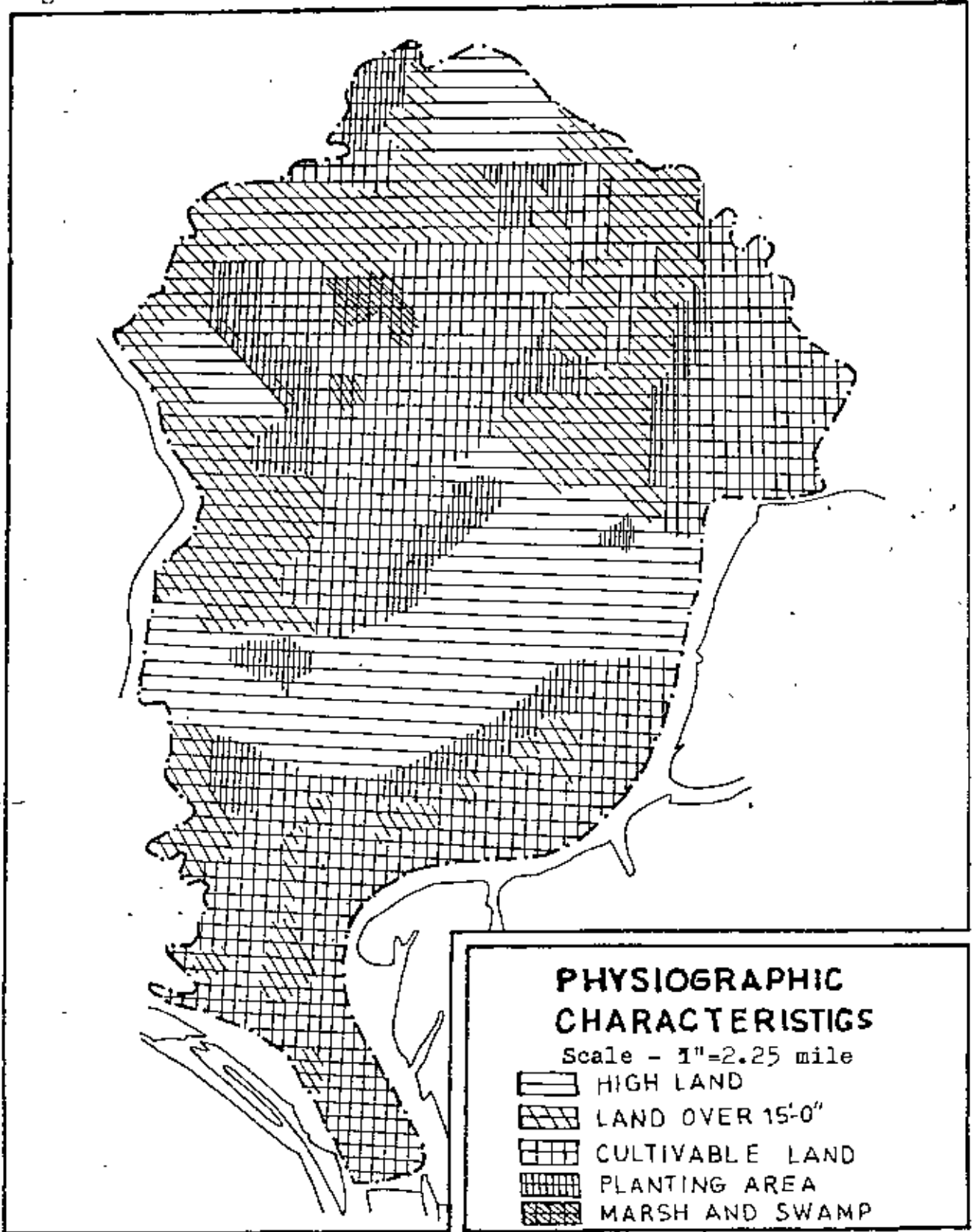


Fig. 7

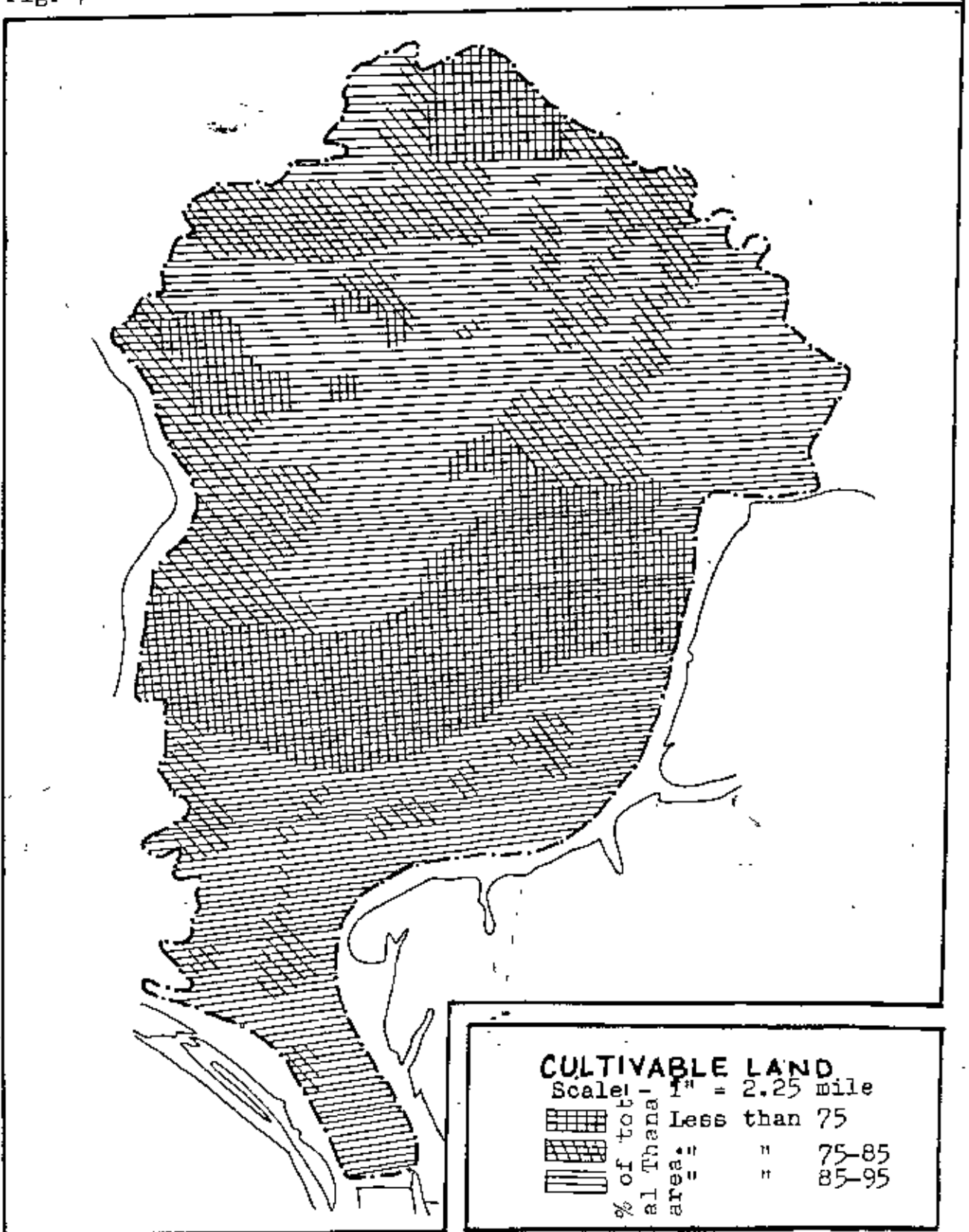
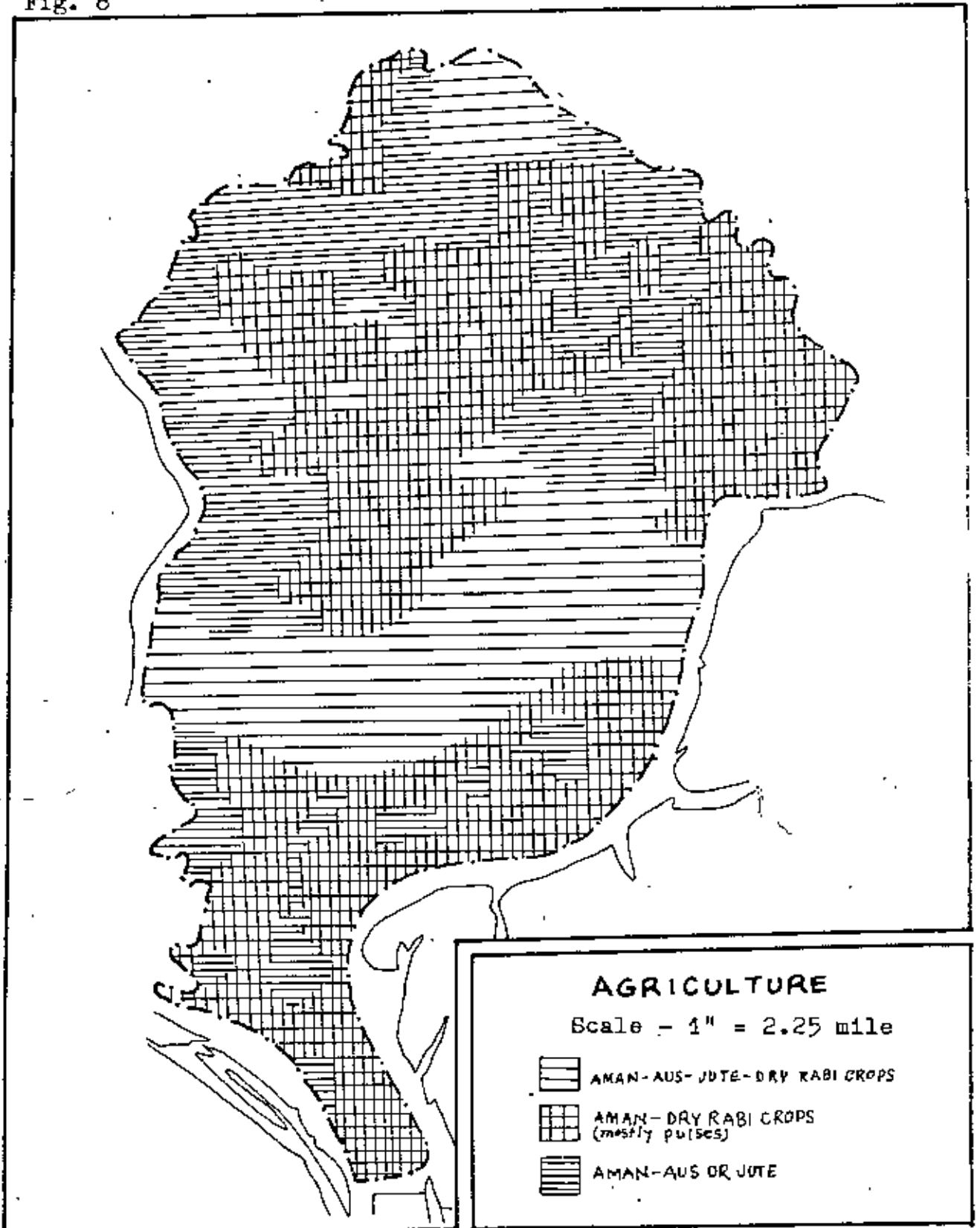


Fig. 8



There are also sufficient land in the Upazila for the development of private yards or gardens, play lots, play fields, parks and other possible recreational services.

3.4 The general landuse pattern

The landuse pattern (Table: 1) of the Upazila demonstrates that the highest percentage (71.35) of land is under agriculture, followed by rural residential and related uses (13.32), water bodies (8.61), fallow land (5.71), roads/railway line (0.62) and so on. This indicates that non-residential and non-agricultural activities of the Upazila share only a small percentage of landuses.

Table - 1
General Landuse Pattern

<u>Types of Landuses</u>	<u>Area in acres</u>	<u>Percentage of the total area</u>
Rural residential and related uses	5623	13.32
Agriculture land	30141	71.35
Forest trees	11	.02
Hat/Bazars	19	.05
Upazila township	17	.04
Education	63	.15
Water bodies	3636	8.61
Roads/railway line	262	.62
Industries	30	.07
Fallow	2413	5.71
Recreational	25	.06
<u>Total</u>	<u>42240</u>	<u>100</u>

Source: Field Survey, 1984.

An interesting feature to note that a substantial quantity of land is remaining as fallow in the Upazila. This fallow land may in future be valuable used for agriculture. The general landuse pattern of the Upazila is shown in the figure-9.

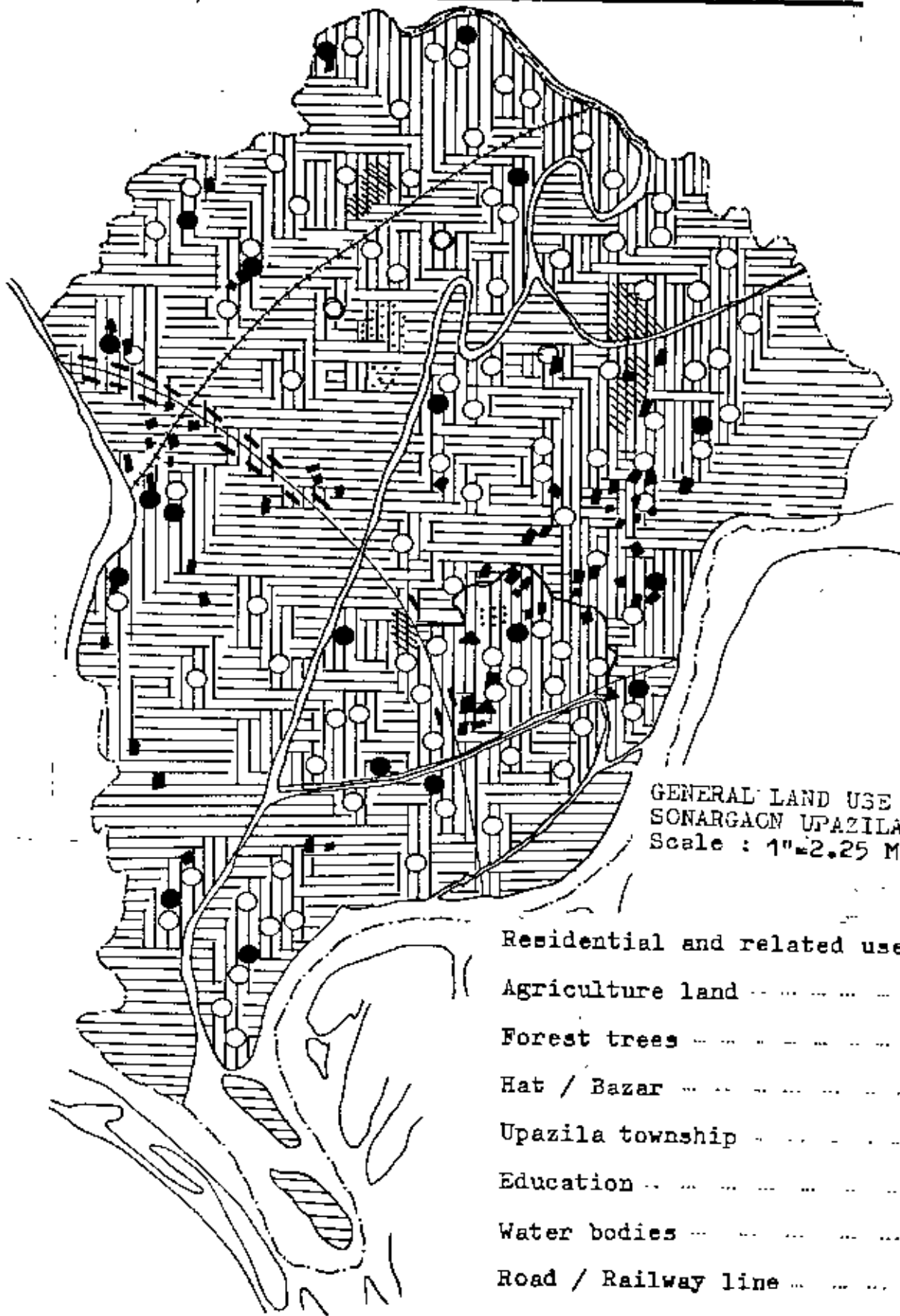
3.5 The Agricultural Potentiality and Problems

It is apparent from the physiographic characteristics and the general landuse pattern that Sonargaon is a typical upazila with high agricultural importance. The upazila has at present 71.35 percent of the land under the agricultural practice. The high percentage of land under agriculture is an indication towards the potentiality of agricultural economic sector. But there are also problems in the utilization of this potentiality in the development process of the Upazila. These are discussed in the subsequent stages of the study.

3.5.1 The Present Agricultural Landuse Pattern

Land utilization survey in the study are reveals that out of total 42240 acres, 9156 acres is used for non-agricultural activities, 11 acres foresttrees crops and graveyards, 519 acres uncultivable land, 2413 acres fallow land, 19601 acres constitute single crop land, 10540 acres are cultivated more than once, 42335 acres are total cropped area, 30141 acres are net cropped area and 2160 acres are flood affected (Table - 2).

Fig. 9



GENERAL LAND USE PATTERN
SONARGACHH UPAZILA
Scale : 1"=2.25 Mile



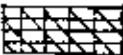


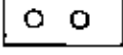

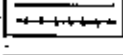
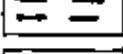
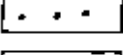

- Residential and related use 
- Agriculture land 
- Forest trees 
- Hat / Bazar 
- Upazila township 
- Education 
- Water bodies 
- Road / Railway line 
- Industry 
- Fallow land 
- Recreational areas 

Table - 2

Agricultural Land Utilization

(Area in Acres)

<u>Types</u>	<u>1978-79</u>	<u>1979-80</u>	<u>1982-83</u>
Current Fallow	3566	2708	2413
Single Cropped	19970	9907	960
Double Cropped	8909	8640	8886
Tripple Cropped	1907	1589	1654
Net Cropped	30786	30136	30141
Total Cropped	43509	41854	42335
Intensity of Cropping	141.3	39.22	40.46
Area Flooded	3019	2894	2160

Source: Statistical Year Book 1983, Published by
Statistical Bureau, Dhaka.

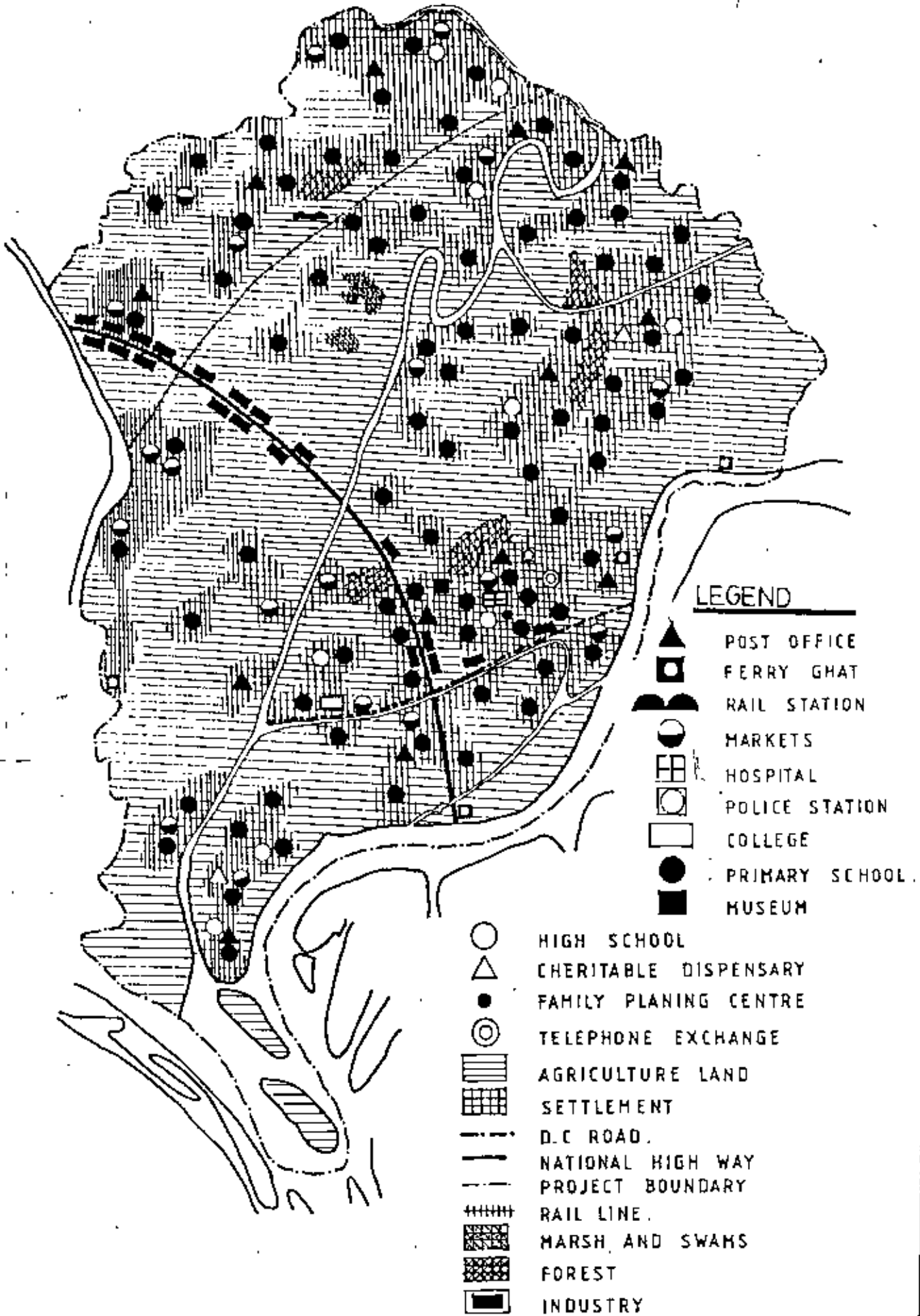
The Upazila is composed of an incompatible landuses such as Upazila centre with residences, shops and bazars, health and educational facilities, village settlements, street front stores with tenaments, commercial uses, small workshops, factories, small industrial establishments, vacant lots filled with trees, agricultural lands and water bodies (Fig-10). All of these activities are indiscriminately and haphazardly located. As a result, provision of utility services has become inefficient and a healthy growth of the community has been obstructed and this emphasizes the need for their reorganization with appropriate physical planning approach.

Fig. 10

EXISTING LAND USE PATTERN

SONARGAON UPAZILA.

SCALE: 1"=2.25 Mile



3.5.2 Irrigation Facilities

Most of the cultivable lands in the Sonargaon Upazila are low lying area which remain under water from the monsoon season till the end of the Autumn. Therefore, the farmers can produce only one crop during the period between November and April with the help of surface and ground water by using power pump, tubewell and other indigenous irrigation devices (Karim R. 1985, Low coverage of irrigation by pumps in Bangladesh: the problems and prospects for improvement, P.28).

The number of pumps are being uses at present are not adequate to meet up the demand for irrigation facilities. The use of existing water bodies for the purpose of irrigation with the help of low cost methods may substntially increase the irrigated area in dry season. The use of modern technology will further enhance the irrigation and increase the agricultural productivity and cropping intensity.

Table - 3

Irrigation by Means in Upazila

(Area in Acres)

<u>Types</u>	<u>1978-79</u>	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>
Power pump	5900	5940	4594	4513
Tubewell	50	50	52	78
Doons	250	258	170	159
Swing basket	240	244	254	266
Canals	600	622	650	687
Others	95	99	103	108
Total	7135	7213	5923	5811

Source: Statistical Year Book, 1983.

Table-3 demonstrates on the existing irrigation facilities of the Upazila. It is also evident that only 22.78% of the agricultural land is now under irrigation (Karim R, 1985, low coverage of irrigation by pumps in Bangladesh: the problems and prospects for improvement, p.32).

3.5.3 The Flood Problems and other Constraints

The monsoon flood is a usual phenomenon on Sonargaon Upazila. The standing crops of large quality of land go under water during monsoon in each year. Along with it, the facility for intensive agricultural practices in dry seasons are also inadequate. These dual phenomenon in agriculture do not advance the level of agricultural economy substantially. Thus to overcome the problems or minimize the bottlenecks, drainage in monsoon season needs to be improved and irrigation facilities in dry part of the year required to be increased. In monsoon season, special species of deep water crop may be cultivated in the low - lying agricultural lands.

3.5.4 The Current Agricultural Development Plan of the Upazila

At present the Upazila agricultural development plan is prepared within the scope of broad guidelines given in the upazila Manual. There is also a definite percentage allocation for agricultural development. Under the existing practice, the financial allocation for agricultural sector is not the highest. Therefore, there is less scope to develop the agriculture substantially within a shorter foresable future. But still there is an indication and opportunity to mould the situation in to a favourable position and that is possible through a rationalised plan for other sectors of Annual Development Plan of the Upazila. A well-coordinated development approach may extend the physical and social infrastructure facilities towards the improvement of agricultural economy as well.

Therefore, the future of agricultural development in the Upazila will depend on a rational planning approach by the Upazila Parishad of Sonargaon and the national policy for Upazila level development plan and special programme as well.

3.6 Socio-economic Situation

Sonargaon as a potential centre of trade, wholesale business and Upazila administrative activities. There is no high potential for industrial development in the region, but historically the Upazila was famous for 'Muslin'. Therefore, still a large number of handloom industries are located in the Upazila and about 4786 peoples (6%) are engaged in these industries. Most of the handloom industries are running on private investment which are being deteriorated due to lack of financial support. The products of these handloom industries are mainly Lungi and Gamcha which are supplied mainly to Narayanganj, Narshingdi and Baburhat. The demand for the output is quite satisfactory. Raw materials are mostly collected from Narayanganj. These centres are linked by roads and water ways with the Sonargargaon.

3.6.1 Population Distribution

The northern part of the Upazila is more densely populated than the southern low lying areas. The distribution of population is less demed and scattered in the souther part. As per population census 1981, highest population concentration was found in Sambhupura union (5173 persons) while it was lowest in Jampur union (2181 persons). Figure-11 indicates the population distribution of Sonargaon Upazila. The following table shows the population distribution and density of population in Sonargaon Upazila.

Table - 4

Population Distribution in Sonargaon Upazila 1981

<u>Unions</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Area in (Acres)</u>	<u>Density (per sq. mile)</u>
Aminpur	7815	7280	15095	1984	4862
Baider bazar	7979	7536	15515	2153	4612
Baradi	10261	9494	19755	2897	4364
Jampur	12837	2629	15466	7473	2181
Katchpur	9564	8779	18343	3097	3811
Mograpara	8074	7334	15408	2898	3403
Noyagaon	7875	7631	15506	3092	3210
Pirijpur	10588	9709	20297	3745	3469
Shadipur	9040	8687	17727	4061	2794
Sambhupura	10239	9692	19931	2466	5173
Sanmondi	14106	13081	27187	4824	3607
Total	108478	101852	210330	38690	3479 (per sq. mile)

Source: Census Report 1981, published by Bangladesh
Statistical Bureau, Dhaka

The existing net densities vary from 2181 to 5173 persons per sq. mile for different unions. Average population density in the Upazila is 3479 persons per sq. mile (Table-4) and the average size of households is 5.9 persons.

The total number of households is 30328 in the Upazila. As regards age-structure, the young group forms the majority of the population (Table-5).

Table - 5
Age Group of the Population

<u>Age</u>	<u>Group</u>	<u>1961</u>	<u>1974</u>	<u>1981</u>
0-14	Child age	30932	40979	54711
15-34	Younger age	68666	83691	99708
35-54	Middle age	32531	41050	48974
55-60 & over	Old age	2123	3038	4546
<u>Total</u>		<u>134252</u>	<u>168698</u>	<u>207939</u>

Source: Statistic Officer, Sonargaon Upazila.

This indicates the manpower potential of the Upazila for future development. The sex ratio of the study area has been illustrated in the figure No. 13. As per census 1981, about 16% of the total population is literate. Of this total literates 52% are male and 48% are female.

Fig. 11

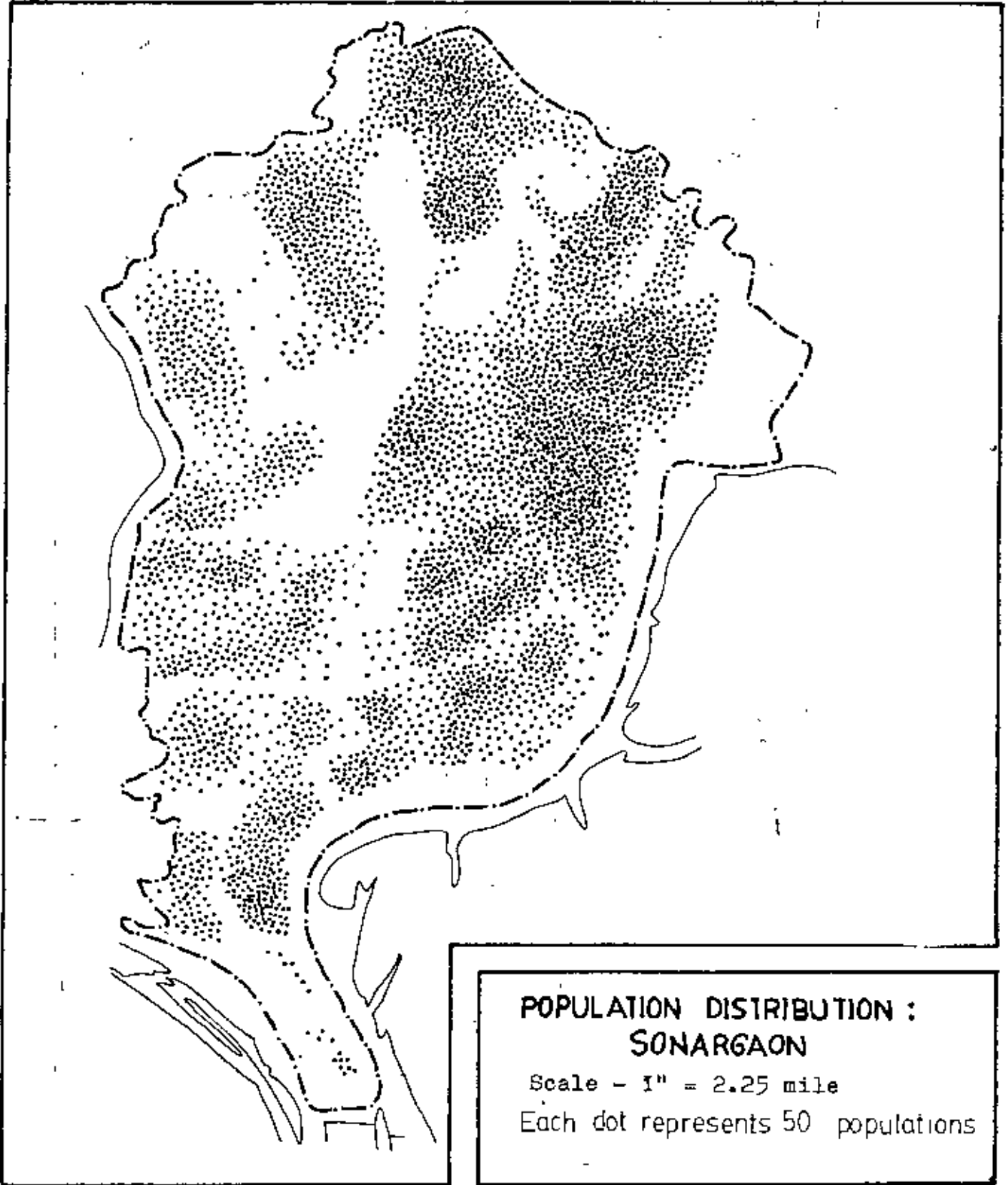


Fig. 12

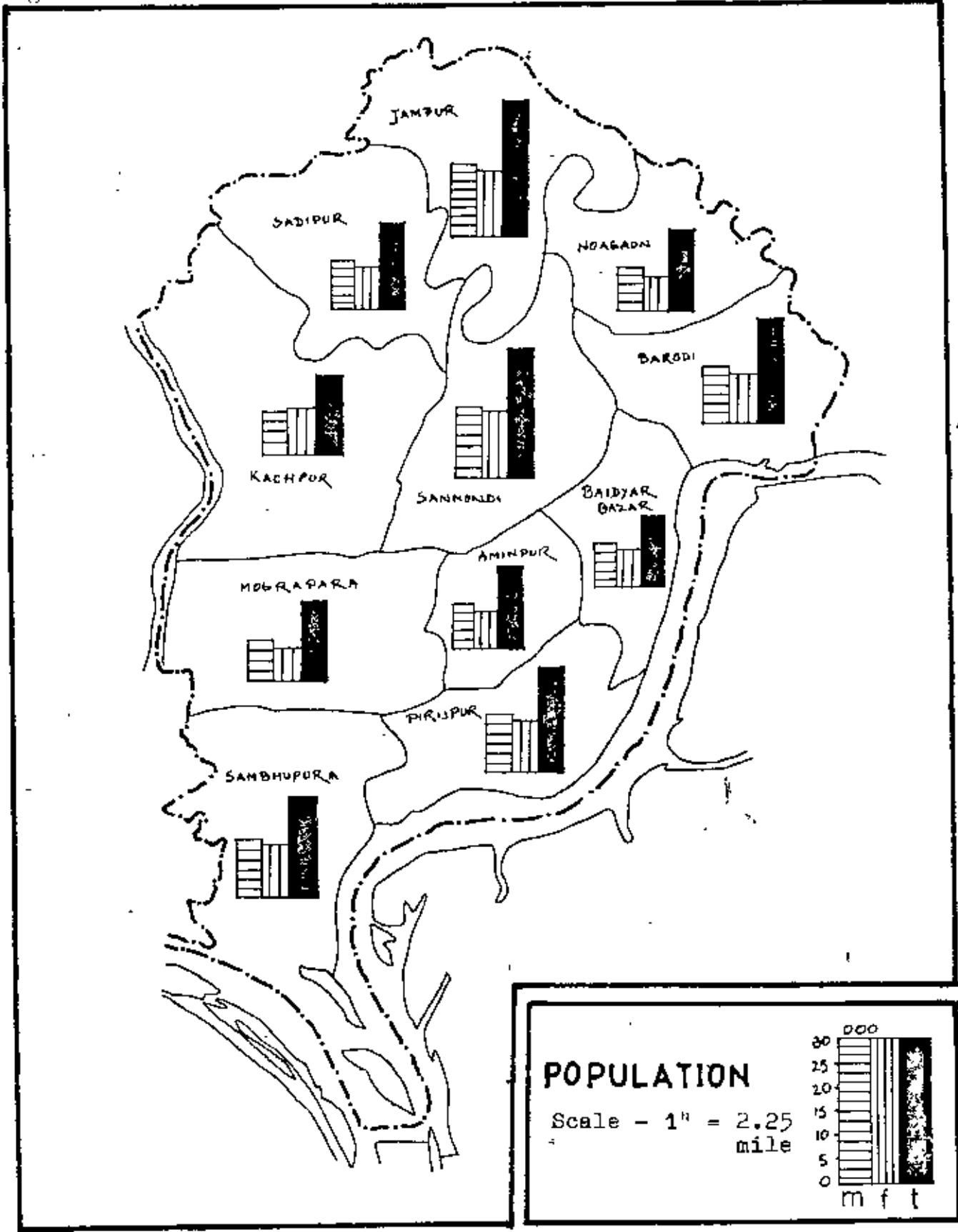
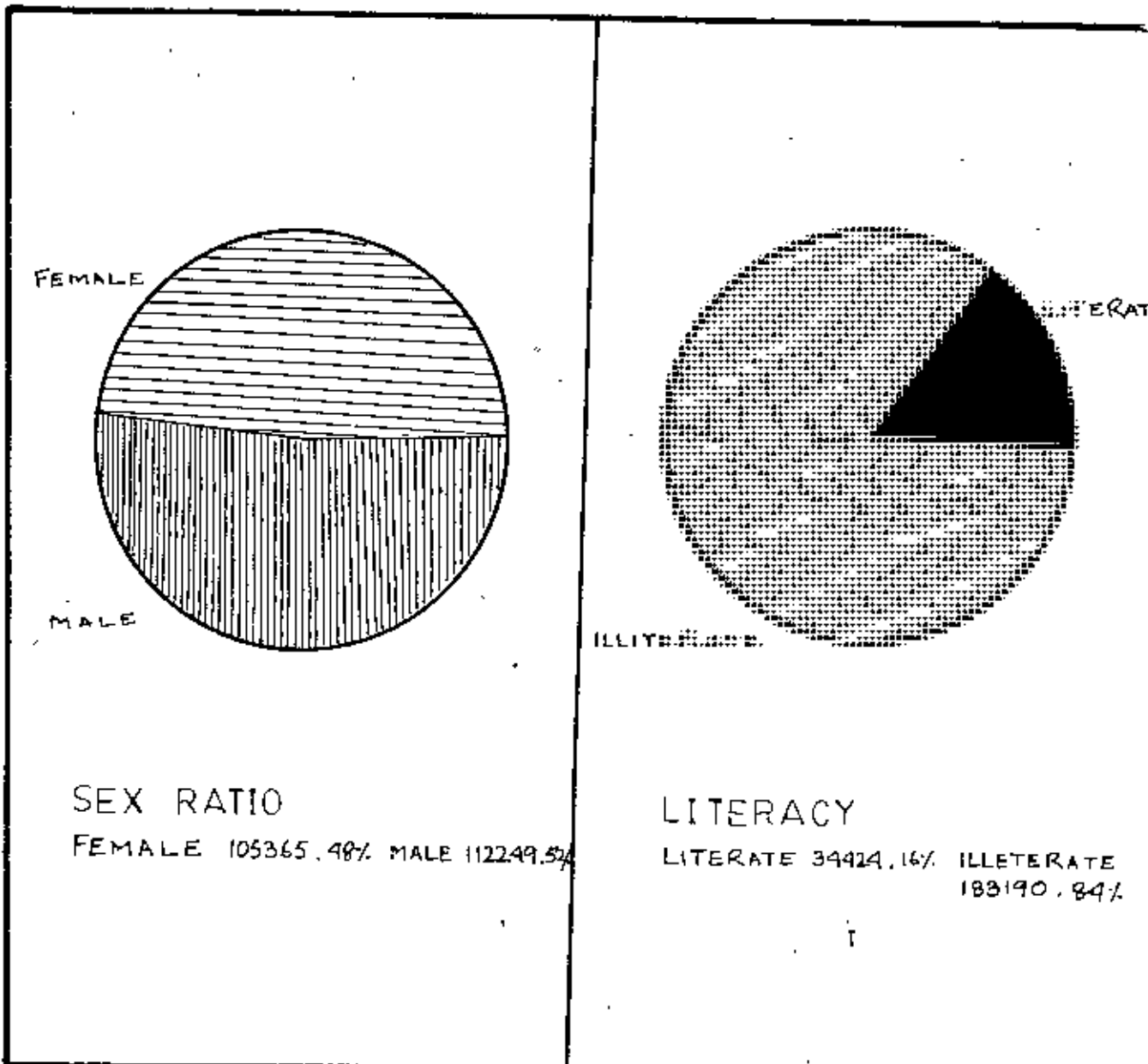


Fig. 13



DEMOGRAPHIC CHARECTERSTICS

3.6.2 Migration aspects of Population

Sonargaon Upazila has distributed in 353 mouzas (District Statistics, 1983) and 35342 households. To study the aspects of migration, one percent sample totalling a number of 360 households were included in the survey.

Table - 6

Distribution of sample Households

<u>Unions</u>	<u>No. of sample mouzas</u>	<u>No. of sample households</u>
Baider bazar	10	100
Mograpara	12	120
Aminpur	8	80
Pirijpur	6	60
Total	36	360

No. of samples were uniformly distributed in unions and mouzas in terms of number of households. The samples were selected with the help of random member tables. The difficulties faced by the investigators in the survey is to identify the sample households. The migration data presented in the study is mainly based on field survey and analysis has been made on the basis of this field level collection of data.

In estimating the historical pattern of in-and out-migration as given in table - 7 and table - 8, statistical method was used. The samples were arranged through Union-wise distribution. Percentage of migrants in different periods were calculated in terms of total sample household population. Total number of migrants in a period was then estimated by multiplying the corresponding percentage with the 1981 Census population of the Union and the aggregating all unions.

Symbolically, Let $Un(n=1.....4)$ be the Unions,

Snk the number of sample households in Unions Un ,

$Mnkt$ the number of migrants in period t in sample Snk ,

Pnk surveyed population of sample households Snk and

Cn Census population of Union Un .

Then the number of migrants in period t is given by:

$$\frac{K Mnkt. Cn}{K Pnk}$$

It is found in the survey that 61 percent of the households have their origin outside of Sonargaon Upazila. On the other hand, about 14 percent households have some members who living away from Sonargaon. The out migrants who have left the Upazila permanently or living outside the Upazila for a considerable period have not been included in the survey.

Table - 7

Historical Pattern of Migration from 1945-85

	No. of sample individuals who migrated in successive five years period.	upto 1945	1946- 50	1951- 55	1956- 60	1961- 65	1966- 70	1971- 75	1976- 85
		58	95	33	41	60	75	80	191
IN-MIGRATION	Estimated total migration during successive five years periods.	3013	6105	1689	2682	2574	4796	3960	99578
	No. of sample individuals who migrated in successive five years period.	-	-	-	1	2	8	5	53
OUT-MIGRATION	Estimated total migration during successive five years period.	-	-	-	30	124	331	177	3005

Source: Sample survey, 1984.

Table - 8

Pattern of Migration during 1975-85

		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
	Individually migrated persons	19	6	12	12	21	36	11	12	25	27	14
In-	Family-wise migrated persons	1013	205	586	495	1261	1657	456	715	1116	1191	574
Migration	Individually migrated persons	1	2	2	3	1	5	-	8	10	7	8
Out-	Family-wise migrated persons	30	64	129	103	58	397	95	297	665	389	475
Migration												

Source: Field Survey, 1984.

Union-wise pattern of migration is shown in Table-9 and Union-wise destination of individual in-migrants is shown in Table-10.

Table - 9
Union-wise Pattern of Migration

<u>Unions</u>	<u>No. of Households migrated to Sonargaon</u>	<u>Percentage</u>	<u>No. of households having members living out of Sonargaon</u>	<u>Percentage</u>
Baider bazar	42	20.09	18	41.86
Mograpara	66	31.59	9	20.93
Aminpur	69	33.01	10	23.26
Pirijpur	32	15.31	6	13.95
Total	209	100	43	100

Source: Field Survey, 1984.

Table - 10

Union-wise Destination of Individual in-migrants

<u>Unions</u>	No. of sample households	No. of individuals migrated to <u>Sonargaon</u>	Average no. of migrants per household	%
Baider Bazar	100	27	.27	34.18
Mograpara	120	24	.20	30.38
Aminpur	80	20	.25	25.32
Pirijpur	60	8	.13	10.12
Total	360	79	.21	100

Historical pattern of in- and out-migration is presented in Table-11 and Table-12. It may be observed that other than a short period during the time of partition of India, rate of in-migration has been continuously increasing. Out-migration on a significant scale is a recent phenomenon in the Upazila.

Table - 11

Distribution of in-migrants to Sonargaon by Origin

<u>Place of origin</u>	<u>No. of in-migrants</u>	<u>% of migrants to Sonargaon</u>
Old Dhaka District	58	20
Old Comilla District	102	35.18
Old Noakhali District	35	12.07
Old Chittagong District	29	10
Old Sylhet District	15	5.17
Old Mymensingh District	9	3.10
Old Faridpur District	8	2.76
Old Dinajpur District	7	2.41
Old Bogra District	6	2.07
Old Barishal District	7	2.41
India	14	4.83
Total	290	100

Source: Field Survey, 1984.

PERCENTAGE IN-MIGRANTS FROM
DIFFERENT DISTRICTS TO
SONARGAON UPAZILA

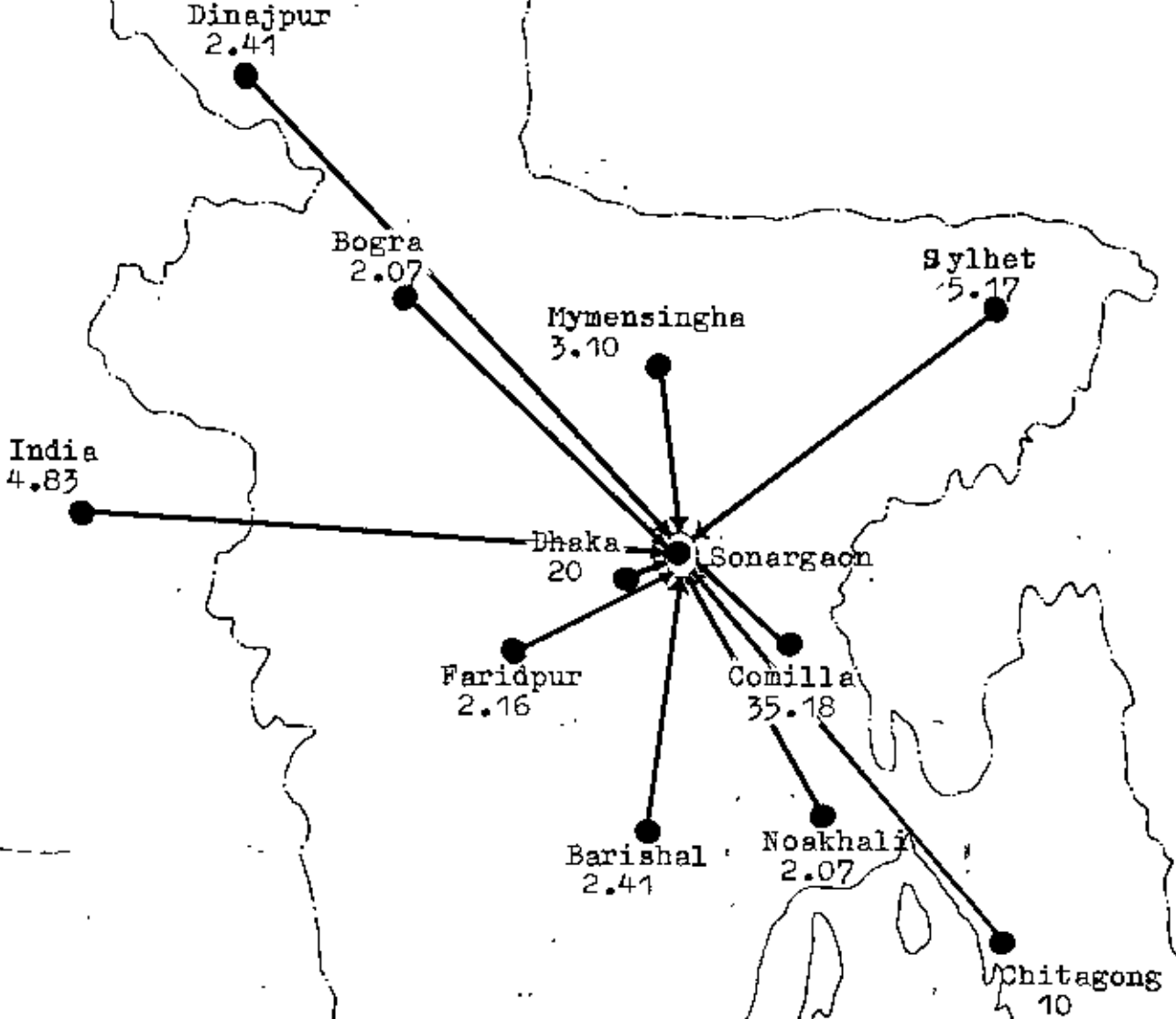


Table - 12Destination of Out-migrants from Sonargaon

<u>Destination</u>	<u>No.</u>	<u>%</u>
Narayanganj	18	35.29
Dhaka	9	17.65
Comilla	5	9.80
Narshingdi	7	13.73
Other District	8	15.69
Middle East	4	7.84
Total	51	100

Source: Field Survey, 1984.

3.6.3 Employment Situation in the Upazila

As regards opinion about job preferences, a large percentage of respondents expressed to retain their existing profession mainly in agriculture, business and handlooms (Table-13). The next preferred job is service in Narayanganj City. The other preferred jobs are worked as skilled labourers (Industrial labour), day labours etc. There is also a remarkable trend of change in profession. Majority of the respondents expressed their willingness to switch over to the business.

Table - 13

Employment in Different Activities as Main Occupation

<u>Types</u>	<u>1961</u>		<u>1974</u>		<u>1981</u>		<u>1983</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Agriculture	27441	78	40031	70	48034	64	47875	58
Business	1880	5	3753	7	6113	8	6703	8
Service	1504	4	3755	7	6113	8	9575	11
Fishing	752	2	1876	3	2620	3	2873	3
Industrial Labour	1127	3	3127	5	5240	7	6703	8
Handloom Industry	752	2	2502	4	5241	7	4786	6
Others	1880	6	1877	4	2620	3	4787	6
Total	35336	100	56921	100	75981	100	83302	100

Source: Statistics Office; Sonargaon Upazila.

The economic base of the Upazila is mainly agriculture. But the commercial and industrial development of Narayanganj has given the service opportunities for the population of Sonargaon especially in the industries.

It is realized that there is a strong physical as well as socio-economic linkage between the Sonargaon and Narayanganj and Dhaka. As a result, the population of the Upazila get Narayanganj and Dhaka as favourable work places for non-agricultural activities. The in-migrants to the Upazila are gradually extending their settlements towards the agriculture land and along the roads.

The rural population are very poor and the local old inhabitants are not precisely literate and enlightened. They are mainly engaged in agriculture. The in-migrants are comparatively more literate and are mostly employed in Narayanganj city.

Table - 14

Employment in Different Activities as Subsidiary Occupation

<u>Types</u>	<u>1961</u>		<u>1974</u>		<u>1981</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Agriculture	1879	83	3753	67	6113	54
Business	-	-	624	11	1747	15
Service	-	-	-	-	873	8
Fishing	-	-	623	11	1747	15
Others	376	17	628	11	873	8
<u>Total</u>	<u>2255</u>	<u>100</u>	<u>5628</u>	<u>100</u>	<u>11353</u>	<u>100</u>

Source: Statistics Office, Sonargaon Upazila

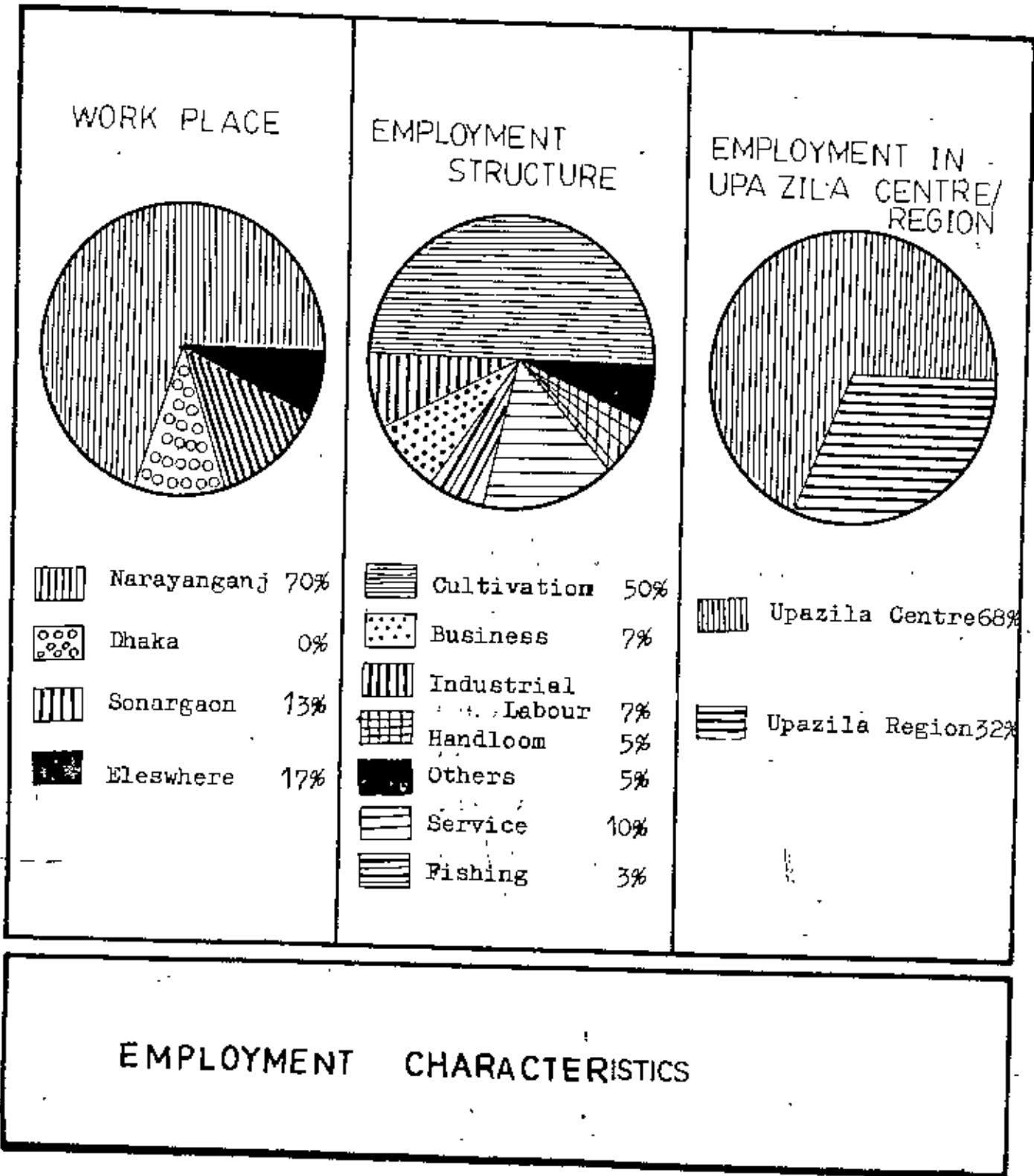
It is very difficult to obtain the occupancy rate and annual income. The survey shows that majority of the people is composed of middle income group. About 58% family earns Tk.6000.00 to Tk.6600.00 per year as main occupation (Table-15). The percentage of population engaged in different occupations are business 8%, service 11%, fishing 3%, industrial labour 8%, handloom industry (mostly owner) 6% and others 6% who are mainly shopkeepers, school teachers, retailers, rickshaw poolers, boatmans etc. All of their income varies from Tk.2000.00 to Tk.1550.00 per year.

Table - 15

Income Opportunities from Different Activities
as main occupation (income as per year)

<u>Types</u>	<u>1961</u>		<u>1974</u>		<u>1981</u>		<u>1983</u>	
	<u>Tk.</u>	<u>%</u>	<u>Tk.</u>	<u>%</u>	<u>Tk.</u>	<u>%</u>	<u>Tk.</u>	<u>%</u>
Agriculture	3500	78	5000	70	6000	64	6500	58
Business	6000	5	10000	7	15000	8	15500	8
Service	3600	4	6000	7	7000	8	7000	11
Fishing	1000	2	1800	3	2000	3	2500	3
Industrial Labour	1800	3	4000	5	4500	7	5000	8
Handloom Industry	2500	2	3500	4	4000	7	4500	6
Others	1000	6	1500	4	2000	3	2000	6

Source: Field Survey, 1984.



3.6.4 Education Facilities

In the Sonargaon Upazila, there are in total 110 educational institutions of which 85 are primary school, 6 junior high school, 10 high school, 2 adult education centre, one college and rest are madrashaw (Table-16). Some high schools and the college have pucca structures but almost all primary schools are with kutcha structures. It is found in the survey that all institutions are lacking in-adequate accommodations and other facilities like play field, scientific apparatus, books and ancillary facilities as per modern standard. Fig. 15 indicates the total literates as per union.

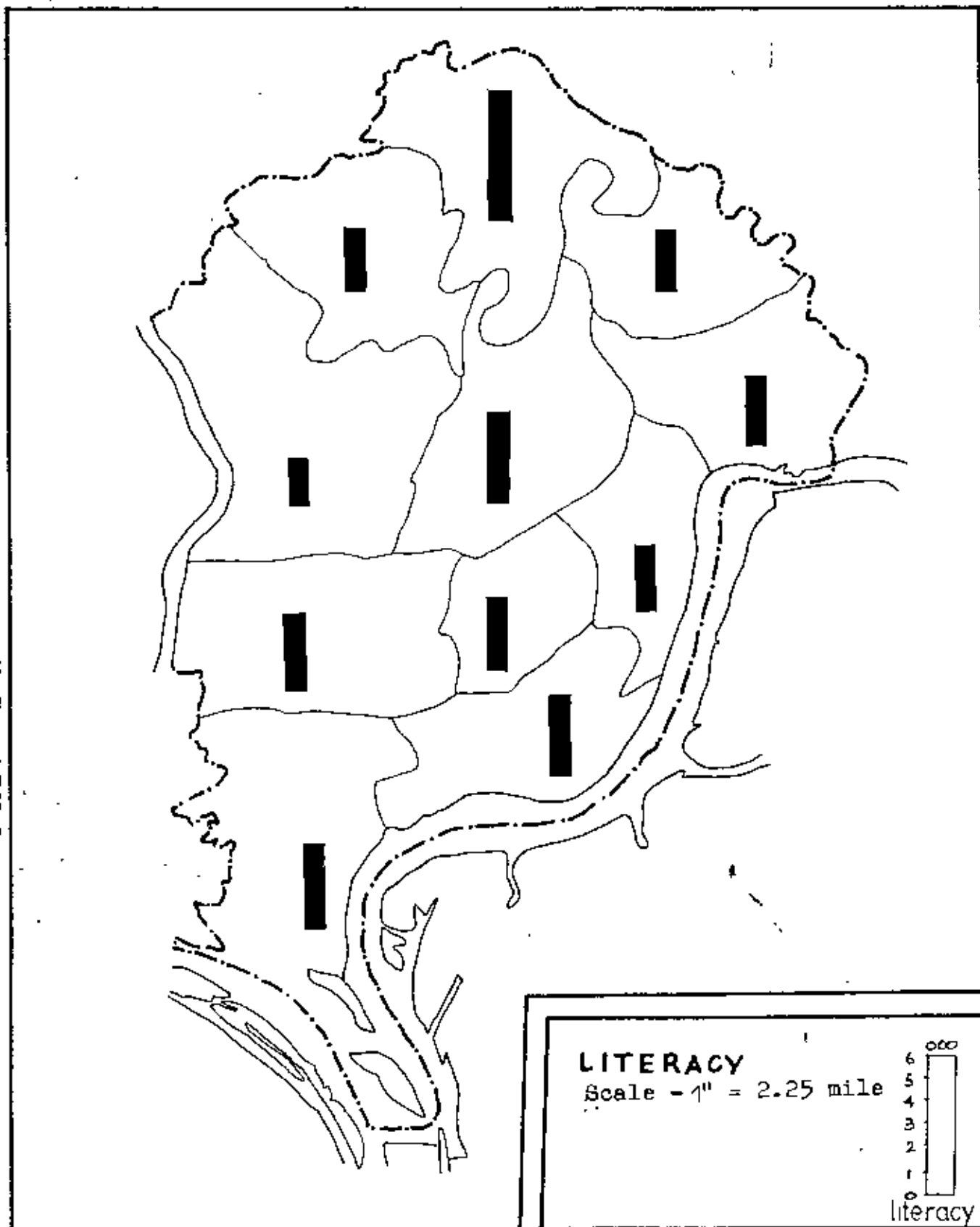
There are 6 mosques in the Upazila. Of these, three are historically important.

Table - 16

Education and Religious Facilities
in the Sonargaon Upazila

<u>Types</u>	<u>Total No.</u>	<u>Distance from the Upazila Headquarters (% in mile)</u>
Primary school	85	1
Junior high school	6	2.5
High school	10	2
College	1	2
Madrashaw	6	1
Mosque	6	.5
Adult education centre	2	3
<u>Total</u>	<u>116</u>	<u>13</u>

Source: Statistical Year Book 1981 and Field Survey 1984.



3.6.5 Health Facilities

For reliable and better treatment people has to depend on the Upazila health complex and medical centre. There is one Family Planning Centre, two Charitable Dispensaries and 45 Private Practitioners in the Upazila(Table-17). The private practitioners are distributed in different rural markets and villages. The MBBS doctors sit mainly in Upazila Headquarters.

Table - 17

Health Facilities in the Upazila

<u>Types</u>	<u>Total No.</u>
Hospital	1
Charitable Dispensary	2
Family Planning Centre	1
M.B.B.S.	2
T.S.F.S.	2
Homeopathic	25
Wijāgā doctor	205
Kabiraj	12

Source: Statistic Office, Sonargaon Upazila.

Hospital and Family Planning Centre are located in the Upazila centre while the Charitable Dispensaries are in two union headquarters named Barodi and Smabhupura. Evidently, it can be said that the health facilities are not uniformly distributed in the Upazila.

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3.6.6. Recreational Facilities

There is one Sishu Park in the Upazila which is not adequate to serve recreation for the children. Also two Cinema Hall in the area, preserved a heavy load of population. Therefore a deteriorating condition affecting in the surrounding area of those cinema halls.

The existing number of play ground and play fields are 102 in the Upazila (Table-18), attached with the school compounds. Except these, there are 38 clubs usually attached with the union offices which perform very poorly. Most of them remain inactive throughout the year.

Table - 18

Recreational Facilities in the Upazila

<u>Types</u>	<u>Area in Acres</u>	<u>Total No.</u>	<u>Expected population (daily)</u>	<u>Present population (daily)</u>
Play grounds/ Play fields	17	102	30600	45900
Cinama Hall	2	2	800	1000
Clubs	7	38	1140	760
Sishu Park	.25	1	50	100
Total	25.25	142	3290	47260

Sources: Statistical Year Book 1983 and Field Survey 1984.

The existing open spaces in the Upazila centre is not satisfactory to provide standard living condition and recreational facilities for the population in and around the Sonargaon Upazila Headquarters.

3.6.7 Settlement Distribution Pattern

The settlement pattern of Sonargaon Upazila is more or less clustered. At the eastern part of Sonargaon it is more compact than other areas, northern and western part are also clustered than southern part. The settlement pattern of southern part is dispersed. Few historical buildings are also present near the Upazila centre (fig. 16).

Floor Materials: The condition of the buildings cannot be directly co-related with the age of structures. Some old pucca structures are in a better condition than the katcha structures. About 81.25% floor of living houses are mud built, 14.37% brick, 4.37% concrete and 1.25% are wood built (Table-19). Therefore, the economic and social health of the community are reflected in it's housing condition.

Table - 19

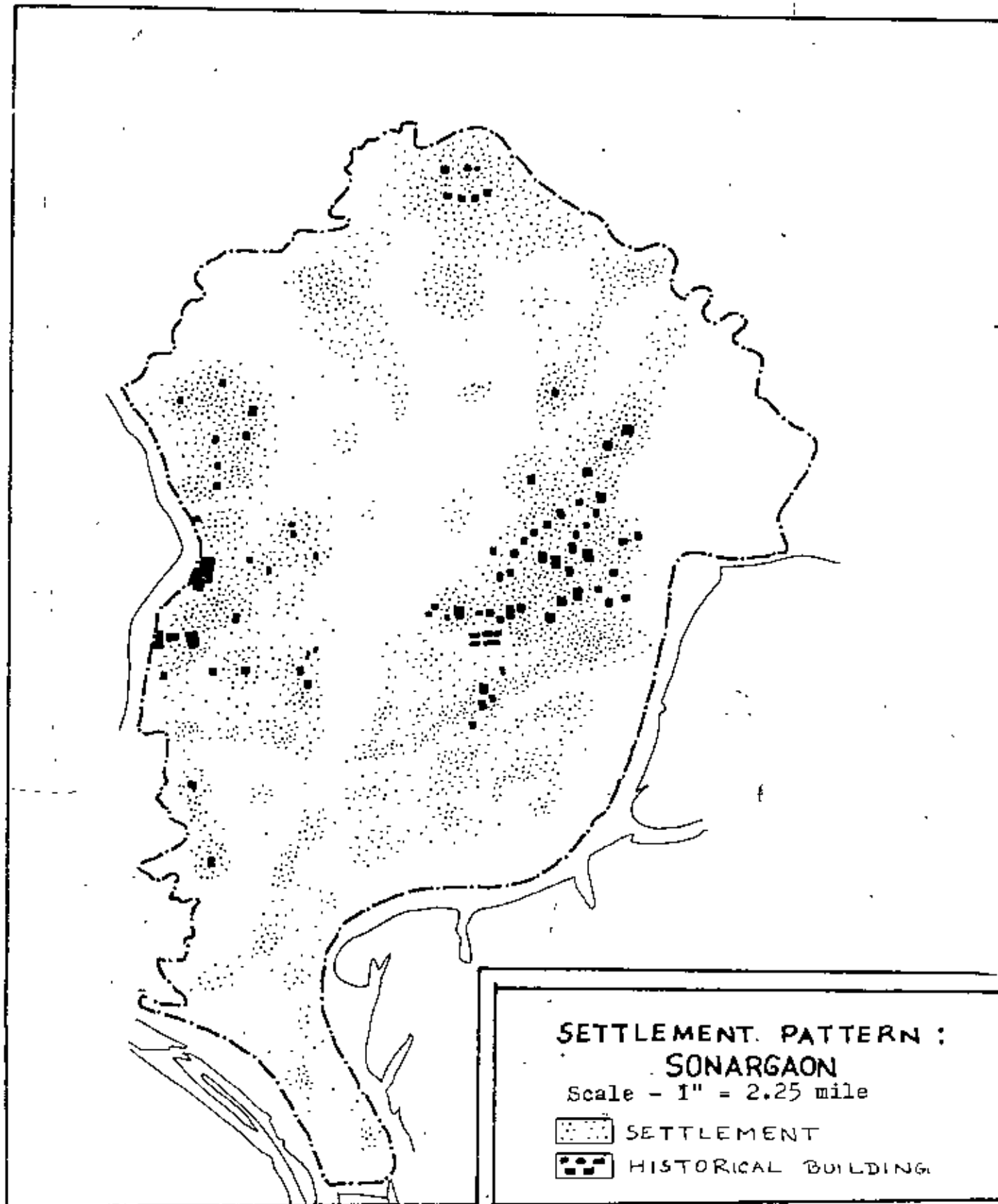
Floor Materials of the Houses (% of Persons Used)

<u>Types</u>	<u>Mud</u>	<u>Brick</u>	<u>Concrete</u>	<u>Wood</u>
Living house	81.25	14.37	4.37	1.25
Qatchhouse	74.37	5.62	1.25	-
Kitchen	98.75	3.12	-	-
Cattleshed	75.62	1.25	-	-

Source: Field Survey 1984.

The bazar area comprises a congested and over crowded with small one or two stored brick made buildings, tin shade structures with open wall and bustee dwellings are in bad condition. Many dwellings are structurally unsound, insanitary, overcrowded and poorly ventilated.

Fig. 16



Land and Building Cost: To obtain a brief economic status of the Upazila, a survey was carried out and the following characteristics were observed:-

The survey indicates varried prices of land from locality to locality. Prices are higher in the Upazila centre where per acre of land costs about Tk. 4 lacs which was Tk. 30,000.00 in 1970. But in other areas of the Upazila it is Tk. One Lac 50 Thousands while cultivable land costs Tk. 2 Lacks per acre which is just half of the former (Table-20).

Figure-17 indicates the land value pattern in the Upazila.

Table - 20
Land, Building Costs and Rent Structure (% in Tk.)

<u>Types</u>	<u>1970</u>		<u>1974</u>		<u>1984</u>	
	<u>Upazila Centre</u>	<u>Upazila Region</u>	<u>Upazila Centre</u>	<u>Upazila Region</u>	<u>Upazila Centre</u>	<u>Upazila Region</u>
Land cost (per acre)	30000	24000	100000	60000	400000	150000
Dwelling cost (per sft.)	10	10	25	25	80	80
Wood+C.I. Sheet						
Rent structure (per sft.)-						
i) Dwelling	.10	-	.70	.15	2.50	.80
ii) Office	.10	.50	.75	.15	3.00	1.00
iii) Shop	.15	.10	1.00	.20	3.00	1.50

Source: Field Survey 1984.

The gross and net density in the older housing areas emphasize the lack of open space, adequate school and other social problems. Majority of the historical buildings are vacant, noisy and polluted, and disposal system is common in the residential areas. Fig.-18 indicates the generalized house-rent structures in the Upazila.

Fig. 17

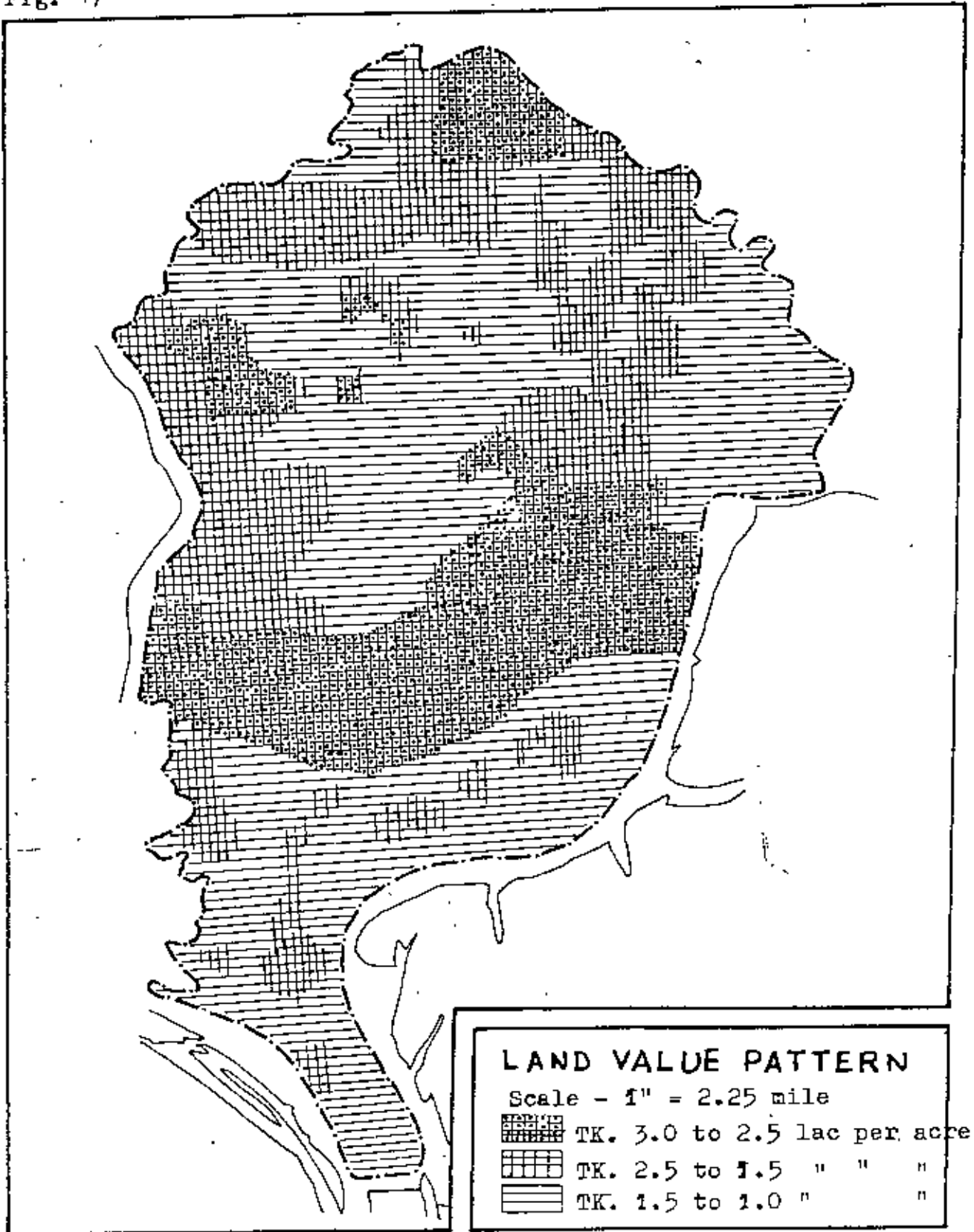
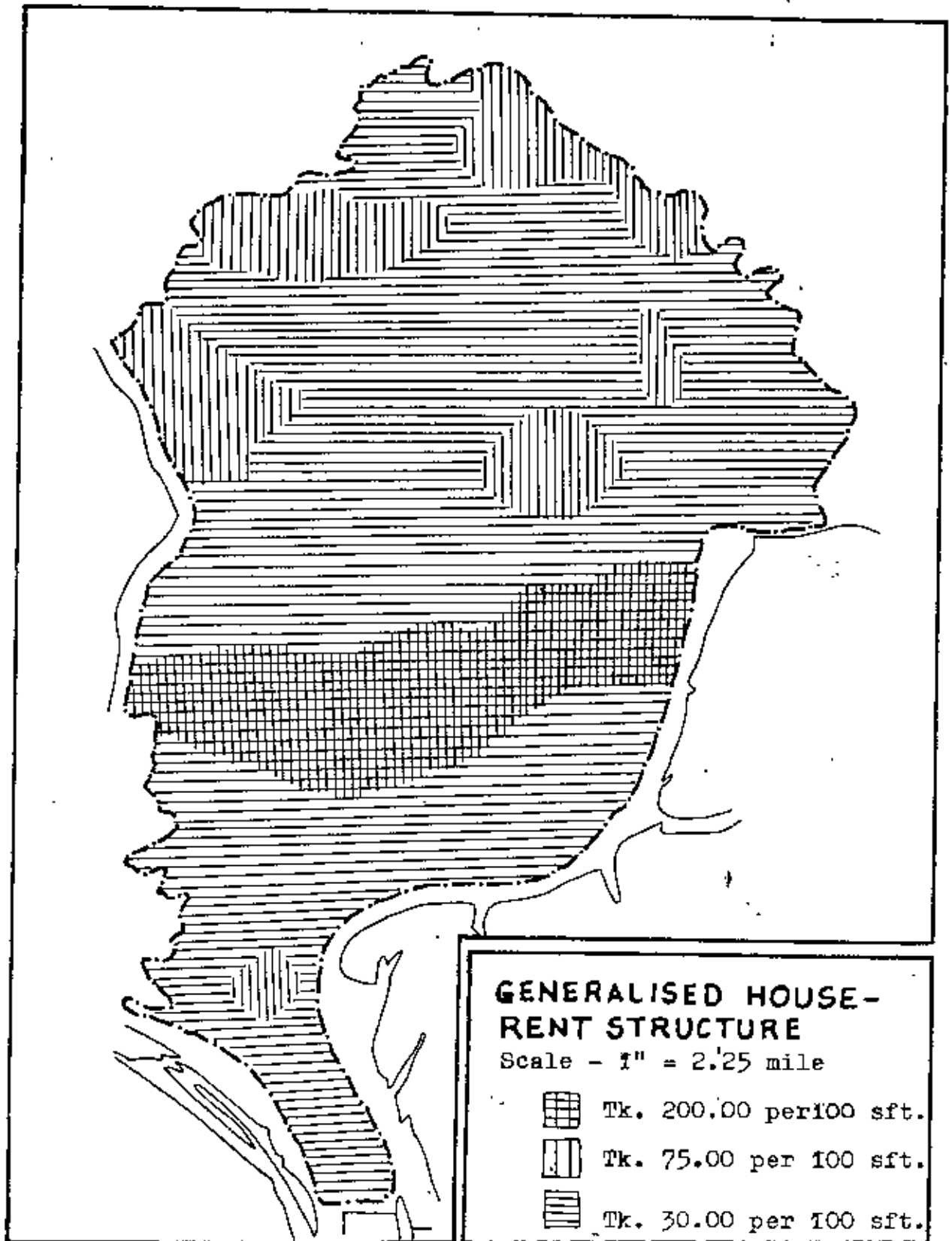


Fig. 18



3.6.8 Markets and Business Centres

There are 15 daily market places within the Upazila and are weekly or bi-weekly hats (Table-21). Barodi and Kaikertek hat ranks in the highest order of them which are located on the bank of river Meghna and Brahmaputra.

Table - 21

No. of Hat/Bazar, Hand Tubewell and Village Electrified

<u>Daily Bazars</u>	<u>Weekly/ bi-weekly hats</u>	<u>Tubewells</u>	<u>Villages/Mahallas Electrified</u>
15	16	1288	136

Source: Statistical Year Book 1983.

On the market day roads and entire area especially the bazar and it's adjacent area gets too congested that movement becomes very difficult. The shops are not planned, they are simply overflowed on the roads and surrounded by vacant places.

So, re-organization of those markets may be suggested. The major commodities transacted between these rural markets and their serviced communities are rice/wheat, fish, vegetables, fruits etc. Of the total commodities traded in the market places about 86.42% is rice/wheat - sold in open spaces and 13.58% commodities are transacted in the shops. Fish sales happens in open spaces and about 98% vegetables and 97% fruits are transacted in open spaces, the rest are in the shops (Table-22). Figure-19 indicates the weekly shopping pattern in the Upazila.

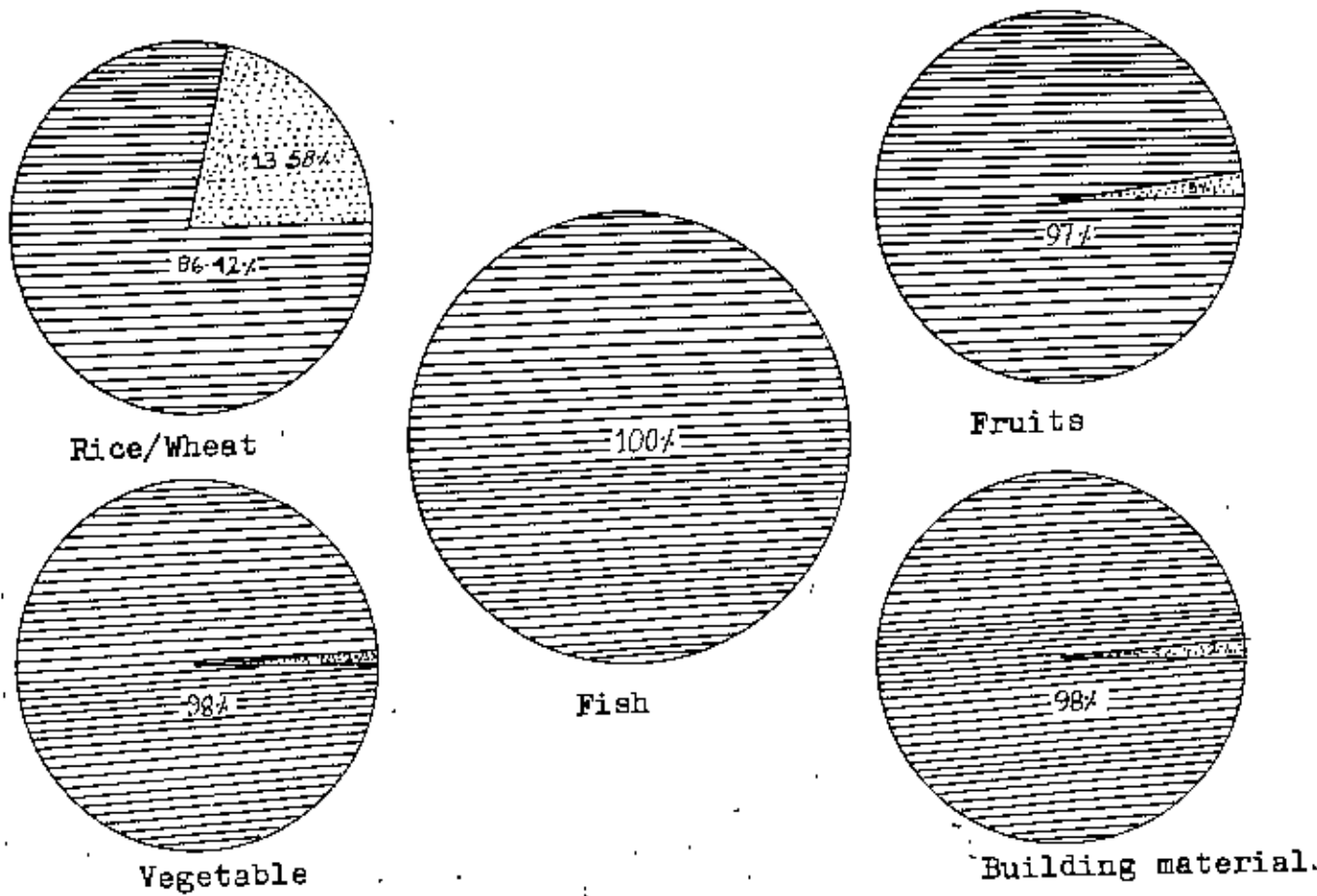
Table-22

Commodities traded in the Market Places



<u>Types of Goods</u>	<u>% Sale in Open Spaces</u>	<u>% Sale in Shops</u>
Rice/Wheat	86.42	13.58
Jute	2	Nil
Fish	100	Nil
Vegetables	98	2
Fruits	97	3
Building Materials (tin, bamboo, cement)	98	2

Source: Field Survey 1984.

Fig. 19



WEEKLY SHOPPING PATTERN OF SONARGAON UPAZILA

-  Shopping at open space
-  Shopping in shops

3.7 Transport and Communication System

The upazila is served by only one railway line which is about 8 miles in length. This railway line connect Narayanganj with Sonargaon. Roads are the main means of communication. Dhaka-Meghna Ghat road serves the chief transport line. Villages are connected with each other by carttracks. Besides, the numerous inter-connecting water ways and khals which flow into it, provide potential routes for country boats which play during monsoon season. In the dry season, however, some of the khals become difficult for navigation. The Dhaka-Meghna and Narayanganj-Meghna roads are important transport facilities for the area and the Grand Trunk Road upto Baider Bazar Lawuch Ghat to Kaikertek Hat, is the oldest transport link. Two ferry ghats perform physical linkage of the designated area with Comilla and Munshiganj. The important ferry connection points are Meghna-Comilla and Baider Bazar Munshiganj.

Meghna ferry ghat is well known for her important role. Maximum number of passengers cross through this ghat. Except passengers, commodities are also transported far beyond the boundry of the Sonargaon Upazila. Because it is the only ferry ghat to communicate the eastern zone of Bangladesh.

The study area is sorrouded by Meghna and Bakhya river. The old Brahmaputra passes through the Upazila from north to south. Small boats are the only mode to corss this river. There is no remarkable transport system that links up the two ghats along the river. The bus communication plays an important mode of transportation in the whole year and is supplemented by water transport during the rainy season.

Buses provide the only means of vehicular movement in the area. At present about 50 percent of all journey in dry season in the Upazila are made by bus. There is need for improvement of transport services and if possible the introduction of new roads should be constructed to serve the remote villages of the Upazila Headquarters. It has been evident in the survey that a better transport linkage is a long-felt demand of the area.

The length of transportation network of different modes in the Upazila are 11 miles National Highway, 3 miles C&B road, 46 miles D.C. Road, 8 miles railway line and 50 miles waterways (Table-23) of which 30 miles are navigable in all seasons and the rest are navigable in monsoon period. The National Highway that runs through the Upazila is an important transportation link with Dhaka, Narayanganj, Comilla, Sylhet, Chittagong, Noakhali etc.

Sonargaon - Narayanganj road is importantly used by Upazila people for different purposes.

Table - 23
Length of Transportation Network in Upazila
(distance in miles)

<u>Types</u>	<u>Non Motorable katcha Road</u>	<u>Motorable katcha Road</u>	<u>Mettaled Road</u>	<u>Brick soled Road</u>	<u>Total distance</u>
National Highway	-	-	11	-	11
C&B Road	-	-	-	3	3
D.C. Road	39	5	-	2	46
Railway Line	-	-	-	-	8
Water ways	<u>Dry Season</u>	-	-	-	30
	<u>Monsoon period</u>	-	-	-	50
Total	39	5	11	5	148

Source: Census Report 1983, published by Bangladesh Statistical Bureau, Dhaka.

The existing transportation facilities in the Upazila are as follows:-

There are 50 miles of river ways and 9 miles of canal ways on which only 2 steamers, 4 lawnches, and 4700 country boats play regularly. Again there are semi-pucca roads and 11 miles pucca road on which only one bus, 50 scooters, 122 motor cycles and 527 Rickshaws regularly move (Table-24). About 44 katcha roads of the Upazila are used by the villagers. These kutch roads are important for transaction of commodities between rural growth centres and the communities. The location of existing transport facilities and the number of settlements by each category of transport mode are given respectively in Tables 23 & 24 which demonstrate the existing situation and indicates over the future planning of the transportation system.

Table - 24

Available Transportation Facilities in the Upazila

Mode of Transport	Types of Transport Available		Length of transportation system (in miles)
	Types	Nos.	
Water ways	Steamer	2	30 (Dry or Rainy seasons)
	Lawnch	4	
	Country boats	4700	50 (Monsoon period)
Pucca Road	Bus	1	11
	Scooters	50	
	Motor Cycle	122	
	Rickshaw	527	
Semi Pucca Road	-	-	5
Kutch Road	Pedestrian	-	44
Canais	boats	4700	9

Source : Field Survey 1984.

Table - 25

Location of Transport Facilities in the
Sonargaon Upazila

<u>Types</u>	<u>Names</u>	<u>Where Located</u>	
		<u>Village</u>	<u>Union</u>
A. Bus stop	Katchpur	Katchpur	Katchpur
	Dewanbagh	Dewanbagh	Katchpur
	Madanpur	Madanpur	Katchpur
	Kayodala	Kayodala	Sanmondi
	Janghal	Janghal	Sanmondi
	Darikandi	Darikandi	Sanmondi
	Sonakhali	Sonakhali	Mograpara
	Tripordi	Tipordi	Mograpara
	Mograpara	Mograpara	Mograpara
	Pirijpur	Pirijpur	Pirijpur
	Ashariar Char	Ashariar Char	Pirijpur
Meghna Ghat	Char?Ramjan Sonauilla	Pirijpur	
B. Rail Station	Noyapur	Noyapur	Sadipur
	Kutipara	Kutipara	Jampur
C. Launch Ghat (Mechanized)	Meghna Ghat	Char Ramjan Sonauilla	Pirijpur
D. Launch Ghat (Non Mecha- nized)	Kaikertek	Kaikertek	Mograpara
	Mograpara	Baranagar	Mograpara
	Otipura	Otipura	Sonmondi
	Ananda Bazar	Baidar Bazar	Baidar Bazar

Source: Field Survey 1984

The road condition is not of good quality in the rural areas of the Upazila. Roads within the Upazila Headquarters are mostly un-metalled, narrow and un-planned and cannot accommodate the usual traffic volume. The important rural roads are Mograpara to Baider Bazar and Mograpara to Kaikertek hat (C&B roads). This semi pucca and undulating narrow carriage way needs proper repair and widening. These are the only roads to enter the vast rural areas within the Upazila and to maintain communication between the rural areas and the Upazila centre.

The main road structure is basically linear and the rest are inter-connected with National Highway and C&B roads. All main roads in the Upazila meet the river bank developed as ferry ghats or boat ghats at different places. These roads function both for through traffic and the main internal road traffic. It is observed that the growth of settlements have been spreading along these roads. Also, the rural markets and shopping centres have been developed at places on these roads. Figure no. 20 showing the present road network in the Upazila.

The deficiency of roads in the Upazila reflects problems. So it is essential to provide a proper road structure if effect of urbanization in the sense of modernization of socio-economic life is to be initiated in the whole Upazila.

Fig. 20

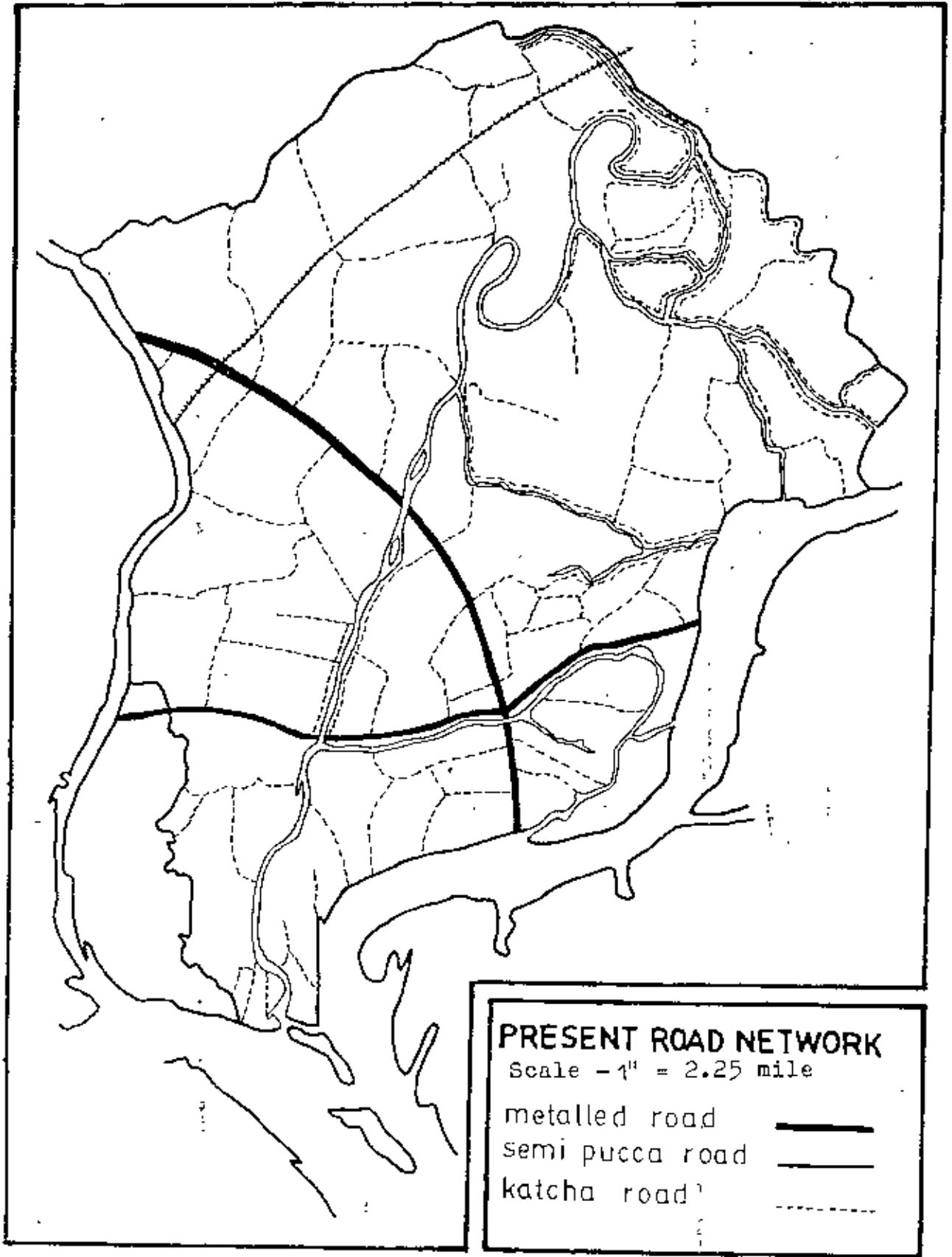


Table - 26

Transport Accessibility

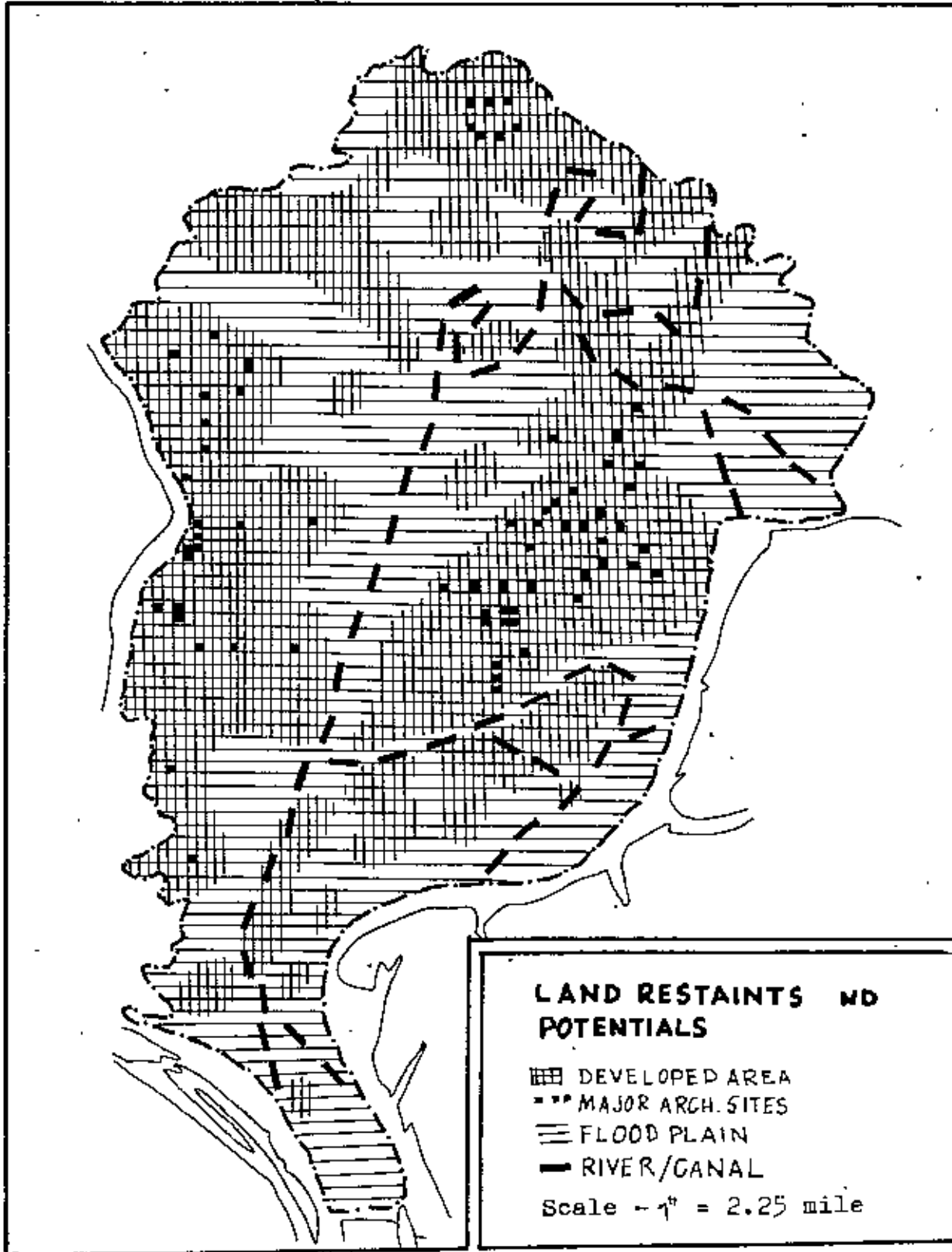
<u>Settlement size</u>	<u>Total No. of settle-ments</u>	<u>No. of settle-ments on road junctions</u>	<u>No. of settlements on National Highway</u>	<u>No. of settlement on D.C. roads</u>	<u>Other settlements</u>
-5000	2	-	-	-	2
3501-5000	5	-	3	1	1
2001-3500	14	2	1	5	6
501-2000	110	4	5	14	87
-500	196	4	6	7	179
Total	327	10	15	27	275

Source: Field Survey 1984.

3.8 Development Potentials and Constraints

It must be mentioned that the physical characteristics of the Upazila pose certain difficulties to it's development. Presence of physical features such as low lying areas, poor drainage system, river erosion etc. make some locations difficult, expensive, or totally undesirable for development. Areas where physical constraints on development are severe are shown in figure no. 21.

Fig. 21



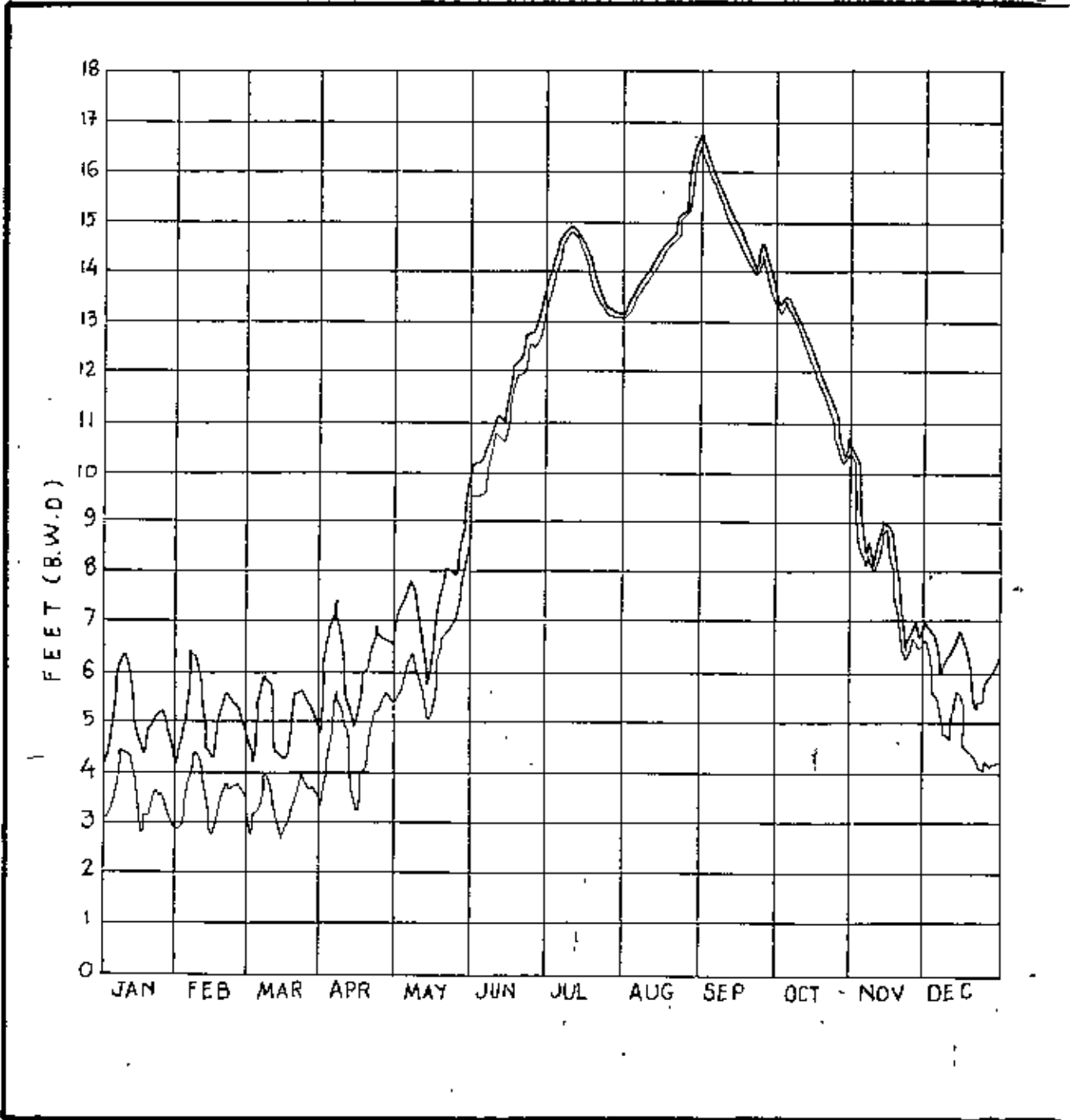
In all cases, most of the areas of the Upazila will require more or less improvement of facilities for the communities because there is shortage of services. There is scarcity of land free from annual flooding on which services like development of markets or other recreational facilities can be developed. The land that falls within the close proximity on Meghna river (on the south) is low lying areas which presents difficulties for physical development on a large scale. But in the eastern side it is feasible for development of physical facilities. So a proper planning system need to be introduced for the whole area on both sides. During every rainy season, the low lying areas go under water to a depth of average 5 feet to 10 feet. The depth and duration of flood water, of course, vary from place to place and from year to year. The flood affected areas remain under water for about 5 to 6 months. Food in Pirijpur and Shambhupura are mainly because of the presence of Meghna and Dhaleswari rivers which overflow the banks during monsoon. Though the maximum height of flood water during the normal year is about 16.5 feet, in exceptional years the conditions becomes severe. Figure no. 22 indicates the Highest and Lowest water level of Meghna at Baider Bazar in 1981.

The economy of Sonargaon may easily be threatened with the rise of water level of the rivers above danger level as it was experienced in the year 1984. The erosion along the banks of the rivers is again a major problem especially for the Baider Bazar area. In addition, change of the courses of the rivers including other drainage system present further complications.

The maintenance of tanks and canals appears to be desirable for the following reason:-

- i) Water-levels are high in the existng wet lands. Irrigation water will, therefore, cause water logging in these areas.

Fig. 22



HIGHEST & LOWEST WATER LEVEL OF MEGHNA
AT BAIDYER BAZAR 1981

- ii) The locations of these tanks is in high land areas formed by arresting settlements which are to function as drainage courses.
- iii) As mentioned above, the quality of water is inferior.
- iv) Since these tanks and canals are formed by arresting the natural drainage courses, the provision of an effective alternative drainage system becomes problematic and expensive.

It is clear that development effort should be strengthened in the southern part of Sonargaon, especially to develop the agricultural programme. It's agricultural potentiality would be higher if development efforts for the area is moulded towards improved agricultural practices. The other areas of the Upazila are also to be physically facilitated for economic development as well as social upliftment of less advanced or disadvantaged communities.

CHAPTER - 4

4. HIERARCHY OF SETTLEMENT AND SERVICE CENTRES
 - 4.1 Methodological approach
 - 4.2 Distribution of settlements by population size
 - 4.3 Hierarchy of settlements in terms of services
 - 4.3.1 Markets
 - 4.3.2 Education facilities
 - 4.3.3 Transport and communication
 - 4.3.4 Service industries
 - 4.3.5 Museum
 - 4.3.6 Health
 - 4.4 The Upazila centre and its service standard
 - 4.5 Functional linkage of service centres with the community
 - 4.6 Hierarchical pattern of service centres in the light of Central Place Theory

4. HIERARCHY OF SETTLEMENT AND SERVICE CENTRES

To identify the location of central places within the Upazila, in respect of the maximum range of demand for service facilities, hierarchy of settlements have been emphasized. The hierarchy of settlements is the product of the centrality of settlements in a region. Centrality of settlements depends upon the quality and quantity of central services performed by a particular settlement. Within a few settlements, the central services can be defined as 'service availability' and 'availed' by a number of settlements. Generally, a central service is composed of many sub-services. So, in a particular central service, different level of services can easily be identified. This identification has been based on the following methodological approaches.

4.1 Methodological Approaches

A misleading picture may come out if we apply the central place studies of western countries in the Bangladesh context of identification of centrality of rural service centres usually termed as Hats/Bazar, individually serving a number of settlements or villages. The western method such as Telephone densities, Range of retail shopping and bus service frequencies, may not be applicable for the determination of settlement hierarchy, so an easy and most applicable method have been used in this study. These are as follows:—

- i) Distribution of settlements by population size
- ii) Hierarchy of settlements in terms of services.

To identify the distribution of settlements by population size, the population of 1961, 1974, and 1981 have been considered and to identify the hierarchy of settlements in terms of services, the availability of services of shopping, finance, industries, education, health, transportation and communication have been taken into consideration. The above hierarchy of settlements are also presented and explained with the help of maps.

4.2 Distribution of Settlements by Population Size

From the Table-27 it is apparent that the number of settlements have been increasing during the census years from 1961. Along with the increase of number of settlements, the number of larger settlements have been also increasing in terms of the population size. This demonstrates the fact that with the increase of the population, higher level of services are also being required. Therefore, with the distributive pattern of the settlements with their population, the distribution of services are to be inconformity with the changed demand for services from the existing service centres. This will be evident in the following Table:-

Table - 27
Distribution of Settlements by Population Size

<u>Population size</u>	<u>1961</u>		<u>1974</u>		<u>1981</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Upto 500	169	68.69	153	57.51	196	59.94
50-2000	70	28.46	99	37.22	110	33.64
200-3500	6	2.44	11	4.14	14	4.29
350-5000	1	.41	2	.76	5	1.52
Above 5000	0	-	1	.37	2	.61
Total	246	100	266	100	327	100

Source: Field Survey 1984.

4.3 Hierarchy of Settlements in Terms of Services

To determine the hierarchy of settlements (mouzas) in terms of services, 28 services have been considered. The category of hierarchies of these mouzas have been identified on the basis of services available in them. These services from a particular centres tend to limit within a definite population size group in terms of their threshold limit.

Scores against the services categorized in Table-28, have been considered to find out a reasonable hierarchic distribution of settlements in terms of services. The distribution of settlements in their hierarchic order has been shown in Table-29.

Table - 28

Scores against the Category of Services

<u>Name of Services</u>	<u>Score</u>
Health Complex, Museum, Shishu Park	10
College, Telephone, Police Station, Railway Station, Mechanized Ferry Service, Tahsil Office, Cinema Hall, Family Planning Clinic	8
Bank, Post Office, High School, High Madrasha, Bus stand, Godwon, Telegraph Office, Boat Ghat, Weekly/bi-weekly hat	6
Union Office, Junior High School/Madrasha	4
Primary School, Daily Bazar, Metalled Road	3
Brick Soling Road, Shops (Above 2 No.)	2
Mosques, Temple (Important), Shops (less than 2 No.)	1
<u>No. Services</u>	<u>0</u>

Source: Field Survey 1984

The scores against the services listed categorically in Table-28 are considered assuming the importance of the services. It is assumed that services under each of these service categories in Table-28 have almost the same level of importance. However, this assumption is not based on any theoretical methodology but a generalized way of rationalizing the value of each services.

Table-29 shows that only 2 mouzas for the total of 327 mouzas, fall under Category-1 of the hierarchy with maximum service facilities in the Upazila. Categories-II and III have same number of settlements (3 mouzas in each) and Category-IV has 9 mouzas. It is importantly notable that Category-V has a large number of 310 settlements without almost no services. This indicates that the community and as well as development facilities are concentrated within a very limited number of mouzas. Therefore, for an uniform distribution of services, these settlements would have to be distributed accordingly. But from the distribution of services, especially the markets, it is notable that those are not evenly distributed. Also, all the mouzas within the category-V of the hierarchy are not suitably linked by good transportation with the higher categories of settlements where the services are available. This situation emphasizes over an uniform redistribution or provision of service facilities within the Upazila along with improvement of communication network.

Table - 29

Hierarchy of Settlement in Terms of Services

<u>Catagory</u>	<u>Score</u>	<u>No. of Mouzas</u>	<u>Name of Mouzas</u>
I	60 and above	2	1. Uddamganj 2. Mognapara
II	45-59	3	1. Barodi 2. Katchpur 3. Baider Bazar
III	30-44	3	1. Aminpur 2. Jampur 3. Shambhupura
IV	15-29	9	1. Baranagar 2. Kaikertek 3. Panam 4. Olipura 5. Kutipara 6. Sanmondi 7. Prijpur 8. Noyagaon 9. Sadipur
V	Below 15	310	Rest 310 Mouzas

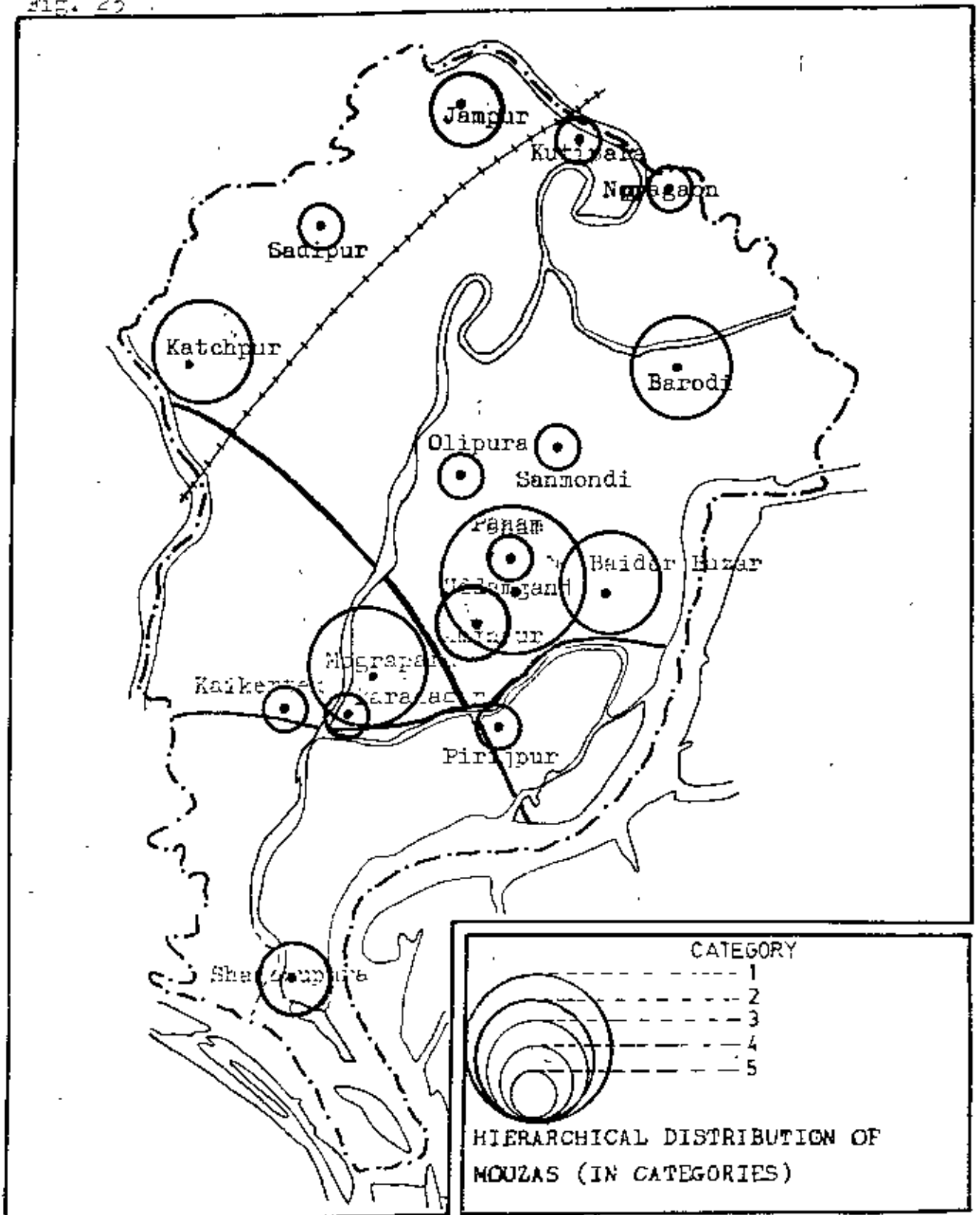
Source: Appendix - XXI

Table - 30
Hierarchical Distribution of Mouzas
(in categories)

<u>Categories</u>	<u>Name of the Mouzas</u>
1st	Uddamganj
Second	Mograpara
Third	Barodi
	Katchpur
	Baidar Bazar
Fourth	Aminpur
	Jampur
	Shambhupura
Fifth	Baranagar
	Kaikertek
	Panam
	Olipura
	Kutipara
	Sanmondi
	Pirijpur
	Noagaon
	Sadipur

Source: Field Survey 1984

Fig. 23



Some self explanatory services in their operational sense are not included here independently, which are - Grocery shop, Tea stall, Barber, Carpenter, Tailor, Blacksmith, Retail cloth store, Hardware store, Medicine shop etc. These services only explained here as shops. Some of the services have been explained here as their operational characteristics. Such as:-

4.3.1 Markets

It is an important trade feature of rural areas. Weekly and daily markets have been considered here. There are not sufficient permanent structures and easy accessibility to these markets, though those are treated as the trade centre of that region. The locational distribution of the existing rural hat/bazars including the Upazila Headquarters are given in the Table-31 along with their existing number of served population.

4.3.2 Educational Facilities

Only included the primary school, high school and college. Primary school considered as educational facilities upto 5th standard. High school, considered as educational facilities upto 10th standard which may be the centre of S.S.C. examination or not. College is considered as educational facilities upto Degree (pass) level.

Table-32 shows the union-wise distribution of education facilities. It is indicated in the Table that the school facilities are not uniformly distributed in all the unions of the Upazila.

4.3.3 Transport and Communication

Included only bus stop, post office, telephone exchange, rail station, mechanized and non-mechanized ferry ghats. Of the 8 bus stops in this Upazila (through Katchpur to Meghna ferry ghat) only two are scheduled stops, others are request stops.

Table - 31

Distribution of hat/bazar in the Sonargaon
Upazila

<u>Union</u>	<u>Name of the hat/bazar</u>	<u>Name of the village where located</u>	<u>Number of population served (approx.)</u>
Mograpara	Mograpara hat/ bazar	Baranagar	1500
	Kaikertek hat	Kaikertek	5000
Barodi	Barodi hat/bazar	Barodi	6000
Baider Bazar	Anandabazar hat	Anandabazar	3000
	Baider Bazar hat/ bazar	Baider Bazar	1500
Noyagaon	Dhundi hat	Dhundi Bari	1000
Jampur	Mahajampur hat	Mahajampur	1500
Aminpur	Munshirail Bazar	Munshirail	2000
	Uddanganj Bazar	Uddanganj	2500
Sonmondi	Olipura hat/bazar	Olipura	1500
Sadipur	Farihordi hat	Farihordi	1000
	Gangapur hat	Gangapur	2000
Katchpur	Katchpur bazar	Katchpur	2500
Shambhupura	Shambhupura hat, bazar	Shambhupura	2000
Pirijpur	Nil	Nil	Nil

Source: Field Survey 1984

Fig. 24

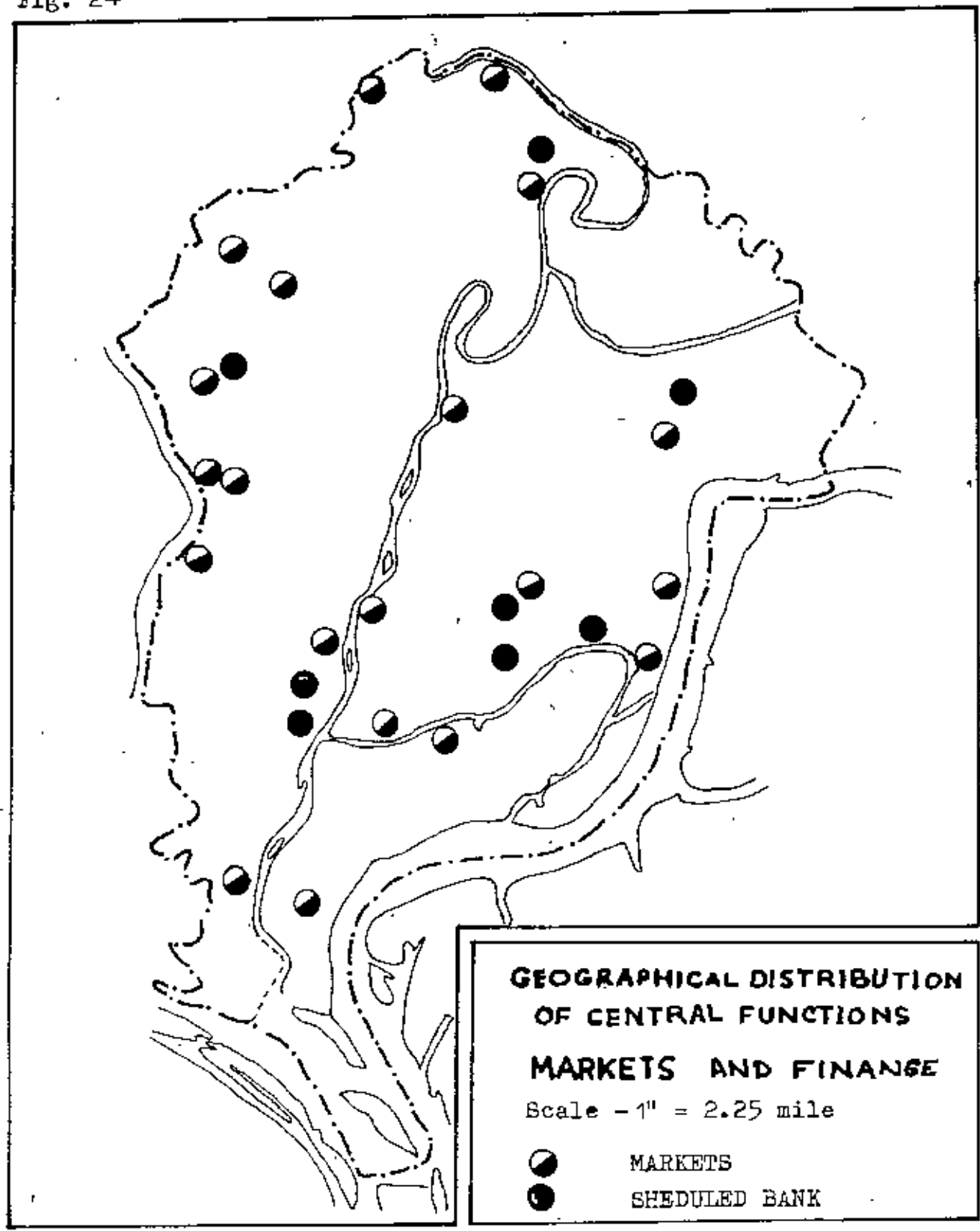


Table - 32

No. of Schools			Union-wise Distribution of Education Facilities											
Primary	Secondary	College	Madrasha		No. of Students			No. of Teachers						
			Junior	Forkania	Primary	Secondary	College	Madrasha	Pri-	Secondary	Coll-	Madrasha		
												ge	Junior	Forkania
7	-	-	1	8	1782	-	-	250	1066	21	-	-	18	7
6	-	-	-	3	1353	-	-	-	240	17	-	-	-	3
11	3	-	2	9	2549	1142	-	428	933	34	31	-	24	11
7	-	-	-	9	1265	-	-	-	720	15	-	-	-	9
6	1	-	1	5	1044	554	-	240	478	18	11	-	11	6
11	1	-	1	7	2724	447	-	235	644	26	13	-	11	8
7	2	1	-	13	2104	1083	712	-	1040	23	27	13	-	13
6	1	-	-	13	1587	636	-	-	480	22	14	-	-	12
5	1	-	-	6	1296	312	-	-	1040	18	17	-	-	6
7	-	-	1	12	1641	-	-	185	375	25	-	-	11	13
7	2	-	-	7	2346	1020	-	-	1040	25	25	-	-	7
30	11	1	6	92	19691	5194	712	1338	8056	254	138	13	75	95

rey, 1985

Fig. 25

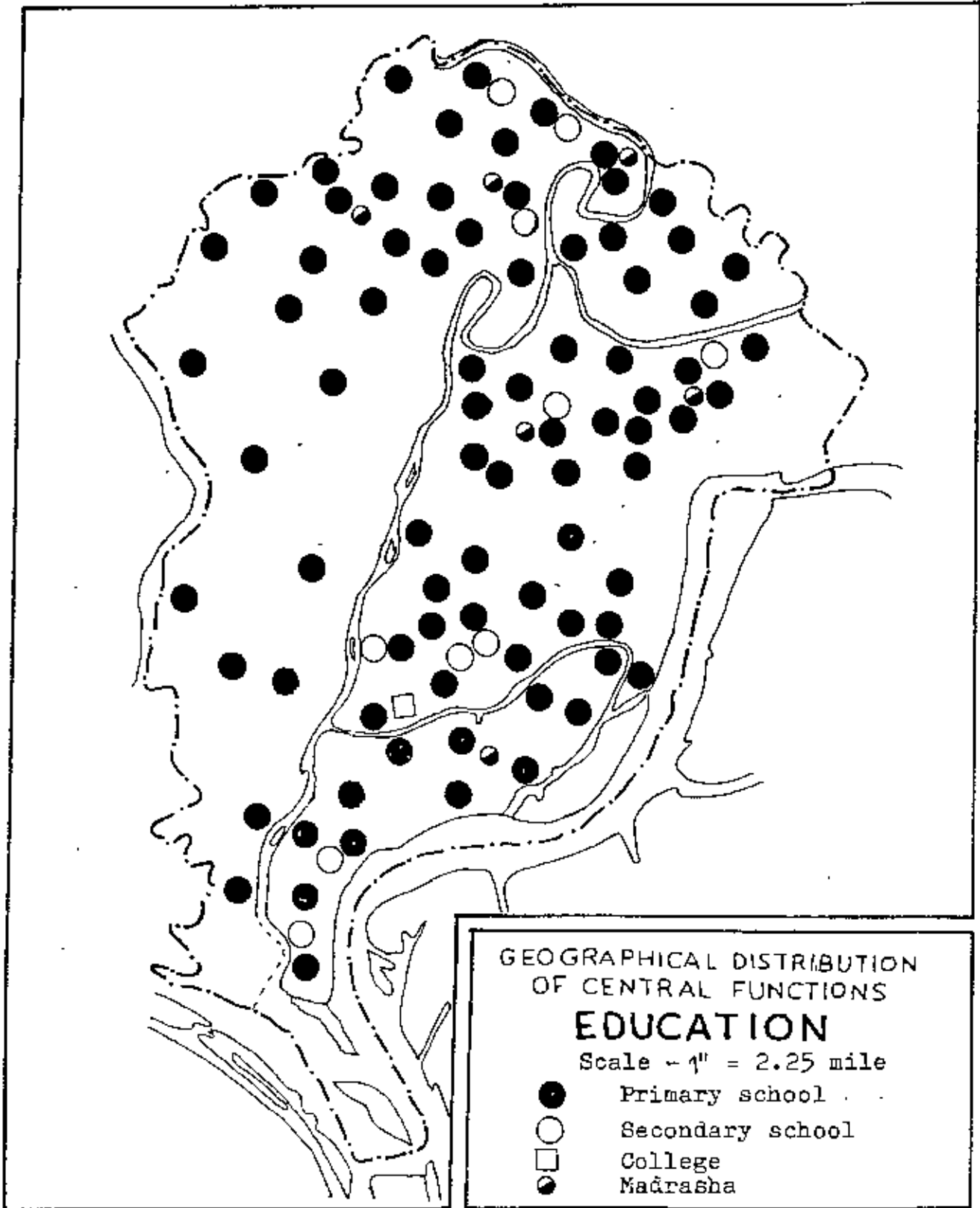
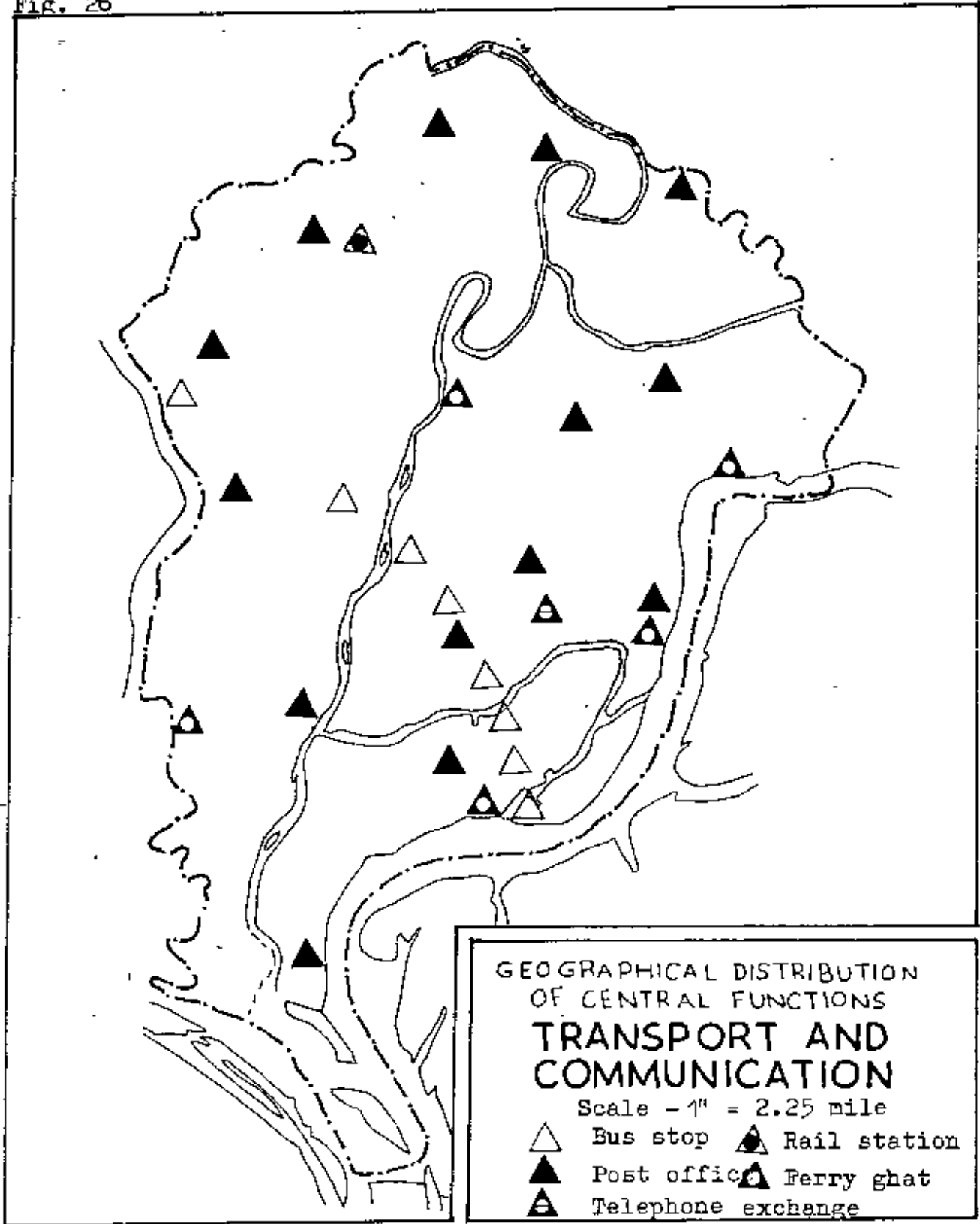


Fig. 26



The Dhaka-Chittagong and Dhaka-Comilla highway pass through some of the villages of the Sonargaon Upazila. Buses always stop on these two scheduled stop. The local bus services between Dhaka-Meghna Ghat and Narayanganj-Meghna Ghat always stop in all the 9 bus stops. Post office considered as letter receive and delivery, money order, book post services etc.

Telephone exchange provide services for public as telephone calls. There is only one rail station (named Kutipara rail station) in the Upazila, treated as scheduled station. Mechanized and non-mechanized ferry ghat considered as the goods and passengers crossing centre also as trade centre.

4.3.4 Service Industries

Included different types of industries which provide only services such as rice crushing mill, flour mill etc.

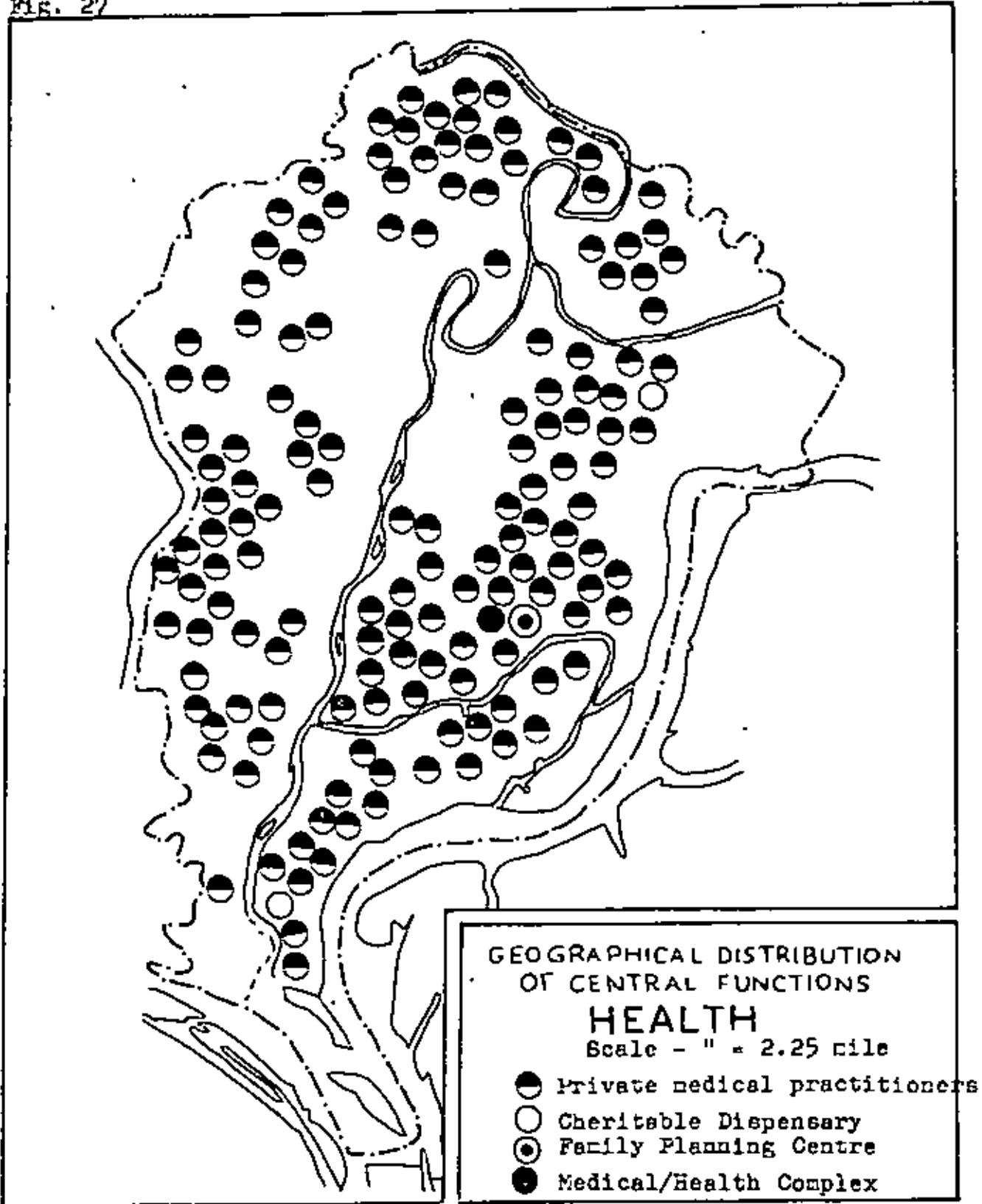
4.3.4 Museum

Includes different type of recreational services. There is only one museum in the Sonargaon Upazila which is prominent on its historical background.

4.3.6 Health

Hospital or Upazila Health Complex, providing allopathic treatment and hospitalisation in the Upazila. Charitable dispensary providing people with allopathic treatment as well as medicine free of cost. Family planning services, providing family planning services with free of cost. Private medical practitioner, includes both qualified and non-qualified village doctors who may M.B.B.S. Or L.M.F.

FIG. 27



4.4 The Upazila Centre and it's Service Standard

The service standard of the Upazila centre can be visualized in the following manner:-

Potentiality of the Upazila centre to render administrative and other services for different purposes needs to be evaluated for undertaking development decisions in the Upazila. But suitability of these services vary from place to place within the Upazila. The remote villages could not get sufficient facilities of administrative services from Upazila centre due to inadequate transportation linkage. So the Upazila administrative services could not maintain it's high level efficiency due to the problem of transportation linkage in the whole Upazila. It was evident from field survey that most of the people of Barodi and Smabhupura unions use water ways with country boats to get services from the Upazila centre.

Upazila Health Complex and family planning centre are located in the Upazila Headquarters which basically provide health services for people in the whole Upazila. The only one family planning centre cannot render it's services with due efficiency and uniformly due to the lack of communication and closeness with people. The remote villagers of the Upazila depend on the field workers to get family planning services. It has been evident that field workers are not sufficient (only eight) in number to distribute family planning services in the Upazila. Therefore, the growth of population of the remote unions are not decreasing. To check this problem, it is important to establish some sub-units of family planning services in the Upazila with proper facilities and rational distributive sense.

The only one hospital with 31 beds in the Upazila centre could not facilitate the people due to insufficiency of required instruments and medicine. Now it can serve only First Aid Services to the people and people who are in the remote villages totally depends on the private practitioners or on the nearby health facilities of adjacent Upazilas.

It was observed in the field survey that if there would have improved transportation linkage with the Upazila Headquarters, people who now avail the health facilities from other Upazilas, they might have used the facilities from Sonargaon Upazila Headquarters.

As a market, the Upazila centre is not much important to the people of all parts of the Upazila. There is a bi-weekly hat in the Upazila centre with a small catchment area. The importance of this market could not increase due to its improper location within a congested area (20 acres) which can not be sufficiently expanded with all required facilities. In the market day the nearby D.C. road becomes over crowded. To minimize the above problem of the market in the Upazila centre, it is important to expand the area of the existing market place in a suitable position on the northern side of the existing D.C. Road.

Other services of the Upazila centre are educational (mainly college), recreational (mainly Museum, Cinema Hall and Shishu Park), Agricultural (mainly Seed and Fertilizer Godown) and building materials (mainly Cement and Iron). These services of the Upazila centre are also important. But all of these services can not serve the total population of Sonargaon Upazila depends on Narayanganj, Narshingdi or adjacent upazilas for these services.

So it can be suggested that an easy and improved transportation linkage may improve the quality of services available in the Upazila Headquarters.

4.5 Functional Linkage of Service Centres with the Community

Fig:-28 demonstrates the way on how the service centres are functionally linked with the community within the close proximity of each service centre. It is evident that only two mouzas under category-I which represents the highest level of services. Mouzas Uddamganj, Aminpur, Baider Bazar and Panam form the Upazila Headquarters Sonargaon and Mouza Pirijpur represent the Meghna Ferry Ghat.

The two largest service centres serve almost the whole Upazila region and also have functional linkage with surrounding Upazilas. However, due to the unevenness in the distributive pattern of transportation services within the Upazila, a large area of the Upazila are being deprived of the services of these large centres. For example - the union Jampur, Sadipur, Naogaon, Samondi, Barodi and Sambhupura are located within the physically disadvantaged areas on the northern extremity of the Upazila having poor road communication to the centre. The main transportation linkage of those unions with the Upazila centre is the water ways by country boats. This takes enough time and costs higher. This situation indicates over the uncareness of the previous administration before the formation of the Upazila, for developing all parts of the Upazila through a rational investment decision and appropriate planning approach.

Although the area served by three service centre of Category-II is regularly commutable by the population served, however, the portion as shown on the map is not physically better linked by good transportation means. This necessitates improvement of transportation system at rural village and locality levels. These service centres usually and individually fall under any of the union parishad. So, it naturally goes under union parishad development programme. Therefore, under the union parishad development scheme, the problem of transportation in any part of the union could be solve earlier. But because of the lack of an approach for uniformity in the development planning objectives of the earlier thana administration, this rationality could have never been achieved.

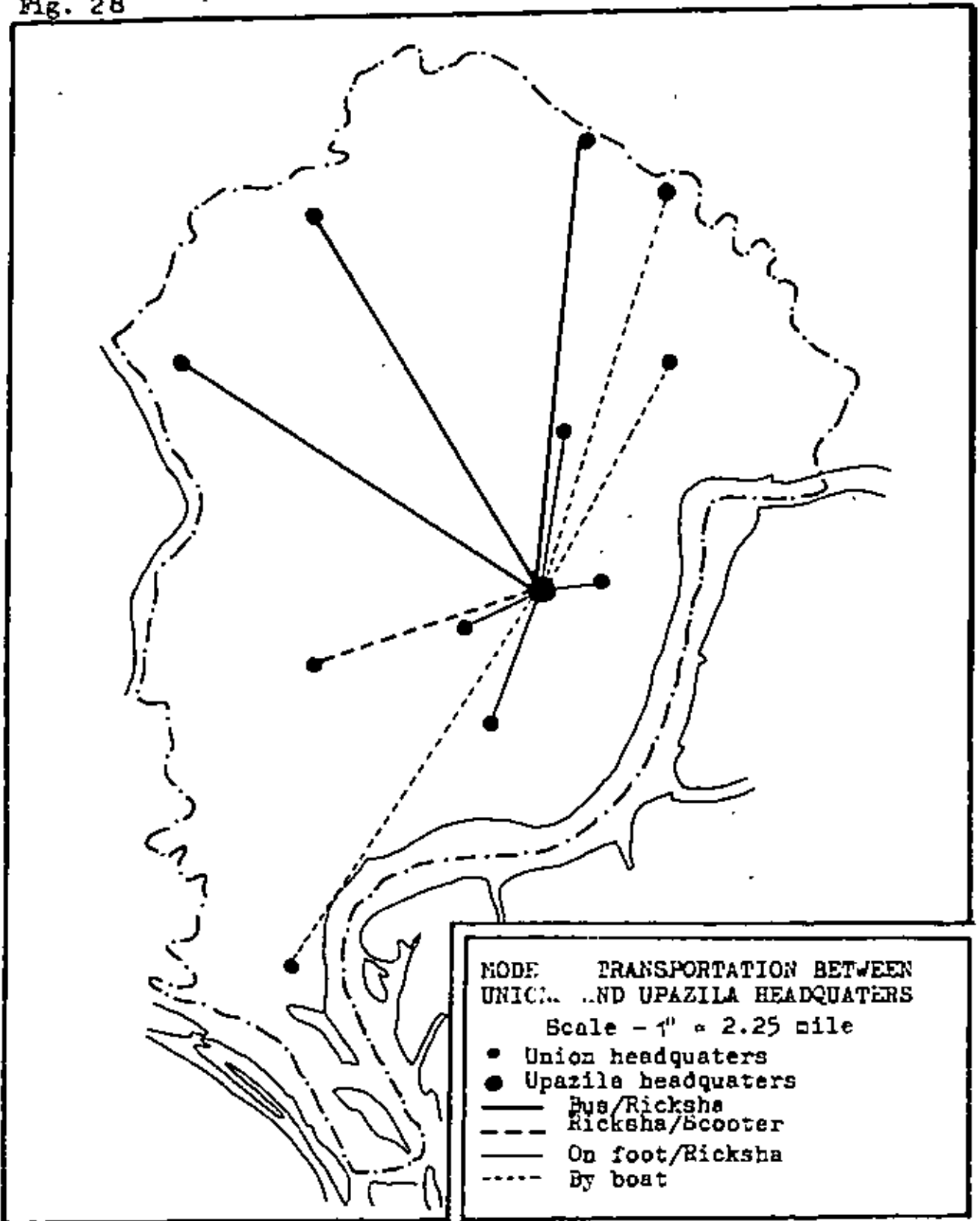
These service centres which are below the rank of Category-II, served the local community at village or mouza level. These centres are not physically well linked with the higher categories in all cases which require better transportation linkage to render higher level of services of the community and to have improved linkage with the higher categories of service centres.

Category-V, have actually no service facilities and these villages or mouzas obtain service facilities from the other categories of service centres. If there exists good transportation linkage with the nearest service centres which are regularly commutable by the population of the village or mouzas having no service facilities, it creates no problem to the community. But if the transportation linkage is poor, it definitely creates problem to the community of such villages or mouzas. In that case, there should have required service facilities within the community or the community should be well linked to the nearest service centres and then to the service centres in higher categories.

It is evident from the field survey that in many parts of the Upazila, the transportation system is poor and in some areas hindered by natural obstacles such as low lying areas or presence of river making problem for road transportation and consuming excess time or money.

Thus uniform distribution of service centres is in fact a necessity to distribute the services within the Upazila on a rational basis. Since the already existing centres should not be redistributed considering the loss of money and other inputs, it is wiser to link the unserved areas or settlements with their nearest service centres by improved transportation facilities especially through developed network. Under the present Upazila administrative system, the planning approach and investment decision may be moulded towards the above direction.

Fig. 28



4.6 Hierarchical Pattern of Service Centres in the Light of Central Place Theory

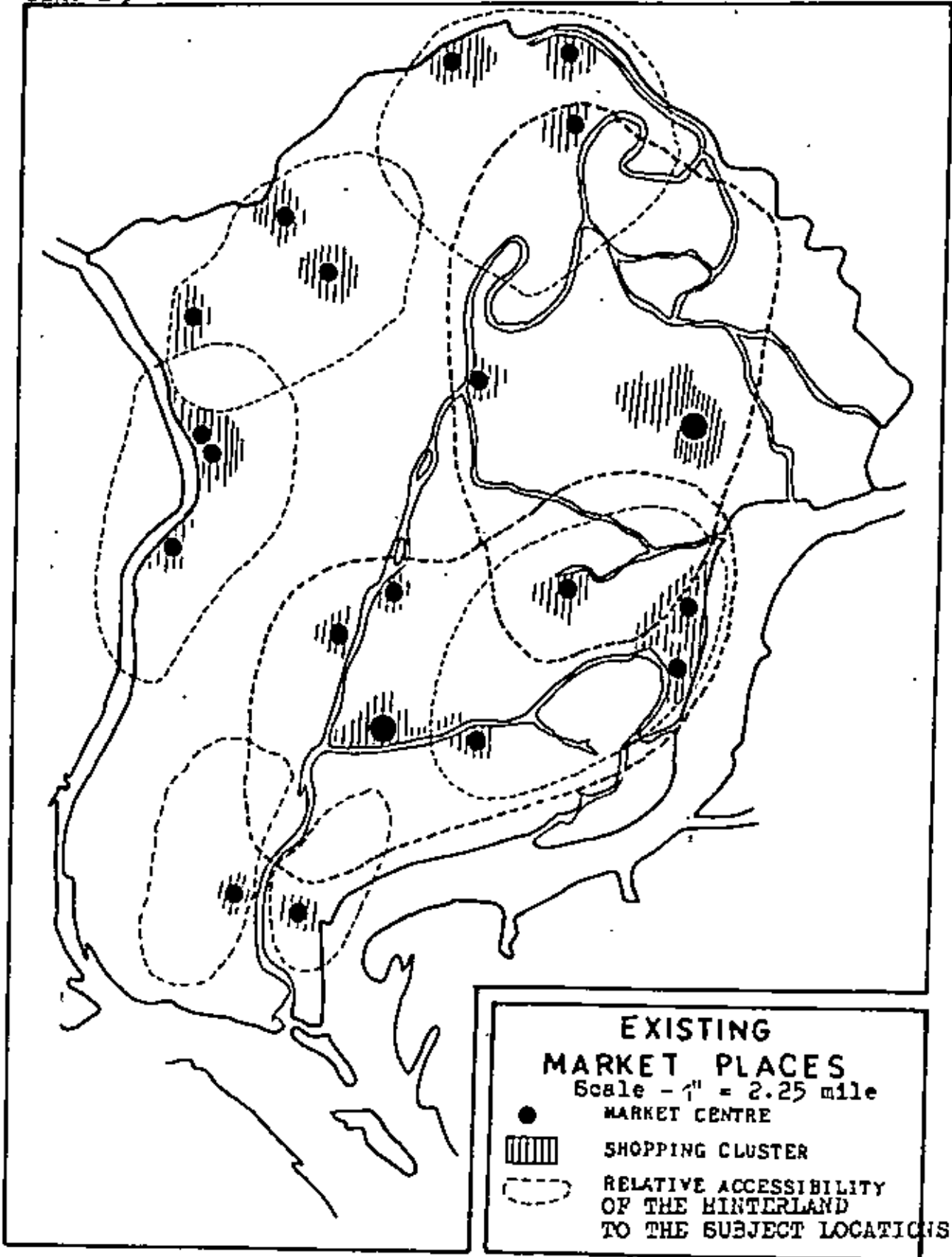
The hierarchy of settlements within the Upazila can be analysed in the light of Central Place Theory of Christaller. In that context, Upazila centre may be considered at the top of the hierarchy. It can be assumed that the degree of services from the Upazila centre will be gradually lowered down to the other centres in the lower level of the hierarchy. This also happens in the case of Christaller's Central Place Theory. Such theoretical ideal pattern of hexagonal hierarchy of service centres may possibly does not exist in the Upazila. However, the concept of Central Place Theory can be valuably used in the analysis of the hierarchy of settlements with their service opportunities.

Leaving aside Upazila centre, the union Headquarters and prominent rural markets can be considered as sub-centres in the hierarchy below the level of Upazila centres. Below the level of these sub-centres, there are other lower level central places of small hats, shopping centres, education places and so on. It is interesting to note that the level of services provided by these service centres in different hierarchical levels along with their zone of influence gradually decreases from the Upazila centre to the village level and vice versa.

Conceptually, the Upazila centre should serve all parts of the Upazila, but in practice this does not happens so in Sonargaon Upazila. Some unions (Fig.-28) and many villages are not well communicated with the Upazila Headquarters by good transportation linkage. This makes a large area within the Upazila virtually unserved by the Sonargaon Upazila Centre. This is equally true in the case of union Headquarters and prominent rural markets.

However, although there are lack of transportation facilities, people from remote corner of the Upazila region also regularly communicate to the Upazila centre for administrative and judicial services. But for day to day necessary marketing requirements, they avail the opportunity of local or nearby markets. Thus, the ideal hexagon pattern of central place hierarchy is not existing in Sonargaon Upazila as well as in Bangladesh. The catchment area of the service places of the Upazila is shown in Figure no. 29 which indicates the unserved area of the Upazila region. But if the transportation system of the Upazila could be developed there would have not any area unserved although theoretical ideal pattern of service system could not be achieved.

FIG. 29



CHAPTER - 5

- 5. FINDINGS
- 5.1 Problems of development
 - 5.1.1 The upazila town centre
 - 5.1.2 Population aspects
 - 5.1.3 Education aspects
 - 5.1.4 Health and sanitation
 - 5.1.5 Distribution of settlements and service centres
 - 5.1.6 Physical linkage between service centres and settlements
 - 5.1.7 Agriculture aspects
 - 5.1.8 Non-agricultural economic sectors
- 5.2 Potentials for development
 - 5.2.1 The upazila town centre
 - 5.2.2 Population aspects
 - 5.2.3 Education aspects
 - 5.2.4 Health and sanitation
 - 5.2.5 Distribution of settlements and service centre
 - 5.2.6 Physical linkage between service centres and settlements
 - 5.2.7 Agriculture aspects
 - 5.2.8 Non-agricultural economic sectors
 - 5.2.9 Existing social and physical infrastructure facilities

5.1 The Problems of Development

The problems of development describe as following manner:-

5.1.1 The Upazila Town Centre

The availability of the buildable land gives the Upazila an irregular shape rather than a theoretical circular shape. The existing form and shape of the Sonargaon Upazila have been characterized mainly by two factors:-

Firstly: The river Meghna and Lakhya, the means of important water ways transportation, has greatly influenced the linear pattern of settlement on both sides of river banks. This influence has attracted different types of activities on either side of the rivers.

Secondly: The inter-district road (Dhaka-Meghna) has induced similar or complementary type of land uses.

It is assumed that this natural form and the existing linear pattern of settlements and the general landuse patterns of the Upazila should not much disturbed or dislocated for future physical planning and development approach. Any distortion or drastic changes to this natural growth and tendency may upset the stability and balance in the development process.

The scope of this study also search to determine an optimum size of Sonargaon Upazila township and the method of restraining further growth of it. There may be two alternative choice viz.

- i) Either to develop Sonargaon as an integral part of Dhaka and Narayanganj, or
- ii) To develop it as a separate self contained town having satellite relationship with Dhaka-Narayanganj.

The existing urban expansion in Sonargaon is the sub-urban development, though it has got a separate identity. The river Lakhya and Meghna are acting as strong barrier between Dhaka, Narayanganj, Comilla and Sonargaon. A great hindrance to the integration of Sonargaon with Dhaka and Narayanganj is the existence of river Lakhya, lying in between them. For proper integration between these areas, shorter transportation linkage at different locations across the river is necessary. Thus Sonargaon can be developed as satellite relationship with Dhaka and Narayanganj.

Being a satellite town, its land use organisation and upazila headquarters will always remain under direct influence from Dhaka and Narayanganj. The upazila centre which proposed to be built at Uddamganj, will not be conveniently accessible from all parts of the upazila. The people may prefer to go for services and facilities available in Narayanganj instead of visiting the headquarters at Sonargaon. Hence, a few sub-centres termed as community service centres are required at convenient locations, so that the services and facilities may be available with easy access. Though this dependence on Narayanganj will considerably reduced.

5.1.2 Population Aspects

The density of population in Sonargaon upazila is 3479 persons per square mile. This density of population is high above the national average density of population. The household size in the upazila (5.9) is also higher than the national average (5.7) (appendix-XVI).

The inter-census population variation indicates that there has been a rapid increase in the total population of the upazila. This increase of population has been higher in the recent years (Table-33). So the pressure of population increase necessitates the increase of physical facilities with a rational physical planning approach in the upazila to keep a balance in the development efforts. Also, care should be taken to check the

5.1.3 Education Aspects

Education facilities of Sonargaon upazila could not maintain it's past literacy rate due to the following problems:-

- a) Shortage of Institutions: In between 1974 and 1984, no near education institutions has been established in the upazila with the increase of number of students. So the existing institutions can not bear the present load of students, and as a result, the quality of education would certainly have been deteriorated. There is no acute problem of secondary and higher secondary education facilities. The existing institutions of these level are not of good quality intems of standard of education. The students from economically solved families, therefore, try to avall the facility in Narayanganj and Dhaka. But poor students cannot maintain the higher expenses in Narayanganj or Dhaka.
- b) Shortage of Teachers: The existing institutions can not provide education to the students for a number of problems, one important reason being the shortage of teachers (Appendix-IVIII).

Teaching as profession in the primary and secondary schools can not provide the teachers good economic support to their families. As a result, any one do not liketto come to the profession in rural areas. Again, those who are associated with this profession, also are engage in other activities to earn their livelihood. Besides this, the salareis are not regularly paid to them and there is no residential accommodation by the institutions for the teachers. In consequence of the above, the quality of school education in the upazila remain in a poor conditions.

It is found in the field survey that the existing college is facing acute problem of lack of physical

accommodation facilities and shortage of teachers as well. Many students, therefore, prefer to study in remote colleges especially in Harayanganj or Dhaka. This is an important reason for the poor picture of high level literate persons in the upazila.

- c) Accommodation problems: The accommodation quality of the schools is of very poor standard. The schools in the union and village are usually not built with complete pucca structures or with any other good alternatives. This dilapidated condition of the institutions can not very well attract the school goers and in many instances, some of them leave schools forever and engage themselves in family activities especially in agriculture or remain unemployed for year after year. But a little improvement in the education facilities might change many of their lives with better human quality.

5.1.4 Health and Sanitation

Health and sanitation facilities of Sonargaon upazila are very poor. Poverty stricken people in the upazila suffer from malnutrition, the diseases of insanitary conditions and lack of medical supplies and facilities. There is one upazila health complex and family planning centre in the upazila headquarters but lack of good transportation facilities in the whole upazila is a limiting factor in the proper use of their service facilities. It is found from field survey that there are only 11 M.B.B.S. doctors in the upazila which is a poor number for a large size of population in the upazila. The only one family planning centre could not facilitate the people with adequate family planning services. Therefore, the growth rate of population is not satisfactorily reducing.

5.1.5 Distribution of Settlements and Service Centres

The upazila is consisted with a non-uniform distribution of service centres. There is absence of market in Pirijpur union and the people of this union depend on the nearby market places in other unions for marketing facilities.

The one family planning centre at the upazila centre cannot served it's services to the people of whole upazila. As a result, population of Sambhupura, Nandpur, Hoogaon and Somnondi unions are not better served by the existing family planning services.

All of the major services such as Hospital, Police station, College, Museum, Family Planning Centre, Telephone Exchange etc. are located in the upazila centre. So people in different parts of the upazila cannot get their services properly. Therefore, a large portion of the people happens to be unserved from their services.

5.1.6 Physical linkage between Service Centres and Settlements

The people of Hoogaon, Barodi and Sambhupura unions seriously suffer for undeveloped transportation linkage with the upazila headquarters. The means of transportation of these unions are mainly country boats. The union Katchpur, Sadipur and Jampur have linkage with upazila headquarters by bus/rickshaws through the National Highway and D.C. road or the erstwhile Grand Trunk road has been much deteriorated and cannot accommodate the present volume of traffic.

It is notable that the D.C. road is the only metalled road linked between National Highway and Upazila Headquarters.

Due to the undeveloped transportation linkage, the field workers of family planning services, the post man and other government

and non-government persons cannot visit the remote villages regularly or whenever it is required. A postman in union level even do not regularly visit the villages under the union due to this lack of transportation. Therefore, problem of transportation also creating communication gap between the institutions and the villagers.

5.1.7 Agriculture Aspects

The upazila is mainly agriculture base on it's earning capacity of population. This agricultural condition suffering inadequate facilities of:-

- i) Seed and Fertilizer Distribution: There is one seed godown and one fertilizer distribution centre in the upazila headquarters. People do not get services from these two centres in a proper time due to the problem of transportation and availability of seed and fertilizer in proper time. Beside these, non-availability of other agricultural inputs and pesticides are also problems to increase the agricultural production.
- ii) Flooding: The upzila is surrounded by rivers on it's three sides and a river flows north-south through the middle of the upazila. There are no embankment or any kinds of flood control system in the upazila. Therefore, in every year flood affects all the low lying lands of agriculture.

It has been evident in the survey that some embankment facilities can protect the agricultural land in Pirijpur, Baider Bazar, Barodi, Sarmondi and Shambhupura unions.

5.1.8 Non-agricultural Economic Sectors

The non-agricultural economic sectors of the upazila have also contribution to the upazila economy especially in generating income and employment.

The upazila Sonargaon had a good industrial past. At present there are also 1860 units of handloom and power loom industries, 791 cottage industries and 29 jute and textile industries (appendix-XVII).

Recently one cold storage, one plumber industry and one brick field have been established. It seems that all of the above activities play an important role to the development of the upazila, but not yet, due to the following problems:-

- i) Lack of Financial support: The handloom and powerloom industries now seriously suffer from lack of financial support. For this, the financially involvement class could not come forward to this activities and therefore, the cottage industrial sector could not expand and developed to an expected level.
- ii) Non-availability of Raw Materials: It has been found in the field survey that all of the handloom industries depend on the Narayanganj and Narshingdi for their raw materials. So carrying cost of the raw materials increased. Raw materials through proper rationing system cannot be established due to the malpractice of the dealers and influential persons. In this way the small and cottage industrial base of the economy has been becoming weaker. At present, there is also problem of shortage of skilled industrial worker due to this diminishing situation in the industrial sector.

- iii) Absence of local Market: In absence of local market, maximum percentage (95%) of industrial products are carried and sold in the markets of Narayanganj (50%), Narshingdi (25%), Baburhat (10%), Munshinganj (5%), Dhaka (5%) and 5% is sold in the local hat/bazars. Therefore, a type of middle man (named as Mahajan, Paiker) have been generated who take the output from producers in exchange of money and borrowed it to the above market places. For this situation, producers cannot get the actual price of their products.

It is found from the survey that the existing timber mill is facing space problems. The cold storage requires adequate supply of electricity and the brick field needs gas for burning the bricks.

5.2 Potential for Development

To develop the Sonargaon upazila in a rational way, there have some potentiality which are as follows:-

5.2.1 The Upazila Town Centre

The upazila centre is generally supposed to have sources for a wide variety of shopping facilities, administrative and other offices, housing blocks, education facilities, cinema and other cultural facilities and so on. This centre should attract people from all parts of the upazila. The location, size and design of this upazila centre which will provide many services and functions not only in the local scale but also in the regional scale, require careful study in terms of its economic and financial feasibility. A complex of this particular nature i.e. a mix development business and residential accommodation economically feasible. Housing should be available to a full range of income groups specially for lower income groups struggling for accommodation in the upazila centre. This aspects leads to the need of good organization and order of a proper hierarchy of functions. The upazila centre should no longer remain haphazard and unorganized. The order and hierarchy of functions will also strengthen the organisation and development of sub-regional and local community level service centres.

5.2.2 Population Aspects

To check the population growth there is scope to provide family planning services in the Sonargaon upazila. The existing family planning centre is located in the upazila centre, some new family planning sub-centres may be established in the unions of Shambhupura, Jampur, Barodi, Katchpur and Mogradara on the basis of population size and geographic distance. Through this family planning efforts can be expanded throughout the whole upazila. This will help campaign for small family and reach the family planning measures to the door steps of the people.

5.2.3 Education Aspects

The incentives for developing the education standard may be attained through the following measures.

Primarily, some existing primary schools and high schools may physically be redeveloped in consideration with more accommodations.

Secondly, to solve the shortage of teachers of existing schools, more teachers may be appointed where needed.

Thirdly, some new schools may be established in considering the population size and area of the unions and walking distance of the school for the children. Public education facilities can be extended to the areas of importance in the upazila with uniform distribution. The economic base should be strong enough to support public services including a tax base sufficient to provide services at each stage of development.

5.2.4 Health and Sanitation

To improve the health facilities of Sonargaon upazila, the upazila health complex needs to be substantially improved in terms of service standard such as, scientific instruments, medicines and number of professionally qualified doctors.

Except this, 4 child care centre may be provide in the union Janpur, Shambhupura, Katchpur and Barodi.

To improve the insanitary condition of the upazila, modern sanitary facilities may be provide all over the upazila. Pure drinking water supply may be substantially extended in the villages through adequate supply tubewell at a subsidized rate of price.

5.2.5 Distribution of Settlements and Service Centres

In consideration with an uniform distribution of service centres in the upazila, two more hat/bazars may be developed in the union Pirijpur. Existing Kaikertek hat is not physically developed in terms of its requirements for services to the people. Therefore, provision of more shopping facilities may be developed. Another one is Barodi hat which is similar to Kaikertek hat and is going to be abolished by the erosion of river Meghna. Baider Bazar hat/bazar is also suffering from the same problem. For these two hat/bazars, two embankments may be provided to check the erosion Meghna.

Beside these, some more service centres may be provided on the basis of settlement distribution in the upazila. These service centres may be developed in the unions of Shambhupura, Mograpara, Sarmondi and Sadipur. Also the standard of services in the upazila centres may be improved through development of transportation linkage in the upazila.

Hierarchy of functions concern the importance of service centres especially the existing rural markets and shopping centres. It deals with the types of people, their diversified needs etc. which will affect and influence the location of service facilities.

5.2.6 Physical Linkage Between Service Centres and Settlements

To develop an uniform transportation linkage between upazila headquarters and unions, good road transportation requires to be established especially between the upazila headquarters and the union headquarters of Moyagaon, Barodi and Shambhupura. The existing Grand Trunk road also needs to be developed to check the present deteriorating condition.

A large percentage of the population get service facilities on foot from different markets. For this, they suffer enormously from the trouble of journey especially in carrying goods in the

absence of suitable mode of transportation modes. But before the consideration of the modes, the necessity of improving the road transportation linkage in the rural area may be given priority.

Through such improvement in the road transportation network in the rural areas or the upazila, the process of rendering services by the existing service centres and institutions may be quicker.

5.2.7 Agricultural aspects

The scope for the development of agriculture in the upazila may be achieved in the following ways:-

- i) Provision of more seed and fertilizer distribution centres in the upazila especially in the unions of Pirijpur, Sadipur, Sanmondi, Barodi and Katchpur.
- ii) Provision of a agricultural inputs centre in the upazila headquarters with facilities of modern agricultural equipments and necessary training and exhibition opportunities to bring an improvement over the traditional system of farming.
- iii) Extension of flood control measures may valuable save the low lying agricultural land and thus yield of the upazila may be substantially increased.

Beside these, insecticides, pesticides and fertilizer may be distributed through a justifiable rationing system by the local dealers at union level.

5.2.8 Non-agricultural Economic Sectors

To improve the condition of non-agricultural economic sectors, managerial and financial support may be extended through adequate

measures by the Government.

Raw materials for this sector which are not available in the upazila may be supplied to the people through a rationing system within the upazila. For this, some dealers may be selected and their shops may be distributed in the unions of Jampur, Noyagaon, Katchpur, Barodi and Sanmondi. These unions are also important for handloom industries, and Mograpara for cottage industries. Local markets needs to be developed to sale the output of these industries checking the malpractices of the middle man. Prices may be fixed up on actual rate for the output of non-agricultural economic sectors in the upazila.

The development efforts should create the type of environment which will attract the retain industry in sufficient quantity and diversity to provide a wide range of job opportunity for the area.

Development should respond to the areas of natural conditions. Thus the potential natural beauty (specially the low lying areas, lakes/canals) of the upazila should be respected and developed. Large open space and extensive recreational opportunities for active and passive activities in the regional scale should be provided and be consistent with the sub-urban context of the upazila and it's rural character. Environmental diversity, contrast and individual architectural expansion should be preserved within a unified environment. Unions should contain a wide variety of housing types and sizes to prevent physical monotony and large enclaves of family types and socio-economic groups.

It needs no mention that emphasis should be given to the need for planning control of landuse within the area. But implementation of local schemes may become difficult, or even impossible,

if they are not first integrated with a planning policy conceived at upazila level which guides the distribution of population and the development of different union centres throughout the upazila.

Time, money and efforts for development may be wasted for redundant road facilities, schools, shops etc. Movement of people and goods within the upazila should not be wasteful necessitating travel over great distance to reach their destination. People should not be made to commute over long distance at the expense of their most valuable leisure time. The upazila centre should be organized to follow a certain functional part of a well co-ordinated system of interdependent activities.

5.2.9 Existing Social and Physical Infrastructure facilities

Appendix-VI showing the existing major facilities for community services. It is expressed that each of the facilities at present serve more than it's design capacity of population which indicates that social and physical infrastructure facilities are to be improved and developed to render services to the community. Some facilities are found also to be serving at a very minimum level. College, Madrasha, Telephone exchange, post office, rail station, ferry ghat, bus station, market, may serve the upazila population more valuable than the existing position if facilities are provided for their improvement. The health facilities may however be expanded through increasing the number of units to reach the opportunities to the remote villagers. Also the existing units need to be improved to render standardized health facilities to the existing overs, whole number will also increase in future.

CHAPTER - 6

- 6. RECOMMENDATIONS AND CONCLUSION
- 6.1 Size and structure of upazila centre
- 6.2 The proposed township landuse pattern
- 6.3 Provision for economic and productive activities
- 6.4 The Communication network
 - 6.4.1 Traffic and transportation pattern
- 6.5 Provision for community facilities and essential services
- 6.6 Summary of Recommendations
- 6.7 Conclusion

6.1 Size and Structure of Upazila Centre

As per the existing condition and a basis of a township structure, Aminpur and some parts of the Baider Bazar unions may be considered as the heart of the upazila township development.

Figure 25 shows the proposals for development of upazila centre, Sonargaon. Centering around the township centre; there are three zones of development for future consideration e.g. the inner zone, the outer zone and peripheral zone. The respective zone has been located further away from the centre and each provides different densities of population, the inner zone accommodates the highest density.

"The complete plan includes about four major communities based on the planning criteria (discussed in the next head line). Each communities when fully developed, will provide a population of 20000 people. The union centres have been created by decreasing this size of population and provision has been made to contain 150 persons per acre with net of roads and other facilities. Each union will be served by a local small township centre and therefore has further been sub-divided into smaller population groups of 5000 population with a primary school and a minor community centre conveniently in the middle (Haque, 19 & UDD, 1983).

It is proposed that the development of upazila town centre may be followed by check of natural growth and tendency of unplanned growth of human settlements in the light of a standard and recommended planning principles. The development of Sonargaon upazila town centre may be viewed as a satellite town and tourists centre.

Haque, A. 1977

An Approach towards physical planning of sub-urban area such as Keraniganj, un-published postgraduate Thesis, BUET, Dhaka, Urban Development Directorate 1983.

Terms of Reference for Lanuse/Master Plan and Upazila Physical Plan, Dhaka

6.2 The Proposed General Landuse Pattern

The landuse pattern provides the general topographical conditions and existing developments as a framework on which to depend for development goals on the upazila. The town plan defines the central core associated with a high density residential development and open landscape as recreational space and decreasing the concentration of growth towards the perimeter. The upazila centre with a compact core bisected by existing major roads will follow main development along the road. No proposal has been made for a new core. The arrangement of different buildings, landuses, their relationship with one another and the manner in which the pattern of landuses are adopted in the plan, largely determine the character, efficiency and quality of the community. The upazila centre is conceived as an administrative centre of the whole upazila region.

A ratio of area to population can be ascertained for various landuses. Such a ratio furnishes an important basis for the estimates of the future landuse needs of the upazila. And in order to prepare satisfactory and reasonable zoning regulation, it is necessary to estimate the amount of land that will be needed for the various purposes over the next 20 or any much foreseeable years. To make such estimates, firstly, to establish the present ratio between the landuse and population and then, to apply such a ratio for an estimation of the future population (Tables 32 & 33).

All markets of Sonargaon upazila is itself to be nucleus and for further expansion, it will be over 600 acres in total. This estimates is only for 16 existing markets and 8 proposed markets, i.e. for 24 markets having a total land of 600 acres which provide 25 acres for each of them. The centrally located market Mograpara and Uddanganj is to be extended with the same ratio of others. Between major landuses (residential and commercial) it is best situated to serve the whole development.

The principal disposition of physical development in the upazila may in short be explained as: on the south along the river is the ferry ghat connecting Narayanganj, Dhaka, Comilla, on the west and along the National Highway heavy industries, dockyards, service industries along the river Lakhya, on the east ferry ghats and fishing activities and on the north residential accommodation (figure-30).

Table - 32
Population Projection and Percentage Variation
over Years in the Upazila

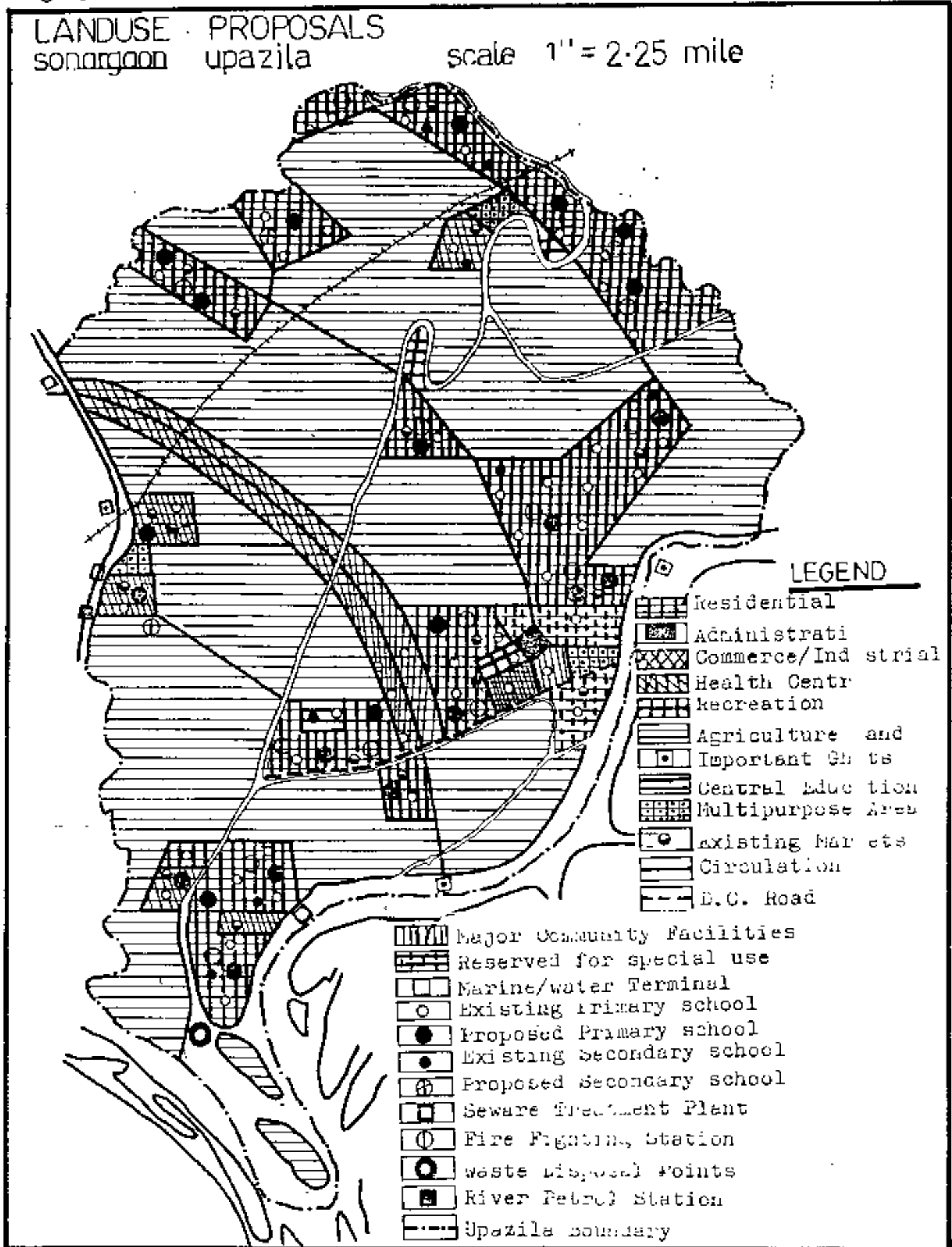
<u>Population</u>					<u>% Variation</u>				
1981	1985	1990	1995	2000	81-85	85-90	90-95	95-20	85-20
210330	235141	270978	313159	362957	11.79	15.24	11.56	15.90	72.56

Source
Source: On the basis of total population, Statistical Year Book 1983.

Fig. 30

LANDUSE PROPOSALS
sonargaon upazila

scale 1" = 2.25 mile



LEGEND

- Residential
- Administrative
- Commerce/Industrial
- Health Centre
- Recreation
- Agriculture and Important Ghats
- Central Education
- Multipurpose Area
- Existing Markets
- Circulation
- D.C. Road
- Major Community Facilities
- Reserved for special use
- Marine/water Terminal
- Existing primary school
- Proposed Primary school
- Existing secondary school
- Proposed secondary school
- Sewage Treatment Plant
- Fire Fighting Station
- waste disposal points
- River Patrol Station
- Upazila boundary

Table - 33

Union-wise Population Projection

<u>Union</u>	<u>1974</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
Sadipur	14924	17727	19559	22117	25010	28281
Katchpur	13372	18443	22163	27885	35086	44142
Jampur	23075	25466	26942	28908	31017	33280
Noyagaon	13714	15506	16633	18158	19823	21641
Barodi	16951	19755	21561	24052	26831	29931
Sarmondi	21861	27187	30794	35983	42046	49131
Baidar Bazar	11076	15515	18810	23930	3044	38731
Aninpur	12607	15095	16731	19028	21640	24611
Hograpara	12142	15408	17655	20930	24813	29416
Pirijpur	17783	20297	21890	24058	26441	29050
Shambhupura	16243	19931	22403	25929	30010	34733
Total	173748	210330	235141	270978	313159	362957

1981
Source:

On the basis of Statistical Year Book 1983

The big shopping stores and those meet other than daily needs may be planned in the upazila centre and be quickly reached by bus/rickshaws or on foot from the farthest part of the upazila by improved roads. There will also be belts of administrative and other public and cultural buildings including the central mosque set in sequence. The existing shopping facilities on the street may be preserved and expanded except on either sides of the Dhaka-Meghna Ghat National Highway which is going to be an Industrial zone and thus may be preserved for such activities.

It is proposed that residential areas may be grouped into functional units of communities, integrated more or less with one another not intended to be self-sufficient or independent. The communities are related as far as possible to areas of major open space. "The areas are grouped together in clusters around major centres in order that community facilities could be provided. Each major centre will contain a mosque, health centre and at least 50 shops. This one major centre serving about 20000 population will therefore have one shopping provision for 400 population in an average." (Haque Ameenu M., 1977, An Approach towards the physical planning of a sub-urban area such as Keraniganj, Un-published M.U.R.P. thesis, BUET, Dhaka).

The proposed plan provides the distribution of population in planned communities varying from low density single family areas to high density apartment buildings. The various densities will encourage diversification. Each community unit will have different classes of people in varying proportion in order to make a balanced community as well as to achieve there dimensional variety of architecture. This may be usually done through locating the low income group of people in the inner residential area. The medium income group in the next outer or mid-level zone and the high income group in the outer zone. But in the context of the upazila town centre, this may not be attained in the like manner and for that the residential provision in the upazila town should be considered in the light of it's prevailing situation. In Sonargaon the above pattern of residential zone may be accommodated in the landuse plan.

A portion of high density should be provided for those who wish to live very close to the upazila centre or other focal points. But too extreme ranges of density will be spread over two Principal zones as described below:-

INNER ZONE - It is obvious that high density residential areas are required to accommodate a large size of anticipated population preferably within close proximity to the central part and on available high land in the planned area.

In the central area, high density residential units comprising multistored apartment blocks will be developed with a area of 150 acres accommodating 3000 population. As such a gross density of 200 persons per acre is recommended, allowing 40 percent reduction of area to be available for circulation, utility service areas, community open space etc. This gives a net density of 600 persons per acre, and "approximately 10% of the total built up area to be reserved for future development expansion. "IV Individual landuses within this category has not been identified.

OUTER ZONE - It is suggested that a gross maximum density of 150 persons per acre with a net density of 300 persons per acre may be considered in the outer zone. At the early stage of development, sufficient public facilities-would not be provided in this zone to save cost and time.

The plan proposals for each of the union of Sonargaon upazila will accommodate a 5000 persons or about 1000 dwelling units after 1995. Future provision has been kept to provide an cillary services for the future increased population and for any expansion of residential areas to accommodate the unanticipated population beyond the largest plan period. This land should not be used for low density housing.

6.3 Provision for Economic and Productive Activies

The flood affected and low lying land on either side of the National Highway, could not form the area on ideal location for industrial and commercial development. Control of flood may therefore, enrich low lying area for agricultural development. At present, both sides of

the National Highway are going to be industrial used. Therefore, above mentioned area have been reserved for industrial zone in the proposed land use plan (fig.30.). The proposed plan includes about 500 acres of land for sound industrial development free from residential uses. In addition, an industrial area of 100 acres is included on the east and west for development in the later stage of the execution period of the land use plan.

The potential sites which have been reserved for future expansion of industrial development provide roads, rivers, jettis, and utility services in an organized way. Following implications may be observed for this area:-

- a) Clearance of site for the industrial development.
- b) Encouragement for setting up new large scale industrial units.
- c) Prohibition of all residential and agricultural has within the area.
- d) The preparation of plan for necessary utility services
- e) Some tracts of land may be reserved for park and open spaces within this industrial area.
- f) The entire industrial zone covers 600 acres of land which will provide a plenty of rooms for a large number of factories and related establishments creating scope for more non-agricultural economic activities and employment.

It is recommended that Local Planning Authority will maintain control of the design and layout of the industrial areas. The new development will be restricted primarily to single storied buildings. It may also be suggested that land coverages should be such as to allow maximum number of factories, a river side or road side garden for employees and roads for services access. No more residential houses shall be allowed to be built on this stage, but there may be some shops and public houses etc. There may also be established some service industries to meet local needs, such as Laundries, Bakeries and Dairies.

6.4 The Communication Network

The communication network for Sonargaon upazila has been proposed to be developed connecting the two main roads and covering the whole upazila. This highway at the same time function as a by-pass road through the area and drains of a high volume of through traffic from the upazila town centre to the periphery. The existing by-pass is extended to the west to form a linear road which will help the movement of traffic between north and south part of the upazila. The upazila centre is situated almost on the road. Traffic to and from town follows a radial and the grid-iron roads. The minor roads are provided in accordance with the landuses and links the communities to each other and ultimately connects the main roads.

The plan recommends the following standard roads as it is presently being recommended for the upazila town centre by the Urban Development Directorate, Ministry of Works, Government of Peoples Republic of Bangladesh (UDD, 1984)

<u>Roads</u>	<u>Reserves</u>	<u>Surface</u>
Major	60 feet	30 feet
Secondary	40 feet	20 feet
Local	24 feet	2 feet

6.4.1 Traffic and Transportation Pattern

An appropriate road plan for the upazila town centre is urgently needed to ease the pedestrian movement in the town and to check the fast moving traffic from the National Highway also a rational road plan is required for the rural areas of the upazila to obtain an improved physical linkage. The following may be the recommendations for the purpose:-

- i) The road pattern within the upazila town centre should be reasonably linked with the different landuse zones. In the same way, the transportation network within the region of the upazila needs to be developed for smooth socio-economic development of the whole upazila.
- ii) To ease the streets of inner part of the town from heavy traffic flow, the heavy traffic requires to be accommodated some where at the outer zone. The existing highway through the upazila is also required to be expanded in a width to avoid the road accidents and if possible it may be newly constructed through the proposed industrial zone (Figure-30).
- iii) The road segment between Mogradara and Baider Bazar has only 12 feet width at present which needs to be doubled for easy movement of traffic. This road links the upazila headquarters with the National Highway and therefore, requires substantial development.
- iv) To provide adequate parking facilities for both public and private vehicles. Parking facilities may be provided within the town centre where it is required in existing situation. Also future provision requirements will have to be considered in terms of increase of traffic flow within the town.
- v) Present river communication system will have to be developed to meet the anticipated demand associated with the future expansion of socio-economic activities and help the development of sub-urbanization process with the standardization of service.

A water based communication system has been recommended identifying the uses of existing canals. Few terminals and jetties have been suggested in the proposed plan considering the locational advantages to facilitate efficient movement of people and goods. Feeder or link roads have been proposed to establish communication between the water transport terminals and their hinterland areas.

- vi) A large part of the people from remote areas of the upazila virtually have no transportation other than walking on foot. The lack of transport facilities for these people seriously limits their access to employment, essential services and participation in community affairs. To solve this problem, some new roads are required to be provided with the scope of movement for automobiles including local bus services connecting different union headquarters and other important centres of business and commerce. For this, the roads which will be selected for services of automobiles will have to be substantially developed.
- vii) The Ferry Ghat on the Meghna river will have to be developed in line with the National requirements for highway development. But because, the ferry ghat is within the upazila Sonargaon and a trade centre for the adjacent rural areas of the upazila, it should have improve physical transportational linkage with the area served by it.

6.5 Provision for Community Facilities and Essential Services

The upazila is an important focus for different purpose of the residents such as shopping services, school, library and health clinic facilities and soon. The quality of design and environment that it offers should be exceptional. The design may be developed to achieve following four general design objectives:-

- a. To create a distinctive character for the centre.
- b. To make grouping of activities to achieve compactness and hence greater utilization of facilities.
- c. To provide climatic protection for the upazila township as well as the upazila region.
- d. To design the centre as a meeting place as outlined above in which residents can remain without being obliged to buy or move on.

Some other essential services and facilities have been included in the plan to cater the needs of the entire upazila region.

Education: Education is a major determinant of social change and will play an increasingly important role in the community. Sites have been kept reserve for a College and a technical institution within the central educational complex. To cater for educationally sub-normal pupils, a special school has also been proposed. Since the proportion of children requiring special education is only 1%-2%, yet provision should be there for future needs. Sites have been reserved for two or more schools for educationally sub-normal children, one of them for the physically handicapped children and the rest for the abandoned (mainly orphanage) children.

As the educational policies, school catchment areas for different categories of schools are determined by the easy walking distance of the school going children of respective category.

Standard of the Educational Facilities

Nursery school	Total area, 2 acres
Primary school	per 5000 population served
Secondary school or College	Total area, 5 acres for 20000 population served.

Based on the above standard, requisite number of school has been calculated for the Upazila. It was found that a good number of existing schools can serve the community still better if proper expansion or improvements are undertaken. Thus in each of eleven union communities there will be atleast eight primary schools and in all twenty secondary schools in the whole upazila. The sites for some of the secondary schools have been so located that they can conveniently serves more than one union.

Health and Welfare: It is proposed that a residential group of the planning area will have a maternity and infant welfare clinic, in some areas, this will be combined with doctors and dentists consulting rooms. Site has been kept reserved for a Central Hospital which will be developed to meet the growing needs of the upazila. It is hoped that a start will be made with a new Health Centre with modern equipments suitably located in the existing market area of Mogradara. It is recommended that one bed should be provided per one thousand populations.

Standard for Health and Welfare Facilities

Dispensary, maternity/child care Health Centre, Hospital	Total area, one acre per 5000 population served Total area, 5 acres per 20000 population served
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The National policy regarding population planning and control should be made known to the people through mass demonstration. At least one family planning centre along with one local health centre and Maternity/Child Welfare Clinic will be provided for each three communities or unions. Site for pharmacists, opticians, Dental Surgeons, Pathologists, Ophthalmic Medical Practitioners has conveniently been located within the Central Medical Complex nearest to the upazila centre.

Essential Services: At present, Sonargaon has no Fire Station. One Fire Service Station preferably at the bank of the Meghna river be located. This will facilitate the situation to bring the site immediately under control of any fire hazards on river side development.

In the upazila centre, the plan proposes a site of approximately 5 acres for a central Idgah with accommodation for about 25000 persons. Part of the area should be paved. Sites have been reserved for new mosques in each union approximately 0.5 acres per 5000 population. All possible measures must be taken to reduce pollution. The noxious odours from the future individual development. The smoke control areas should be extended to cover the whole of Narayanganj as soon as possible.

From time to time, areas will be required for some more public houses and also slaughter house, jail etc. whose spacial siting requirements at the moment cannot be foreseen, and such as no specific zoning has been made in the plan. But some of those semi-industrial services which are needed to meet a local demand may suitably be located in the reserved land areas, approximately 10% of the total built up area.

Recreation and Open Space: An extensive open space system, the most important amenity, is provided for the new communities residents. And one of the most important objectives of this scheme is to provide an open space and pathway system that would be continuous and link all the different areas of the development. The general function of the pathway is to provide safe and convenient routes for pedestrian and bicyclists and easy movement for walkers throughout the site. They will link different residential areas, the major trade areas, the major trade areas and recreational resources, employment centres, bus stops and community facilities.

A network of landscaped spaces including community parks, playing fields are also linked by pathways. These pathways will also act as collectors and link local recreation centres. They pass through the housing areas, alongside local roads through industrial areas and cross main roads. Their character will vary according to their location and the activities which occur along them. They may be planted with variety of trees providing shade in the summer.

Standard for Recreation and Open Space

Parks, open space	One acre per 1000 population served
Cinema, closed space	0.5 acre per 20000 population served
Sports stadium	3 acres per 20000 population served.

The area contains many open spaces for recreation, and instead of these spaces being placed by chance on sites which have no market value as building land. They are carefully sited close to dwellings and designed to suit the convenience of the users.

As far as possible preservation and development of existing streams, brooks, canals and provision of view points are recommended. Few open spaces have been treated as buffer zones too. Open space attached to the schools should be large enough so that they can better served their educational as well as recreational functions. A positive consideration has been given to the buffer arrangement in order to make clean the urban environment and to enrich the city scenery.

Although, Sonargaon is a potential area for recreation but the areas within the upazila are mostly of rural character. It is recommended that Sonargaon may be redeveloped as a historical and recreational place on its heritage.

Land Reserves for Special Use: About 60 acres of land is kept reserved which corresponds to the amount that is appropriate to this development. Through strategic planning, the value of this land may be increased and provide revenues during later stages of development. In addition, these areas provide opportunities for large regional facilities which may emerge in the future such as a Hospital, a Technical College or a Fire Fighting Training Centre.

Adequate power is easily available both for domestic use and industry. The existing overhead cables and poles along the roads are an eye-sore. They should be put underground with the telephone cables, if this is technically practicable. If they must be carried overhead, the design and siting of the poles will need careful setting.

In dealing with the overall planning activities in the study area, it is impossible to separate the factor of sanitation from the nature of the shelter itself. The principles laid down by the World Health Organization, it is to be considered fundamental in dealing with environmental sanitation in the area.

- i) Every household be provided with its own sanitary facilities and whenever possible, with its own water supply, communal sanitation system are strongly discouraged.
- ii) Safety alone should be the primary consideration in the disposal of excreta and sewage.

The aim of water supply programme should be to make "clean" water available at all times to the entire population of the area involved. A separate water treatment plant for water supply will be installed at the proposed site on the bank of river Meghna.

Drainage in many areas can often be accomplished by careful grading and respect for the areas natural drainage patterns. This is especially desirable in view of the cost of providing storms sewers.

The storm drainage may easily be disposed in the existing low lying agricultural fields and canals. Pools and canals where water does not remain stagnant may be connected for disposal in the river. A sewerage treatment plant may be constructed in a suitable location of the river side to finally discharge the treated sewerage in to the river.

6.6 Summary of Recommendations

In the light of the findings of the study the following planning treasures may valuably be recommended for future physical development plan of the Sonargaon upazila.

- a. The Upazila headquarters and the existing rural hats/ bazars may be based as an essential and important links for physical infrastructure as well as social infrastructure development plan and programme. Before developing new service centres, the potentialities of the existing facilities require to be evaluated and improvement possibility of those be found out. On the basis of such detail study, the services and physical facilities may be distributed on a national basis considering the equal benefits for the whole upazila population.
- b. Improvement of transportation facilities and control of monsoon flood should get an special importance to improve the communication system at reasonable level and to develop the agricultural economy of the upazila for the purpose of developing the transportation network, the existing major rural roads may be developed in a way to that the monsoon flood may not affect. This will meet the immediate requirement but efforts need be continued for gradual improvement of the transport and communication in the whole upazila as the development of other sectors largely depend on this sector. To project the flood the drainage facilities through the existing canals may be sustaintially increased so that the monsoon water may not stand for a considerable period which damage the standing agricultural crops and overflows the low level rural katch roads.

- c. Provision of community facilities in a planned way will improve the social and economic condition of the upazila. The plan of community facilities may be prepared on the basis of existing ones and linking them with the existing rural hats/bazars, education centre health centres etc. and also forecasting on present and future requirements of such services. As for example, the existing college may be developed substantially to serve the whole upazila and even the adjacent parts of the surrounding upazila for this no new college is required. In this way all facilities may be evaluated and further plan on those may be adopted to fulfill the objectives of the development goals of equal services for all population of the upazila.
- d. The Sonargaon upazila headquarters may emphatically be considered whether it can be developed as an important tourists spot. Also, consideration over the development of it as a Satellite town may be emphasized. As a historical place of importance, its nearness to Dhaka and Narayanganj and locations on the important national highway emphasizes over such consideration.
- e. The existing condition of the upazila township essentially indicates over the immediate improvement. For this, the town plan of the upazila centre should immediately be prepared and bring it into execution. The development of the upazila headquarters may then bring impetus to many related development activities within the upazila and also the process of social upliftment may be accelerated.

CONCLUSION

This study has been primarily aimed to search for a rational physical planning approach towards the development of upazila region. In doing so, emphasis has been given to formulate some planning strategies for the development of the upazila region. For this purpose, the upazila Sonargaon has been chosen as the sample and suggestions and recommendations have been made for the physical development of this upazila in the light of it's existing problems and potentials.

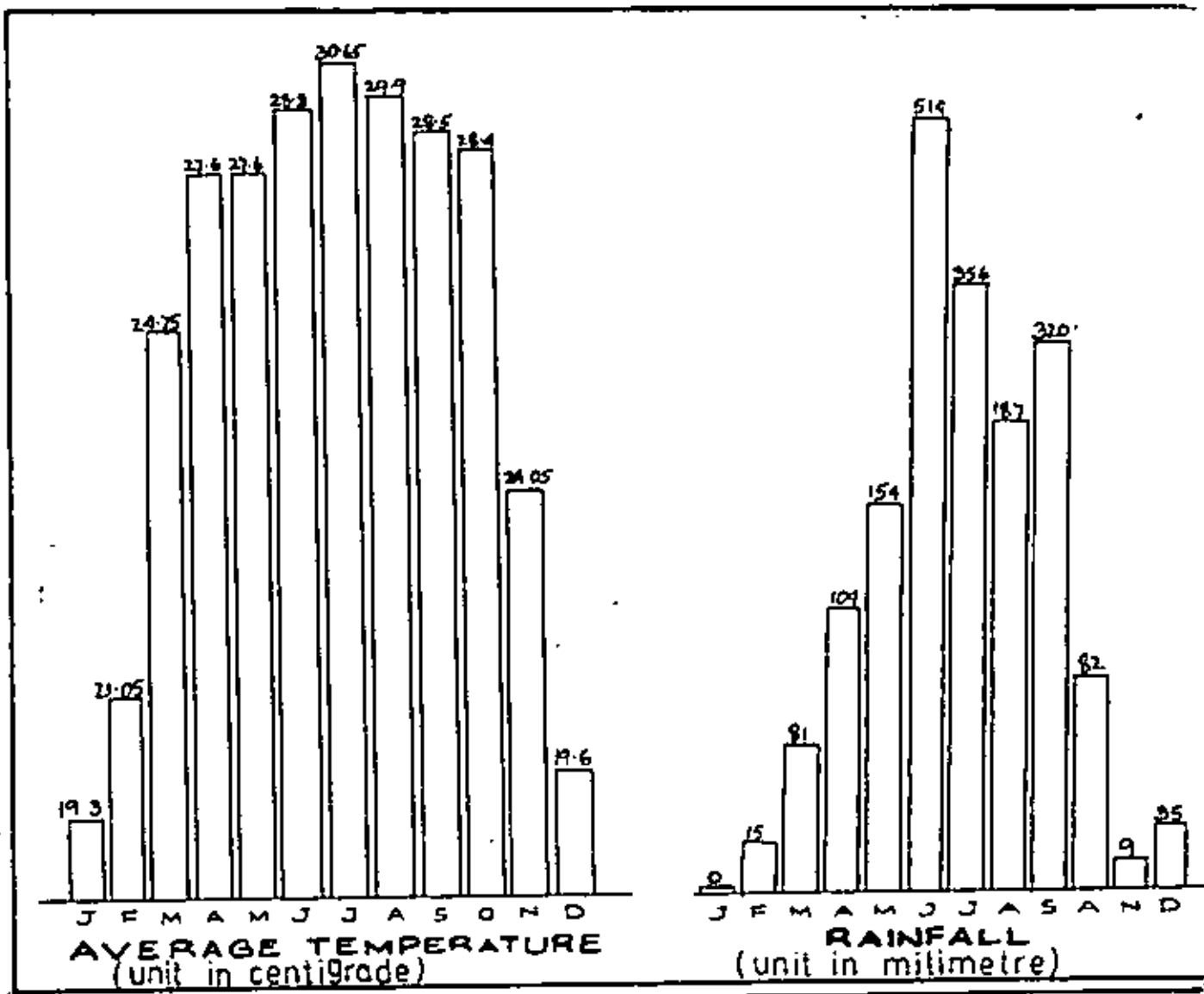
The present study has attempted to prepare a physical plan of the upazila including a landuse plan for the Sonargaon upazila centre and suggested the development of union and village level service centres with the provision of necessary services for the communities. The aim of such approach is to create a proper linkage of physical facilities in the whole upazila through which the rural people of the upazila will be integrated to the urban and semi-urban communities within it. In this way through linking the whole upazila communities with necessary services, a faster physical development process may be achieved.

The actual work demands detail and comprehensive studies over a considerable period of time and consideration from various aspects. A task of that magnitude calls for large amount of resources in terms of cost, manpower and time which is beyond the scope of the present study.

It is hoped that the study may be treated as a basis for further research in this direction. Future study may give birth to different ideas leading to an appropriate planning approach and methodology. Further research is required to formulate an effective administrative system and planning strategy and control for the physical development of the upazila region in a rational sense.



Appendix. I

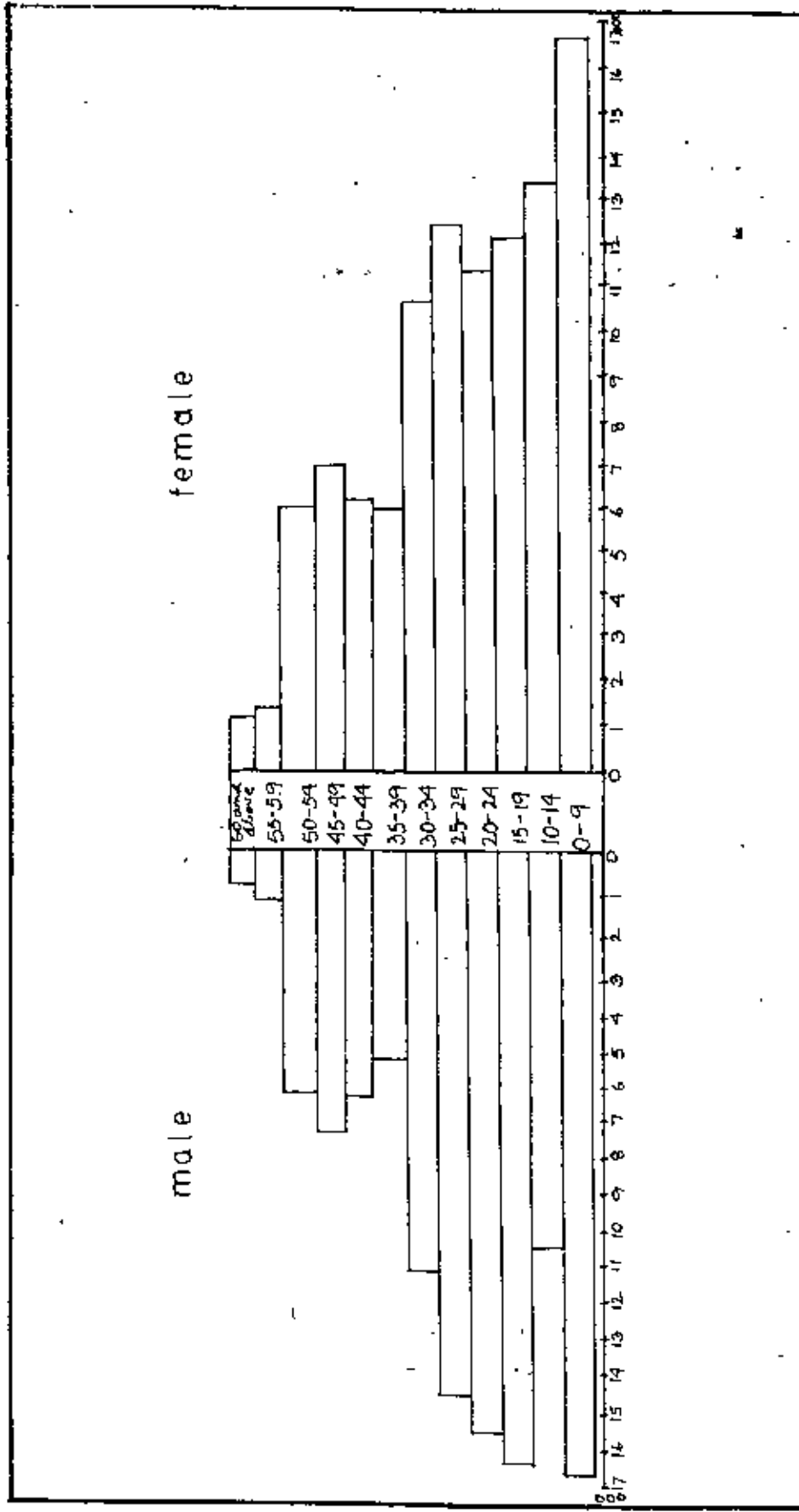


CLIMATOLOGY

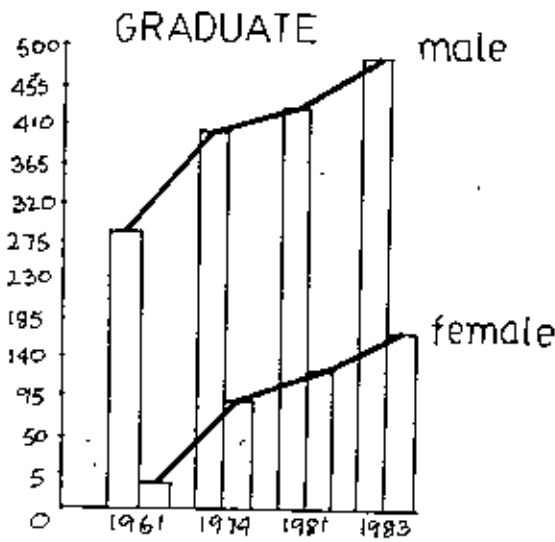
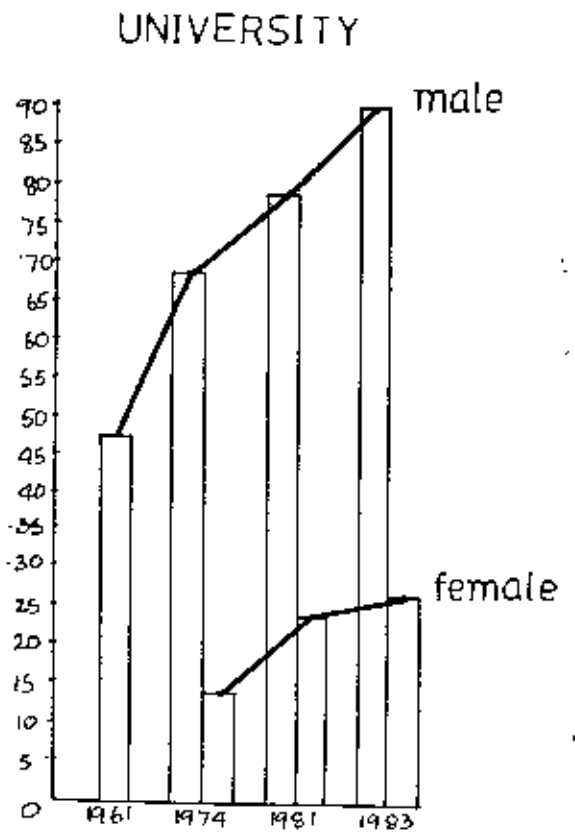
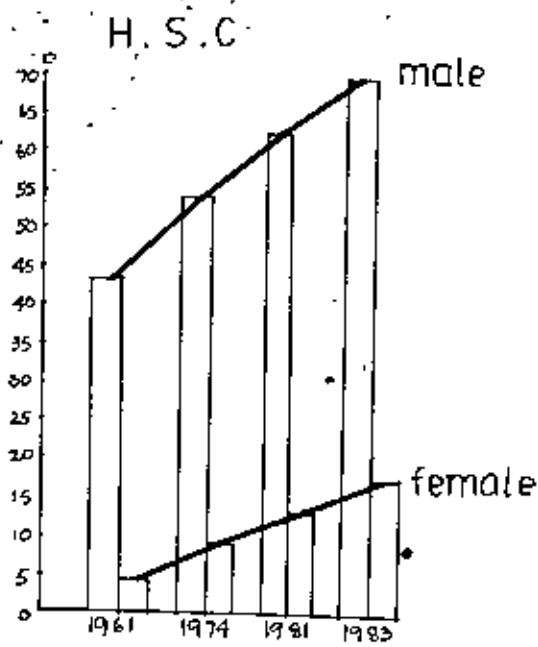
UNIONS	AREA (in acres)	HOUSE- HOLD	POPULATION	LITERATE	
1	2	3	4	5	
SADIPUR	4061	2995	9498 9318 } 18816	2569	
KATCHPUR	3097	3080	8422 8478 } 16900	3773	
JAMPUR	7473	1031	14847 13827 } 28674	4820	
NOAGAON	3092	2413	8820 8192 } 17012	1938	
BARODI	2897	3830	11120 9996 } 21116	2768	
SANMONDI	4824	3618	13876 13600 } 27476	3954	
BAYDERBAZAR	2153	1974	7478 6489 } 13967	2243	
AMIN PUR	1984	1778	8339 7517 } 15856	3484	
MOGRAPARA	2898	2088	8053 7359 } 15412	3490	
PIRIJPUR	3745	3020	11456 10687 } 22143	2678	
SHAMBHUPURA	2466	2724	10340 9902 } 20242	3033	
TOTAL	38690	28551	217614	217614	34750

DEMOGRAPHIC CHARACTERISTICS

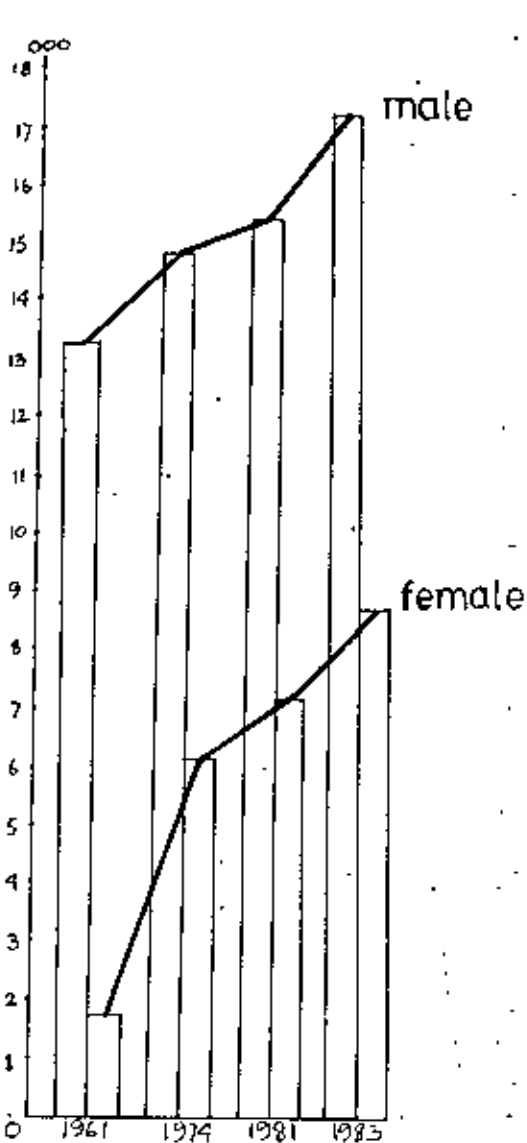
Appendix. III



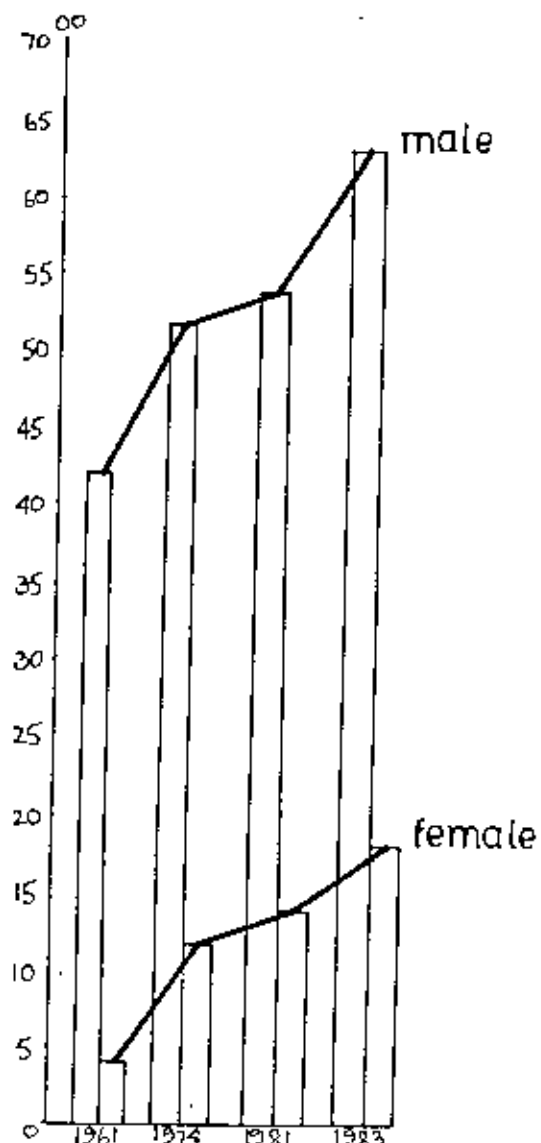
AGE STRUCTURE OF POPULATION



LITERACY



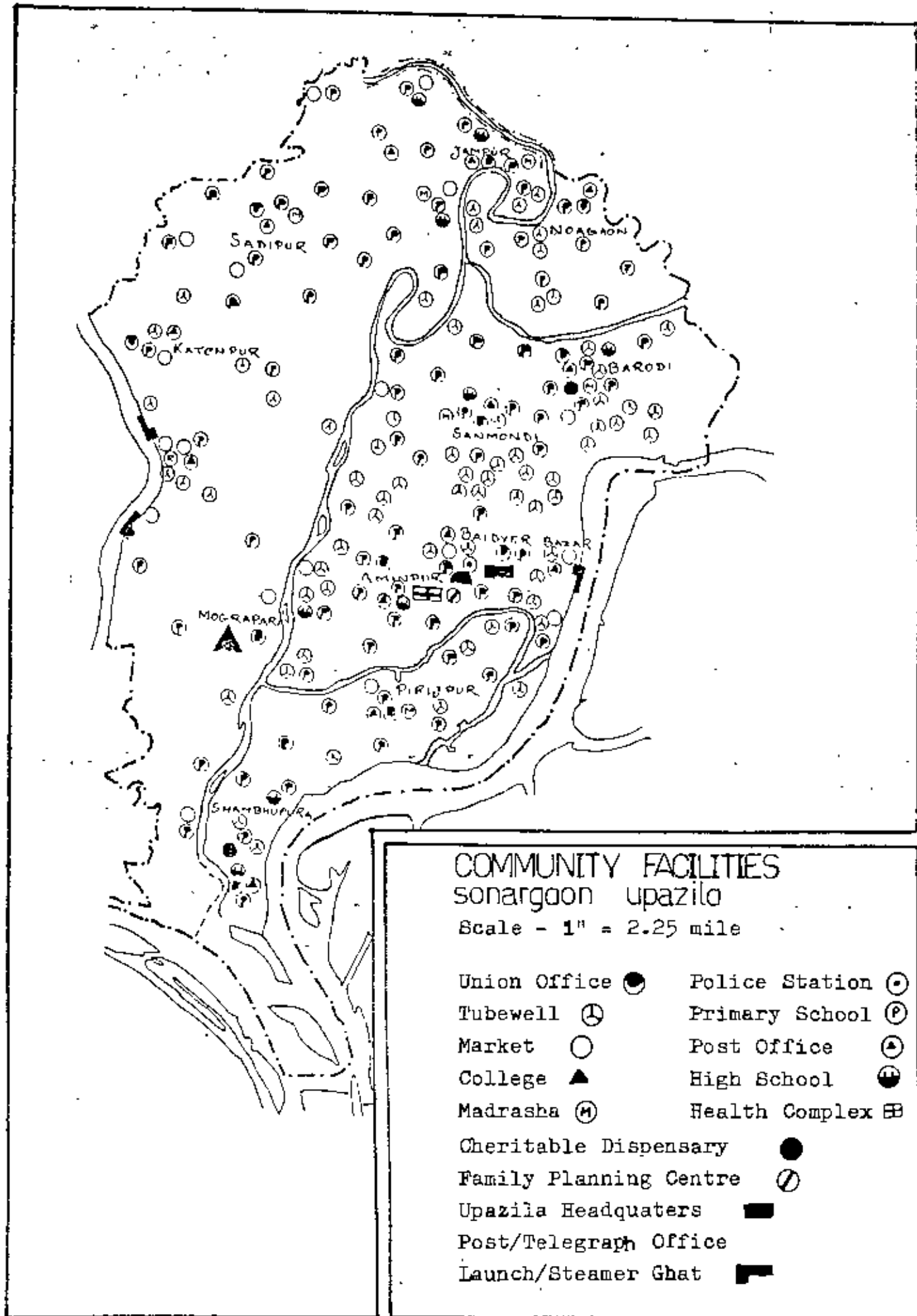
5 YEAR SCHOOLING



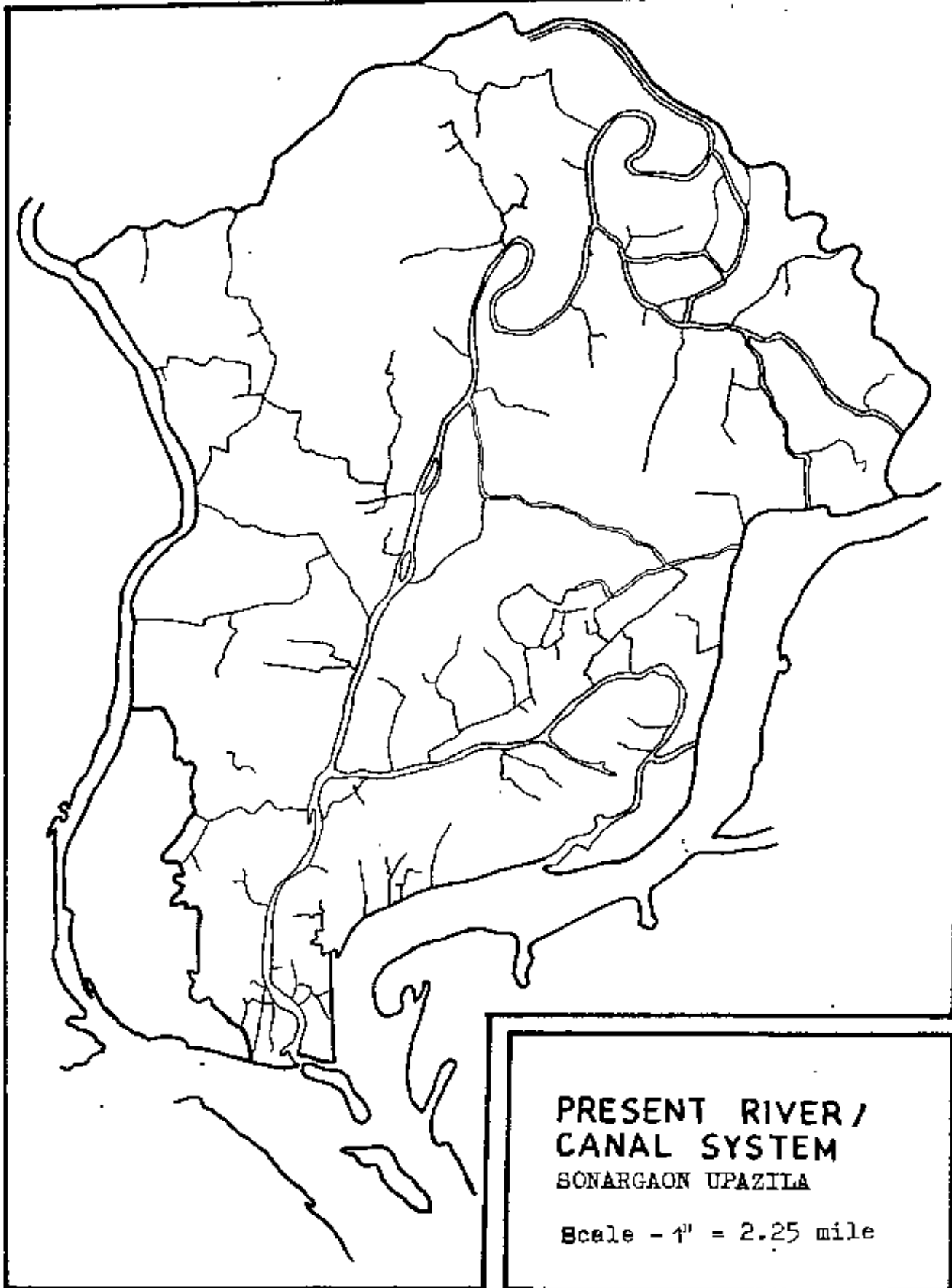
S.S.C

LITERACY

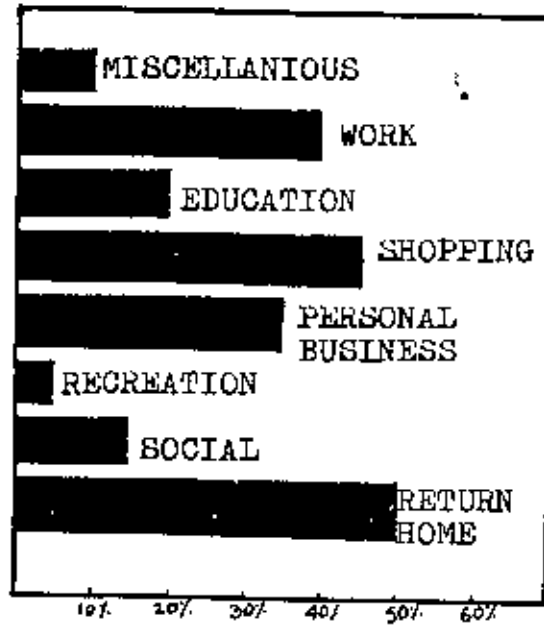
Appendix. VI



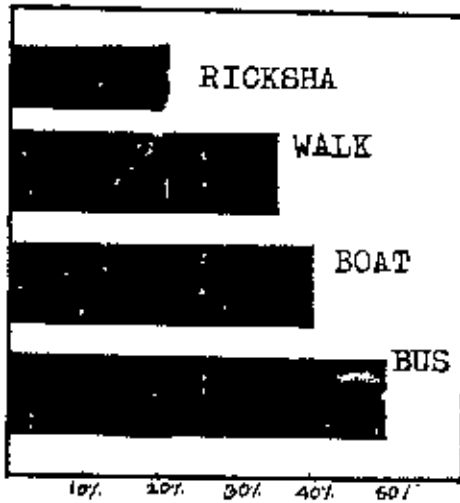
Appendix. VII



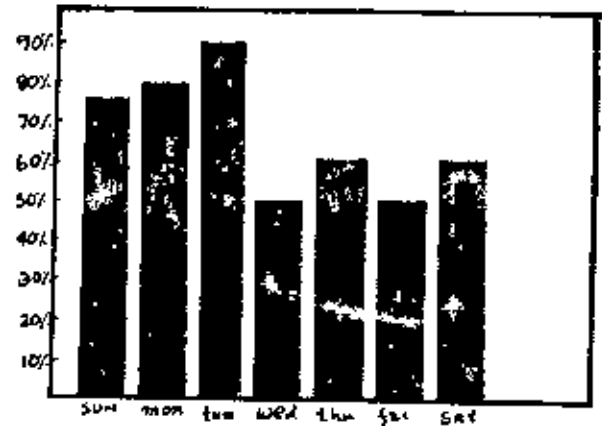
Appendix. VIII



JOURNEY PURPOSE



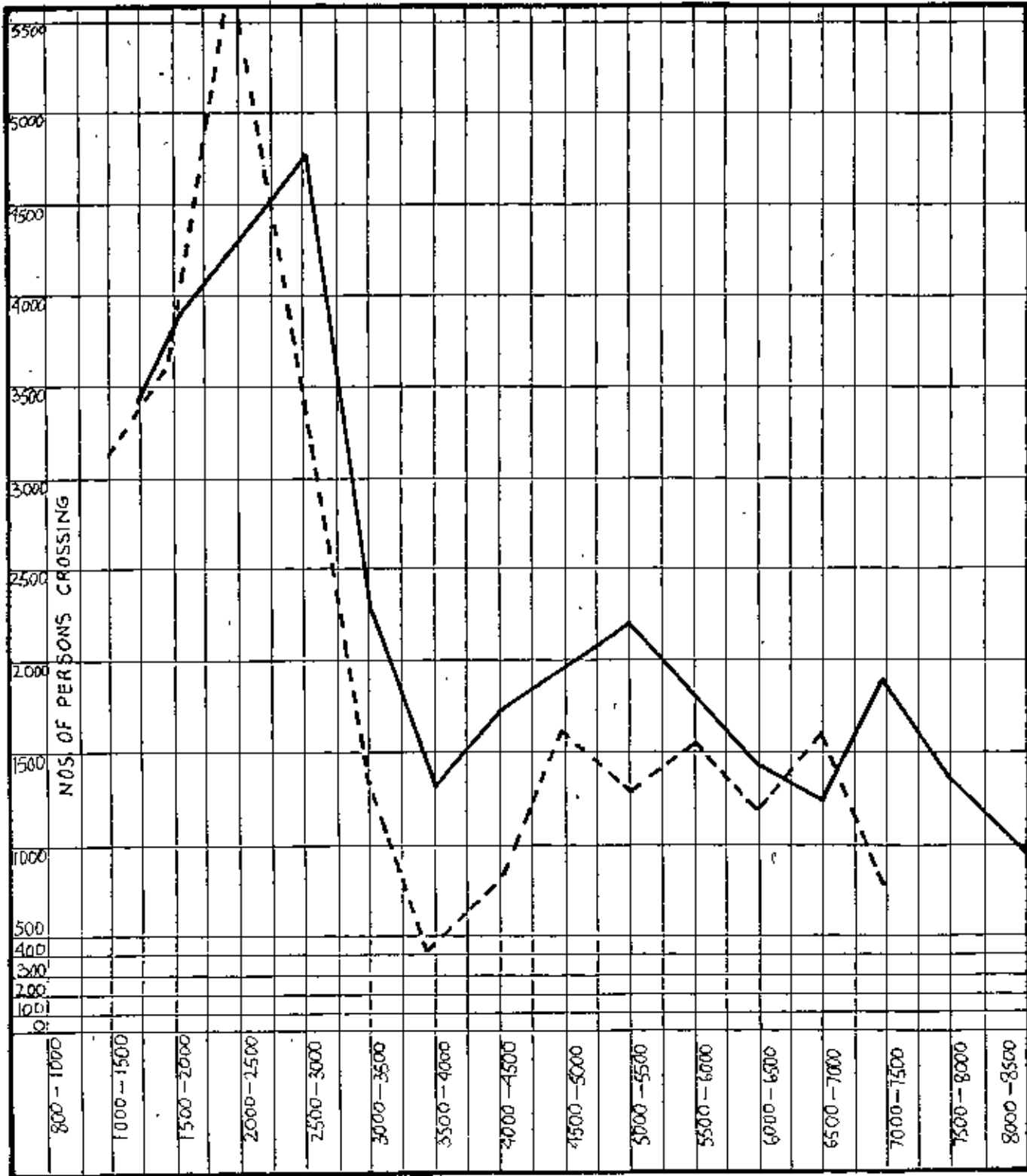
MODE OF TRAVEL



FLOW VARIATION: BUS PASSENGERS

COMMUNICATION

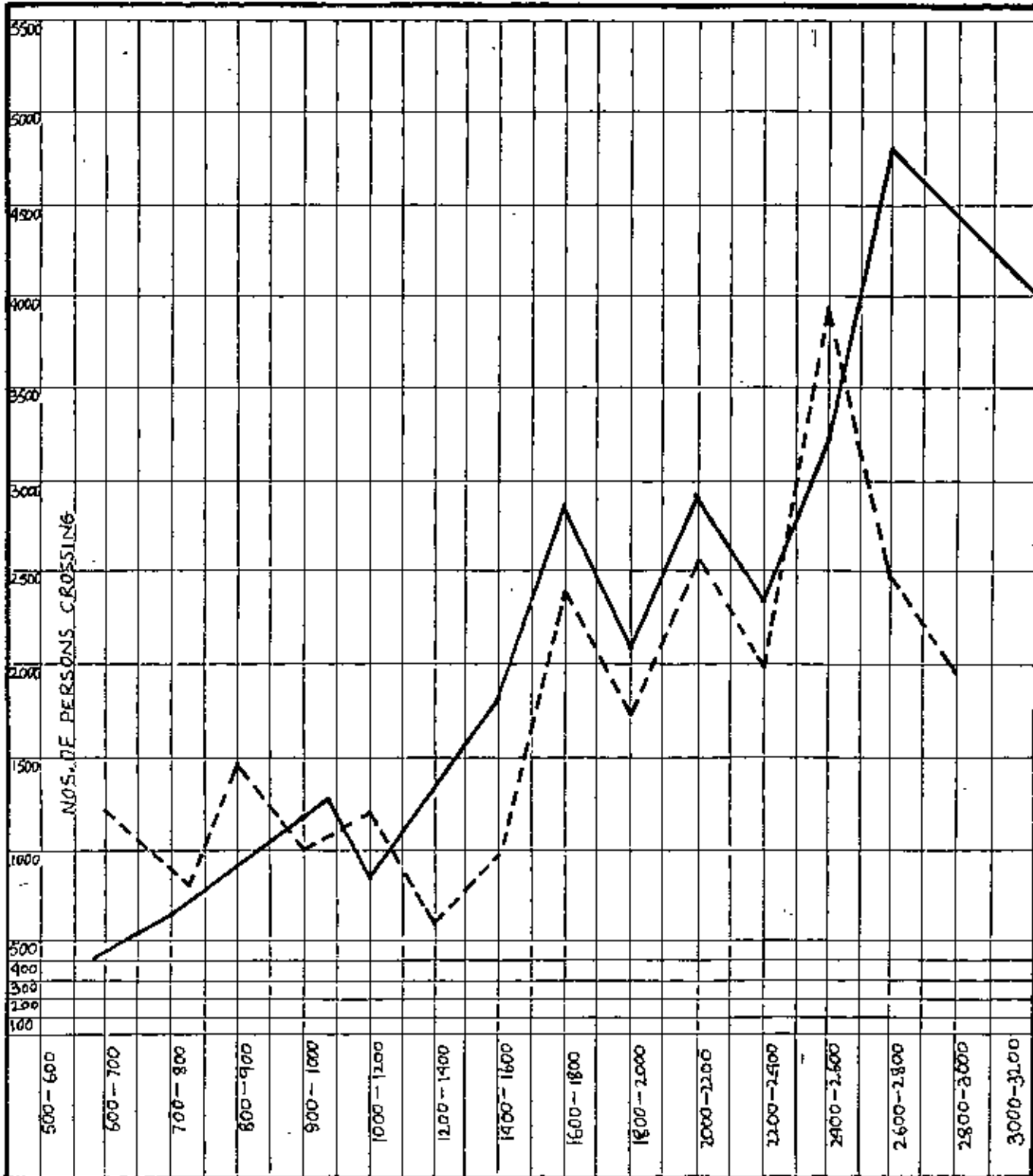
Appendix. IX



— PEAK DAY
-- OFF PEAK

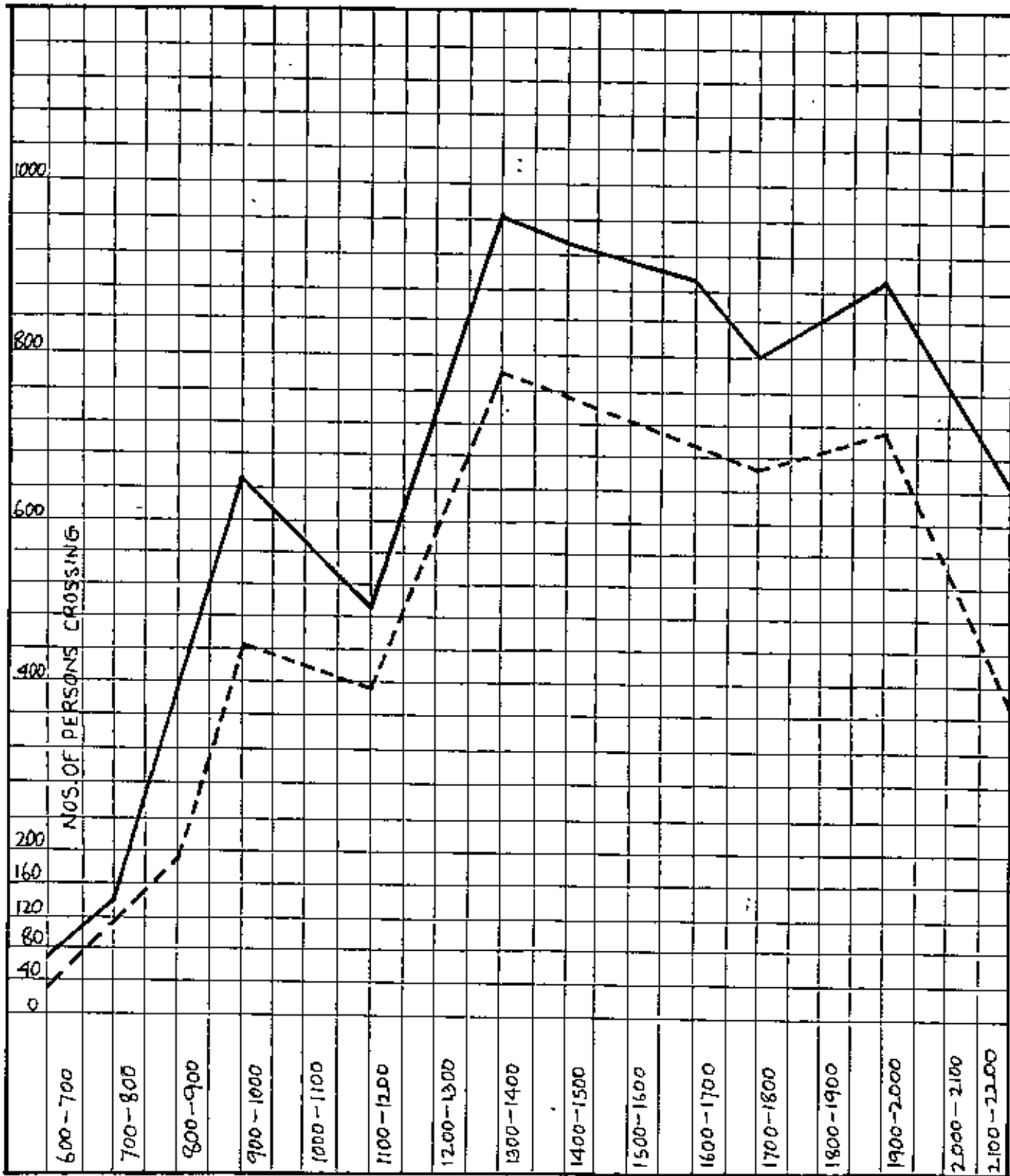
TRAFFIC SURVEY AT MEGHNA FERRY Ghat (FROM MEGHNA)

Appendix. X



TRAFFIC SURVEY AT MEGHNA FERRY
GHAT (TOWARDS MEGHNA)

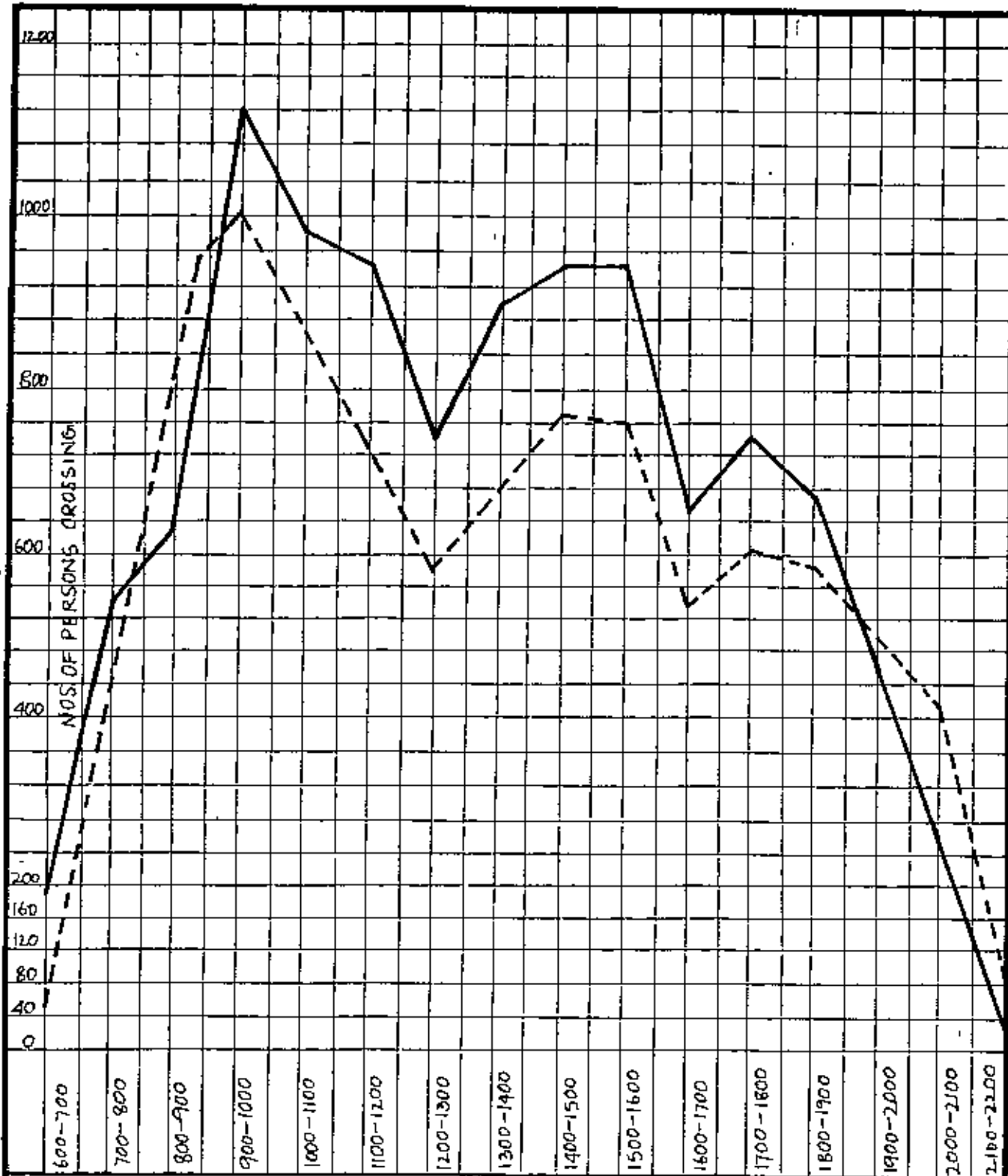
— PEAK DAY
-- OFF PEAK



TRAFFIC SURVEY ON SONARGAON - NARAYANGANJ ROAD (TOWARDS SONARGAON)

— PEAK DAY
 - - OFF PEAK

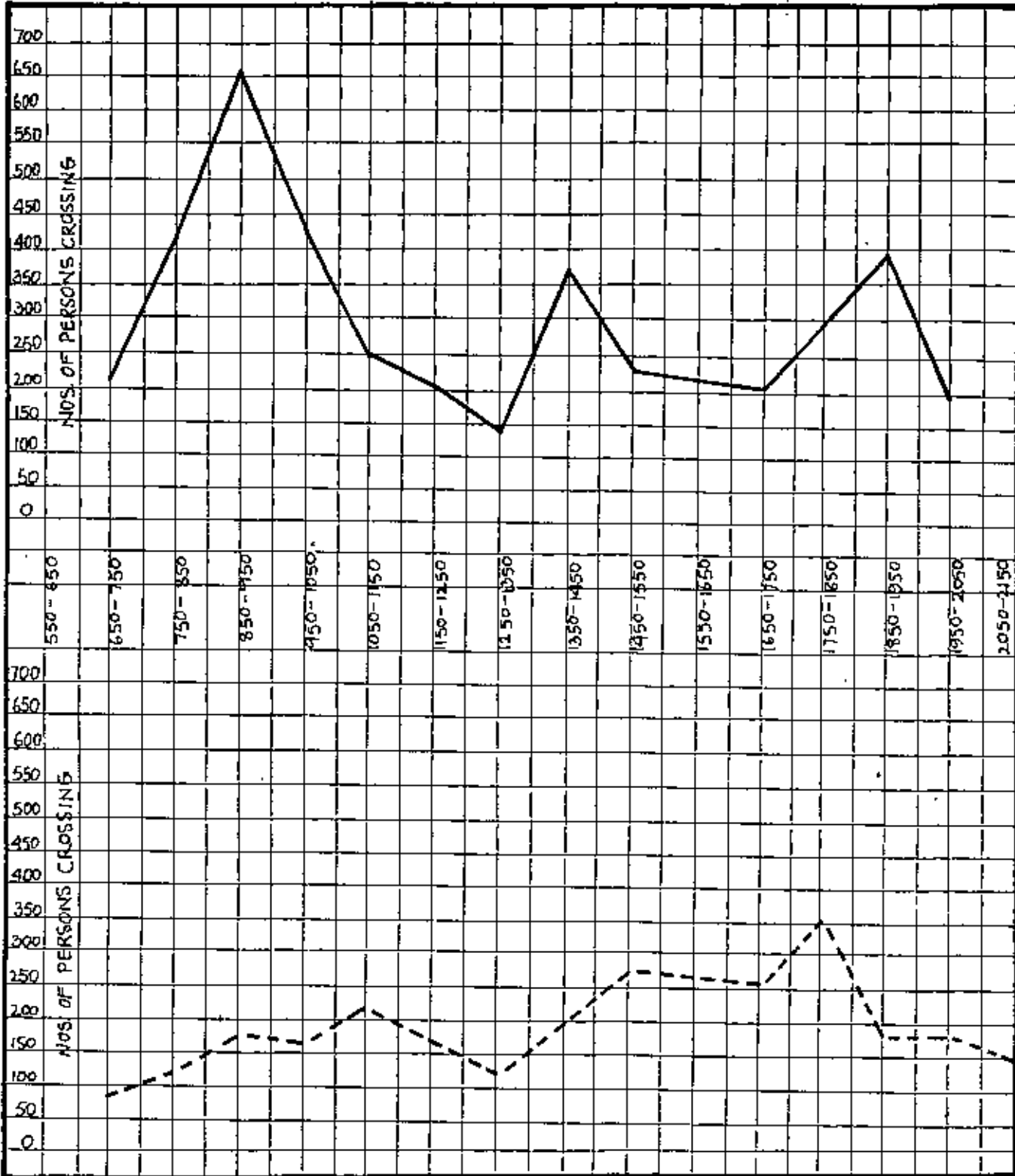
Appendix. XII



TRAFFIC SURVEY ON SONARGAON - NARAYANGANJ ROAD (FROM SONARGAON)

— PEAK DAY
-- OFF PEAK

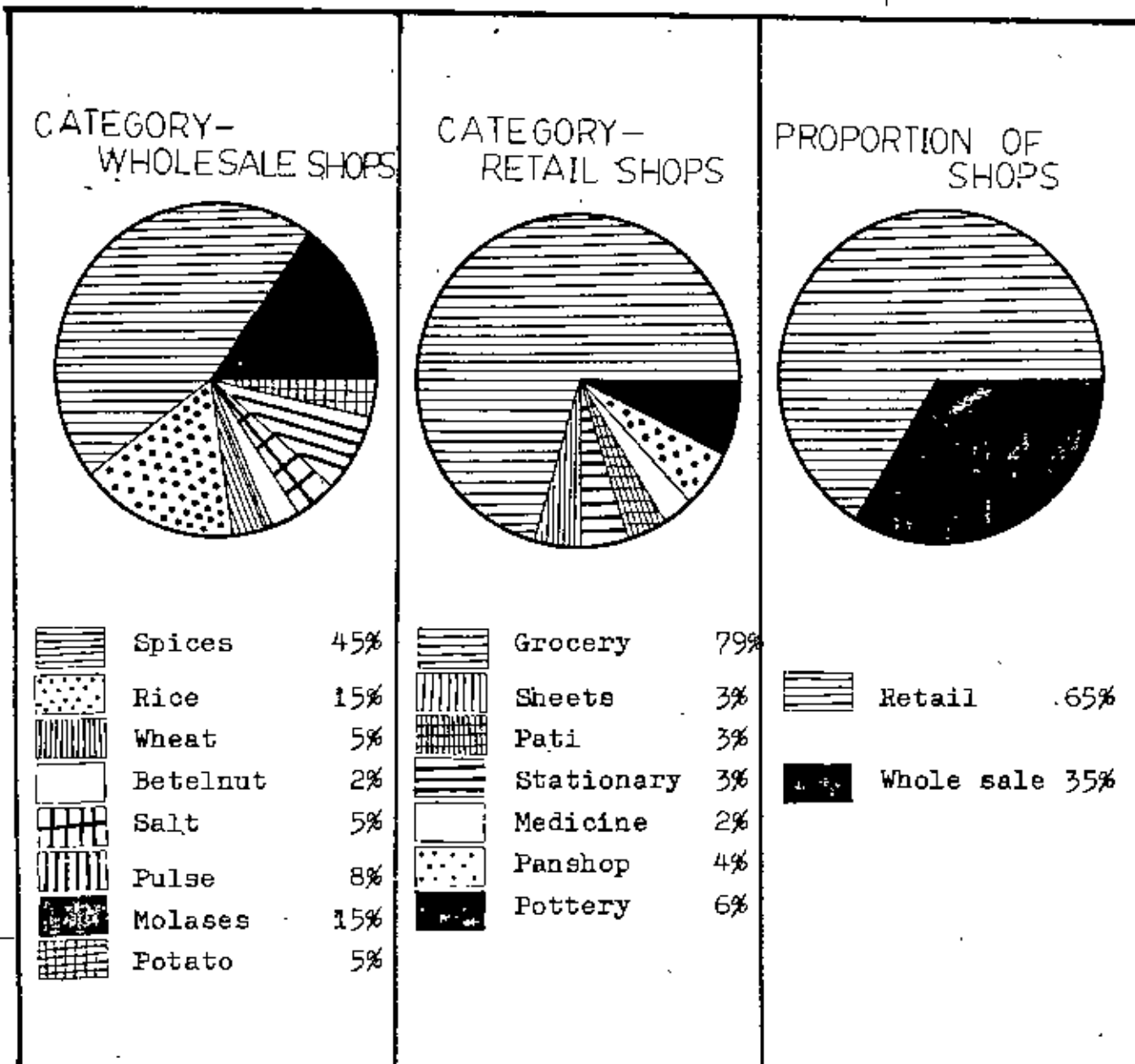
Appendix. XIII



TRAFFIC SURVEY AT BAIDYER BAZAR
FERRY GHAT (ON PEAK DAY)

— FROM
-- TOWARDS

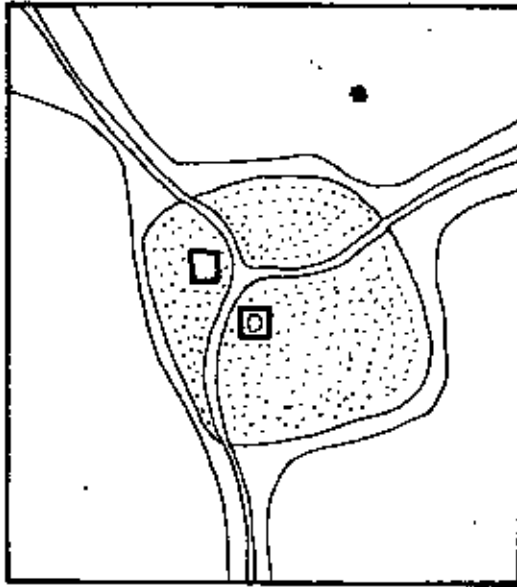
Appendix. XIV



SHOPPING PATTERN

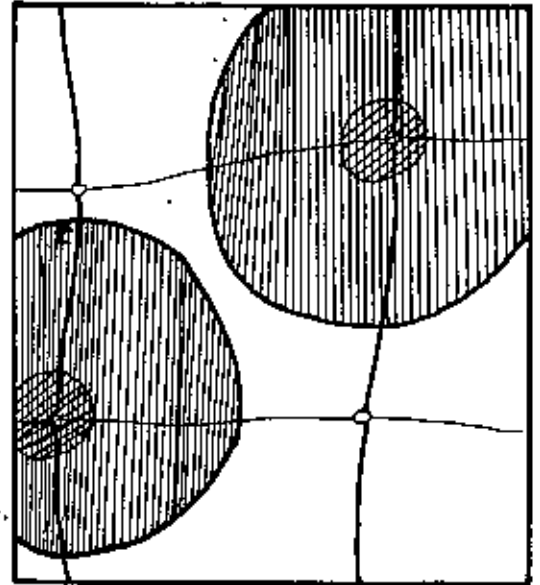
SONARGAON SHOPPING CENTRE

Appendix. XV

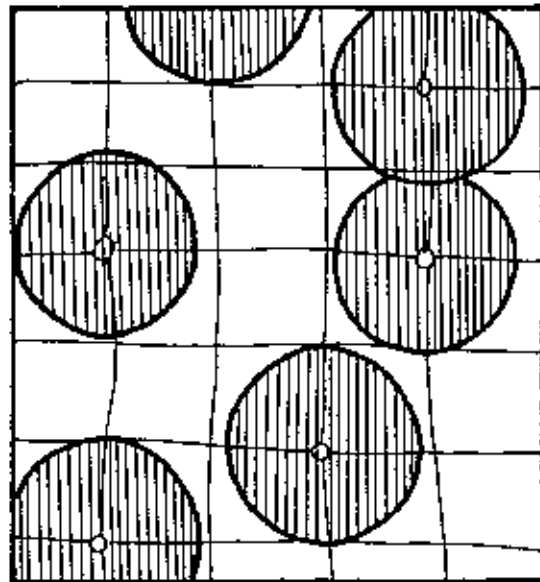


DEVELOPMENT OF A NEIGHBOURHOOD PARK

A park incorporating the school & community centre provides the focal point around which life of a NEIGHBOURHOOD revolves.



ENVIRONMENTAL AREA: STRUCTURE



ENV. AREA: LAND USE LOCATION

THE CONCEPT

- ||||| RESIDENTIAL DEVELOPMENT
- ▣ PARK, RECREATION
- ▣ CENTRAL ACTIVITIES

- ~ ROAD SYSTEM
- ⊕ PEDESTRIAN WALK
- COMMUNITY CENTRE
- ⊙ SCHOOL

Appendix - XVI

Households, Population and Density - 1981

<u>No. of Households</u>	<u>Population 1981</u>			<u>Average size of household</u>	<u>Density /sq. mile</u>
	<u>Male</u>	<u>Female</u>	<u>Both Sex</u>		
35342	108478	101852	210330	5.9	3479

Source: Statistical Year Book 1983.

Appendix - XVII

Industries and Procurement Centre in Sonargaon Upazila

<u>Types</u>	<u>Total No.</u>	<u>Where located (Union)</u>
Cottage Industry	791	Sadipur/Aminpur/ Mograpara
Handloom Industry	1820	Barodi/Jampur/Noyagaon
Powerloom Industry	40	Sadipur/Katchpur
Jute & Textile Industry	29	Katchpur
Cotton Textile Industry	27	Katchpur
Cold Storage	1	Katchpur
Sarmin Saw Mill	1	Katchpur
Brick Field	1	Katchpur

Source: Field Survey, 1984.

Appendix - XVIII

Total No. of Primary school, Secondary school, College And Madrasah of Sonargaon upazila and their deficient situation

Name of the union	No. of schools					No. of teachers					No. of teachers held					No. of teachers deficit				
	pri- mary	secon- dary	coll- ege	mad- rasa		pri- mary	sec- ndary	coll- ege	mad- rasa		pri- mary	seco- ndary	coll- ege	mad- rasa		pri- mary	sec- ondary	coll- ege	mad- rasa	
				J	F				J	F				J	F				J	F
Sadipur	7	-	-	1	8	29	-	-	18	7	21	-	-	18	7	8	-	-	-	-
Katchpur	6	-	-	-	3	29	-	-	-	3	17	-	-	-	3	12	-	-	-	-
Jampur	11	3	-	2	9	49	31	-	24	11	34	31	-	24	11	16	-	-	-	-
Noyagaon	7	-	-	-	9	24	-	-	-	9	15	-	-	-	9	9	-	-	-	-
Berodi	6	1	-	1	5	24	11	-	11	6	18	11	-	11	6	4	-	-	-	-
Sanmondi	11	1	-	1	7	43	15	-	11	8	36	13	-	11	8	7	-	-	-	-
Mograpara	7	2	1	-	15	31	27	15	-	15	23	27	13	-	13	8	-	-	-	-
Aminpur	6	1	-	-	13	25	14	-	-	13	22	14	-	-	12	3	-	-	-	1
Baidar Bazar	5	1	-	-	6	21	17	-	-	6	18	17	-	-	6	3	-	-	-	-
Pirijpur	7	-	-	1	12	29	-	-	12	15	25	-	-	11	13	4	-	-	1	-
Shambhupura	7	2	-	-	7	33	25	-	-	7	25	25	-	-	7	8	-	-	-	-
Grand Total	80	11	1	6	92	334	138	13	76	96	254	138	13	75	95	82	-	-	1	1

Source : Upazila Education Officer, Sonargaon, 1984.

J - Junior Madrasah

F - Ferkani Madrasah.

5. Drainage

- a) None
- b) Kutcha
- c) Pucca

Toilet

- a) None
- b) Kutcha
- c) Pucca
- d) Flush

6. Waste disposal facilities

- a) None
- b) Pumped in a pit
- c) Thrown out

7. Roofing Materials

Types	Thatch	Leaves	Hero Tin	C.I. Sheets	Concrete	Wood
Living House						
Out home						
Kitchen						
Cattle shed						
Grain storage						

8. Wall Materials

Types	Bar. Weav	BW+Incl	BW+Conent	Tin	Brick	Wood
Living house						
Out house						
Kitchen						
Cattle shed						
Grain storage						

PRIMARY AND SECONDARY OCCUPATION STRUCTURE

Type of	1951	1961	1974	1981	Average Annual Income
Agriculture: Primary					
Secondary					
Business: Primary					
Secondary					
Service: Primary					
Secondary					
Miscellaneous: Primary					
Secondary					
Total					

EDUCATIONAL AND RELIGIOUS INSTITUTIONS

Type of Institution	Total No. within the Union-Territory	Location (Name of Village)	Distance from the Zilla Centre
1. Madrasa, School, Maktab			
2. Primary School			
3. Junior High School			
4. High School			
5. Technical School			
6. College			
7. Madrasas			
8. Mosques, Temples, Church			
9. Adult Education Centre			

9. Floor Materials

Types	Mud	Brick	Concrete	Wood
Living house				
Out house				
Kitchen				
Cattle shed				
Grain storage				

10. Location of community facilities —

Types	Location within village 0. No 1. Yes	Distance in Mile	Mode of travel 1. On foot 2. By boat, Rickshas, bus etc.	Travelling time in hour
Post Office				
Police Station				
U.P. Office				
Bazar				
Har				
Primary School				
College				
Bank				
Health Centre				
Agri. Extension Service				
Veterinary Service				
Launch ghat				
Bus stop				
Railway station				

LAND BUILDING COST & RENT STRUCTURES

	1975		1979		1983	
	Upa- zila centre	Upazila Region	Upazila centre	Upazila Region	Upazila centre	Upazila Region
1. Land cost (Per acre)						
2. Dwelling cost (per sqft.)						
3. Rent structure						
a) Dwelling						
b) Office						
c) Shop						
d) Others						

MARKET/BAZAR

Name of Location	Area in acres	Bazar popula- tion (Approx)	Daily (Time)	Weekly (Time)	No. shops		Zone of influ- ence in miles
					Forma- rent	Tempo- rary	
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

TYPE OF SHOP STRUCTURES

Floor	Wall	Roof
1.		
2.		
3.		
4.		
5.		
6.		

COMMODITIES TRADED

Types of goods sold in 'open spaces	% of open space sale	% of sale in shops
1. Paddy		
2. Rice		
3. Jute		
4. Fish		
5. Vegetables		
6. Fruits		
7. Building materials (bamboo, Tin, Thatched etc.)		
8. Others		

LAND UTILIZATION PATTERNS

Land Utilization	Area in 1974	Area in 1981	Remarks
1. Total Geographical Area			
2. Land put to non-agricultural			
3. Forests, tree crops and groves			
4. Permanent grazing land, lawns & unmeasurable land			
5. Fallow land & Unculturable waste			
6. Net area sown			
7. Area sown more than once			
8. Total cropped area (6+7)			

DISTANCE TO OUTSIDE TRANSPORTATION SYSTEM FROM THE VILLAGE

Distance from the village by

Distance from the	Condition	Water	Animal	Non-Motor	Motor	Motor	Motor	Motor	Motor
road	available	way	used	vehicles	vehicles	vehicles	vehicles	vehicles	vehicles
Along	Dry								
road									
to road	Dry								
road									
to road	Dry								
road									
to road	Monsoon								
road									
to road	Dry								
road									
to road	Monsoon								
road									
to road	Dry								
road									
to road	Monsoon								
road									

EDUCATIONAL FACILITIES

Type of Institution	Name of the Institution	No. of Teachers	No. of student	Total No. of accommodation	Total No. attending outside the Upazilla
1. Primary school					
2. Junior High School					
3. High School					
4. Technical School					
5. College					
6. Madrasia					

EDUCATIONAL FACILITIES

Type of Institutions	Total area of site	Type of structure			Physical Condition		Different facilities
		Floor	Wall	Roof	Good	Deteriorated	
1. Primary School							
2. Junior High school							
3. High School							
4. Technical School							
5. College							
6. Madrasia							

Instruction:

1. Type of structure: (Floor/wall/roof)

- a) Earthen
- b) Brick
- c) Concrete
- d) Tin
- e) Thatched/leaves

2. Different facilities:

- a) Play ground
- b) Gymnasium
- c) Hostel/Boarding
- d) Library
- e) Prayer Hall/Mosque
- f) Latrine/Urinal
- g) Teachers Housing

TRANSFORMATION SYSTEM IN BENZILIA REGION

Mode of transportation	Season	Year built; Cost involved	Condition	Convenience available Type of convenience	Length of Transportation system
River	Dry Monsoon				
Canal	Dry Monsoon				
Animal or foot path	Dry Monsoon				
Katcha Road	Dry Monsoon				65
Pucca Road	Dry Monsoon				

Key: Type of Convenience:

- a) Bullock cart./Horse drawn carriages
- b) Bicycles
- c) Rickshaws
- d) Scooters/Water cycle
- e) Cars/Jeep
- f) Trucks/Tractors
- g) Buses
- h) Boat
- i) Launch
- j) Steamer
- k) Others

Score against the Services.

MUZZA NAME	Important Programs/Temp.	Supern Jail	Police Station	Telephone	Boat ghat	Bus Stand	Shops	Metalled Road	High Collage Load	Weekly/biweek- ly Mt.	Daily Bazar	College	High School	Primary School	Madrasna	Junior High School	Health Complex /Hospital	Family Plana- ing Clinic	Post Office	Telegraph Office	Bank	Talsil Office	Union Office	Godown	Rail Station	Museum	Chinark	Library	
Uddeganj		8	8	8					2	6				3	4		10	8	6	6	6			6					
Barnagar									2			8		3					6			8							
Loprapara	1				6	6	2	3	2	6	3		6	3	4	4					6		4						8
Kashmir					6				2	6				3															8
Banar									2					3											10	10			
Ambar	1								2	6	3		6	3	4	4							4						
Malodi	1				6				6				6	3	4	4	10		6				4	6					
Chaur									6	3				3									4						
Jampur									6	3			6	3		4			6				4		8				
Katchpur						6	2	3	2	6	3			3		4					6		4	6					
Kutipara	1										3			3											8				
Beiderbazar	1							3	2	6	3		6	3	4	4					6		4						8
Sarandi									6	3				3									4						
Shashbupura									6	3			6	3		4	10						4						
Pirigpur						8	2	3	7					3	4														
Hoagson									6	3			6	3															
Satapur	1								6	3				3		4							4						

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