

URBAN DEVELOPMENT DIRECTORATE

MINISTRY OF WORKS

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

REPORT -IV

FINAL REPORT AND PLAN

LAND USE PLAN

BADARGANJ UPAZILA SHAHAR
RANGPUR ZILA

MAY 1988.

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ENGINEERING - PLANNING - RESEARCH - DEVELOPMENT

জনপ্রজাতন্ত্রী বাংলাদেশ
চেয়ারম্যান উপজেলা পরিষদ কার্যালয়,

বকরগঞ্জ, বরুপুর।

তারিখ- ১২/১/৮৮ খ্রি.
১৭/১/১৩৮৫ বঙ্গাব্দ

স্মরণ নং

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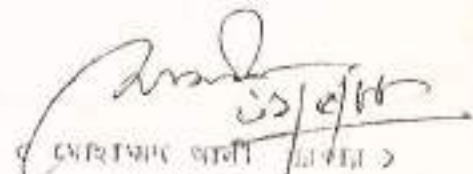
প্রাপক :-

পরিচালক,
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গণ প্রজাতন্ত্রী বাংলাদেশ সরকার।

বিষয় :- বকরগঞ্জ উপজেলা পথের গ্রানিং রিগোর্ট এর উপর মনুবা।

কনসালটেন্ট মেম্বার্স গণি বাংলা লিমিটেড কর্তৃক তৈরী বকরগঞ্জ উপজেলা পথের বসন্তা গ্রান ও রিগোর্ট আমরা উপজেলা পর্ষদের পর্ষদেচনা করিলাম। বসন্তা গ্রান সম্বন্ধে আমাদের বিশেষ কোন মনুবা নাই। আমরা গ্রানটির জন্য বাস্তবায়নের জন্য পদক্ষেপ গ্রহণের অনুরোধ জানাইতেছি।

/৩৪৫০৫/


মেম্বার্স গণি বাংলা
চেয়ারম্যান,
উপজেলা পরিষদ, বকরগঞ্জ,
বরুপুর।

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1. INTRODUCTION

In the Government's recent policy of overall administrative re-organization, the upazila has been recognized as the most significant tier of administration. Each upazila centre will be the focal point of all upazila level administrative activities. Thus the development of upazila centre is the government's key strategy for social, economic and infrastructural upliftment of the upazila region. This also reflects the national policy of bringing the development activities to the door step of vast majority of rural population. The administrative re-organization has delegated more power to the upazila authority for planning, programming implementing and controlling development activities within the upazila region. It is expected that with geared up administrative, social and economic activities the upazila headquarters will gradually emerge as sprawling urban centres. It is evident that most of the urban centres of the country have already been grown in an unplanned haphazard way leading to a jumbling civic problem. The newly created upazila headquarters can be relieved from the curse and ills of unplanned growth through the preparation and implementation of the land use plan.

The upazila headquarters is conceived as focal point of development of the upazila as a whole. The activities performed in the headquarters will act as propulsive factors for generating development trends in the upazila. The Landuse Plan prepared for the headquarters will serve as a guideline for a planned and co-ordinated development of prospective headquarters' town upto the year 2001. When successfully materialised, the Landuse Plan will cause orderly growth of the town and its landuses. It will provide efficient transport network, promote development of commerce and industries, extended marketing facilities resulting in generation of more employment opportunities and will indicate more rational use of scarce land resources. The plan will reserve all provisions necessary for modern civic life.

It is a promise to the potential dwellers of the headquarters for a for a healthy, pleasant and functionally efficient living environment. Preparation of landuse plan is the first step of the programme for bringing the whole of the upazila under planned development. It is expected that other important alternative settlements of the upazila based on hierarchy

of settlements will be taken up soon for planning and development to render them healthy, pleasant and growth generating centres.

Planned development is the prime objective of the land use plan. However, there is a common feeling that planning means a total development involving huge volume of fund. But such an idea is not fully correct. Planned development, to a large extent, can be ensured through effective enforcement of development control regulations. But before regulations are formally passed the Landuse Plan itself will require to be given legislative validity in the form of act.

In the light of the above circumstances, it is felt that the upazila centre should grow up expeditiously and the preparation of landuse plan for such centre is of utmost importance for better utilization of regions land, people and natural resources. With this end in view, the government has planned to engage consultants for preparation of landuse plan for some of the upazila shahars of Bangladesh.

2. METHODOLOGY OF SURVEY AND ANALYSIS

The objectives and scope of services for preparing the landuse plan for upazila shahar have been stated in section-2 and section-3 of the terms of Reference (TOR) respectively. To fulfill the requirements of objectives and scope of services it was needed to go through the following methodology for conducting existing landuse and socio-economic survey.

2.1 Existing Landuse Survey :

Mouza maps in the scale of 1 inch equal to 330 feet were collected from the D.L.R. covering whole of the designated study area and traced out with plot boundaries and numbers. Thus the field survey sheets were prepared. Plot to plot survey of current uses of land were marked on the survey sheets. The layout of the special features like mosques, schools, offices, mazars etc. were drawn on the survey sheets. The survey for current uses of land was completed for the whole of the designated study area.

2.2 Preparation of Existing Landuse Map :

The survey sheets were compiled in the laboratory and existing landuse map were prepared in colours. The land use map was examined and analysed and finally planning area was delineated. From the survey sheets a base map of existing landuses was prepared in graphics.

2.3 Existing Landuse Analysis :

A table on current uses of land of the upazila centre was prepared from the survey map. The quantity of land under different uses were calculated by grid method and consequently there might have some errors. The percentages of land under different uses were also calculated.

2.4 Socio-Economic Survey and Data Analysis :

A format of questionnaire containing nine items and 115 variables was prepared and administered to collect the data on socio-economic condition of the people of the study area. Three percent of the total households were interviewed by field investigators on random basis. The data thus collected were tabulated and analysed to find out the socio-economic characteristics of the people of the study area. The landuse plan was prepared based on this survey and analysis.

2.5 Detailed Landuse Survey :

A detailed landuse survey was conducted and completed by the survey team for around 200 acres of core area of upazila shahar (scale of R. F. 1:1000). Layouts of man-made structures were plotted to the correct scale. The level of land flooded area were demarcated through physical verification. Contour maps were collected from the BWAPDA and were interpreted on the survey map in a correct scale.

2.6 Determination of Hierarchy of Settlements :

The hierarchy of settlements were determined on mouza basis depending on population, economic activities, social infrastructure provisions, transport linkages and related other characteristics. In order to determine the hierarchy of settlements, necessary socio-economic indicators were selected. Data and information on selected indicators were collected during the field survey from the upazila headquarters. These data were tabulated and they were given assumed weightages to find out the gravity of each mouza of the upazila. According to the weights gravitational grading and circles were drawn on the geographical centres of each mouza. was given to the linkage developments for the whole of upazila region so that the functions located in the upazila shahar can serve the upazila region properly.

2.7 Determination of Catchment Area and Planning Area :

To determine the sphere of influence or the catchment area, data on commuting distance and service area of the upazila shahar were collected during the field survey. The physical features in and around the upazila shahar study area were analysed. The sphere of influence or catchment area was determined and delineated through studies on commuting distances, service area and physical features of the upazila headquarters and surroundings. Population and labour forces were estimated for the delineated catchment area to provide service provisions in the upazila shahar. The planning area was determined on analysis of existing land use survey of the study area. Trend of development of settlements, availability of buildable lands and physical features of the centre and surroundings have been given due considerations.

3. THE UPAZILA IN ITS DISTRICT CONTEXT

3.1 Location and Physical Characteristics :

Historical Background of the Upazila :

Badarganj is an old place. It has derived its name from that of a local Nawab. It stands on the Karatoya river. It is a railway station on the Kaunia Parbatipur branch of railway. The upazila of Badarganj consists of 10 unions and 64 mouzas. According to the census report of 1981, the total population of the upazila is 173,284 persons having density of population 575 persons per sq. km.

Location of the Upazila :

Badarganj is one of the Upazilas of the Rangpur (New) Zila. The distance between the Upazila Headquarters and Zila Headquarters is 30.59 km. (19 miles). The upazila headquarters lies south-west of Rangpur Zila Headquarters. The Badarganj Upazila lies between 25°-32' and 25°-45' north latitude and 88°-56' and 89°-08' east longitude. It is bounded from the north by Saidpur, Taraganj and Rangpur Sadar Upazila, from south by Parbatipur and Nowabganj Upazilas of Dinajpur Zila, from the east by Rangpur and Mithapukur upazilas and from the west by Parbatipur Upazila of Dinajpur Zila. It comprises a total area of 301 sq. km. (116 sq. miles) including an area of 3 sq. km. (a little over 1 sq. mile) of river.

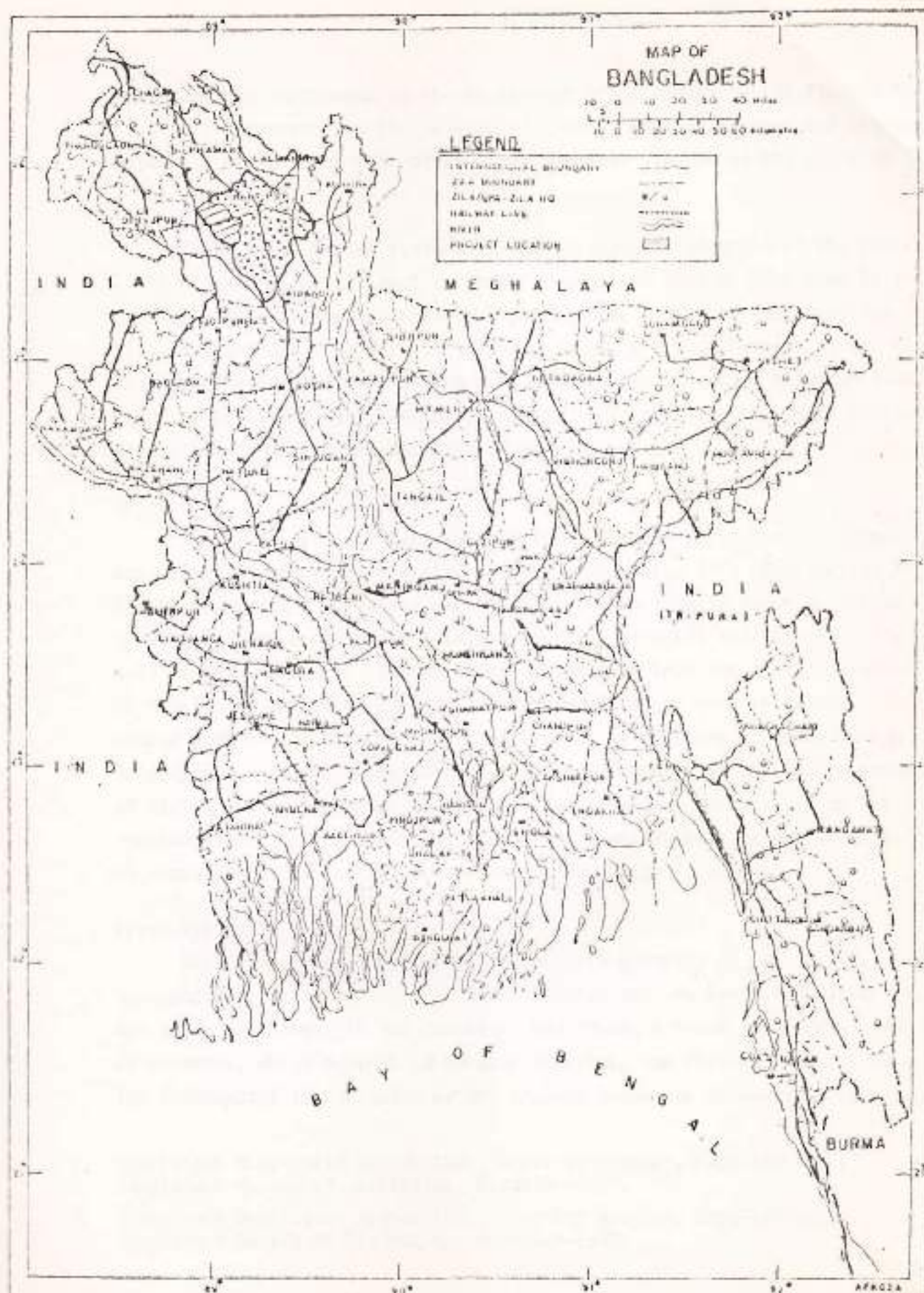
Location of the Upazila Headquarters :

The upazila headquarters is located approximately on 25°-40' north latitude and 89°-03' east longitude. The railway line from Parbatipur to Rangpur passes just skirting the upazila headquarters. A semi-metalled road connects the upazila centre with district headquarters¹.

Topography :

The Zila of Rangpur (old) is a vast alluvial plain without any natural elevation. There are large extent of high sand plains in the north. A strip of high land is also found along the west. The rest of the district, specially towards the east is of low level most of which are inundated during the rains and Badarganj falls within this region. The surface gently slopes

1. Map of Police Station Badarganj and Taraganj District Rangpur, Made-1938, Re-printed in 1983.



down from the north-west to the south-east as displayed by the flow of the rivers. The presence of the network of rivers, smaller streams and channels exposes a vivid appearance of the topographical feature of the district².

Geology :

There is no marked feature in the geological formation of the district. It is a large alluvial tract composed of sand and clay brought down by great Himalayan rivers. The tract in the west and the south-west bordering the (old) Zila of Bogra and Dinajpur, is composed of old alluvial locally known as Khiyar. The greater part of the zila is composed of recent alluvium locally known as pali. The chars which are generally found along the banks of the rivers are formed by the deposits of most recent origin³.

Soils :

The zila (old) is generally divided into two parts for the purpose of soil classification. Narrow strip in the west, which is a continuation of the Barind tract of Dinajpur and Rajshahi and is locally known as Khiyar, forms the first part. It is mainly an outcrop of stiff reddist clay. The soil in this region is strongly impregnated with iron and contains kankor or nodules of carbonate of lime and is of reddish or greyish colour. The second part or the remainder of the district is composed of new alluvium locally known as pali. The soil of this area consists of varying proportion of clay and sand. Moreover, the higher lands in the north which do not receive silt from the beels and rivers are known as bala or reti. The soils of these lands consists of more sands than of clay⁴.

River System :

The Brahmaputra flows along the eastern boundary of the district (old) separating it from Goalpara in Assam (India) and the Mymensingh district, but owing to changes in the course of the river, a tract of alluvial land at Rowanari, which belongs to Rangpur district, now lies on the east bank. The Brahmaputra is navigable by big country boats and steamers throughout

2. Bangladesh Population Census-1981, District Rangpur, Page-XXV-XXVI, Bangladesh Bureau of Statistics, December-1984.
3. Bangladesh Population Census-1981, District Rangpur, Page-XXV-XXVI, Bangladesh Bureau of Statistics, December-1984.

the year. During the monsoon navigation is impeded by the strong current; whilst in the dry season a large number of shoals and sand banks obstruct the channel. The most noticeable features in this great river are the immense number of islands and sand banks formed by its current, and the constant changes its course. The principal tributaries of the Brahmaputra on its western bank, within Rangpur, are the Tista, Dharla, Sankas and Dudkumar.

Climate :

The climate of the Rangpur (old) is that of a sub-tropical country with special characteristics derived from its physical conformation and the proximity of the Himalayan and the Garo Hills. Thus climate is mild with equable temperature, high humidity and plenty of rainfall. The average maximum temperature in the zila during summer becomes 31°C while the average minimum temperature in winter becomes 12°C. December, January and February are the cold months and dry. The monsoon usually sets in June and continues till September. The maximum rainfall is generally observed during the months of July and August and recorded 577 and 346 in 1982.⁵

Agricultural Land Use :

Total arable land of Rangpur Zila and that of Badarganj Upazila are 566,282 and 73,383 acres respectively. Net cropped area of the zila is 409,321 or 72.28 percent and that of Badarganj upazila is 50,961 or 69.44 percent in 1982. But the intensity of cropping of Badarganj upazila is higher than that of the zila and are recorded as 176.36 for the upazila and 148.93 for the zila in 1981-1982. The triple cropped area of the Badarganj upazila is 4,661 acres or 6.35 percent of the total arable land and that of the Rangpur Zila is 58,971 acres or 10.41 percent of the zila total. For details Agricultural Land Use Table No. 1 may be seen.

5. Bangladesh Population Census-1981, District Rangpur, Page-XXVII, Bangladesh Bureau of Statistics, December, 1984.

TABLE NO. 1
Badarganj Upazila
Rangpur Zila (New)
Land Utilization and Land Capability
1981-1982

Locality	Total Area	Current Fallow	Single Cropped Area	Double Cropped Area	Triple Cropped Area	Net Cropped Area	Total Cropped Area	Intensity of Cropping
Badarganj	73,383	977	167,091	29,591	4,661	50,961	89874	176.36
Rangpur Zila	566,282	9,340	120,660	229,690	58,971	409321	756953	148.93

Source : Rangpur District Statistics - 1983.
Table No. 3.02, 3.03, 3.04 & 3.05, Pages 20-23
Bangladesh Bureau of Statistics.

Land Capability :

According to the District Statistics of Rangpur-1983. Only 35 percent of the total soil of Badarganj upazila is doash, 40 percent is sandy, 10 percent is etel and 15 percent is unknown. From agricultural point of view it is very difficult to bring the sandy as well as etel soils under many crops. It is possible to improve soils to produce more crops providing intensive facilities of irrigation and intensive use of fertilizers.

3.2 Population and Settlement Distribution.

Distribution of Settlements :

There is only one paurashava area in the New Zila of Rangpur. The new zila is consisted of 8 upazilas. There are 82 union headquarters. It includes 1194 mouzas for details Table No. 3 may be seen.

TABLE NO. 2
 Badarganj Upazila Shahar
 Rangpur Zila
 Distribution of settlements in Zila Rangpur and Constituent Upazilas

	Urban Settlements		Rural Settlements	
	Upazila Shahar	Municipal Towns	Mouzas	Union Headquarters
1. Upazila Sadar	1	1	149	12
2. Kaunia	1	-	80	6
3. Gangacharan	1	-	73	8
4. Mithapukur	-	-	310	17
5. Pirganj	1	-	308	15
6. Pirgacha	1	-	170	9
7. Badarganj	1	-	64	10
8. Taraganj	1	-	40	5
Total Zila	8	1	1194	

Note : Adopted from Table No. 1.01 of Rangpur District Statistics, 1983, (P. 3) and other sources of the BBS.

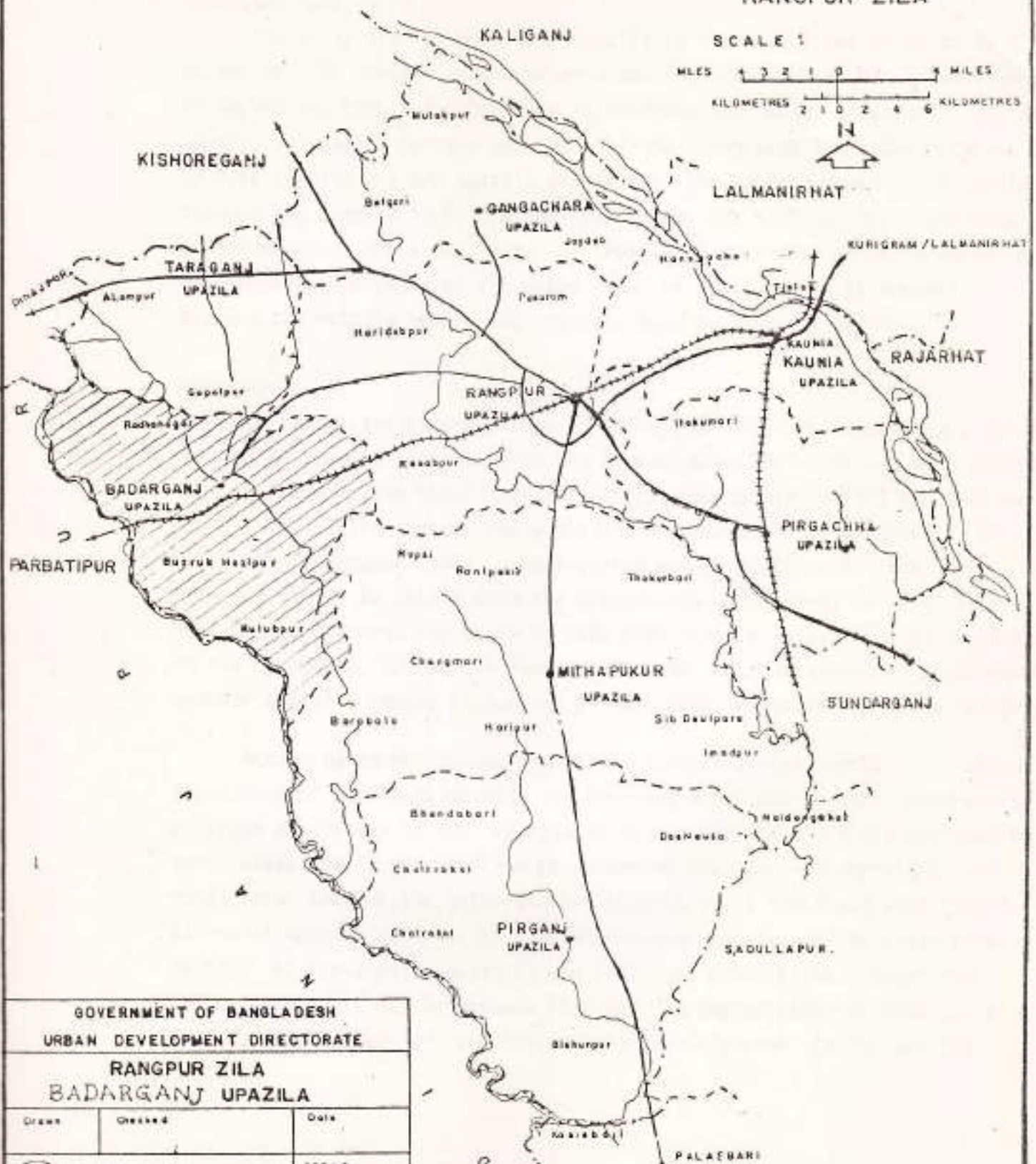
Rangpur Zila :

According to the district census report of Rangpur-1981, the total area of Rangpur Zila (new) is 2,131 sq.km. out of which 92.4 sq.km. or 3.99 percent of the total area of the zila is urban. According to the same report the total population of the zila is 1,703,357 persons of which 206,937 persons or 12.15 percent of the district population are urban. The total number of households is 316,051 and that of urban is 23,847. The average density of population of the zila is 679 persons per sq.km. and that of urban area is 2,240 persons per sq.km. The annual rate of growth of population in the zila and urban area are 3.00 and 3.09 percent respectively. The Rangpur town is the only paurashava area in the zila. The area of Rangpur town is 38.60 sq.km. having urban population 153,174 persons. The density of population of the Rangpur paurashava area is 3,968 persons per sq.km.

RANGPUR ZILA

SCALE 1

MILES 1 2 3 4 5
KILOMETRES 2 1 0 2 4 6



GOVERNMENT OF BANGLADESH
URBAN DEVELOPMENT DIRECTORATE

RANGPUR ZILA
BADARGANJ UPAZILA

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Badarganj Upazila :

The total area of Badarganj upazila is 301 sq.km. out of which 25.6 sq.km. or 8.50 percent is the urban area. The total number of households is 32,998 and that of urban area is unknown. The total population of the upazila is 173,248 persons and that of the urban area is 17,258 persons or 9.96 percent of the upazila population. The average density of population of the upazila is 577 persons per sq.km. and that of the urban area is 674 persons. The annual rate of growth of population of the upazila is 2.56 percent and that of the urban area of the upazila is unknown because the upazila centre has recently been declared as urban.

Migration :

In the district census report of Rangpur-1981, the annual rate of growth of population in between the census years 1974-1981 has been recorded as 2.54 percent. The population of Rangpur paurashava in 1974 and 1981 were 72,829 and 153,174 persons respectively. The annual rate of growth of population in between these census period was 10.62 percent. From this analysis it may be assumed that the annual rate of migration is $6.09 - 2.54 = 3.55$ percent. The cause of such high rate of migration may be ascribed to the movement of people from rural areas to urban areas for socio-economic reasons and also to the inclusion of additional areas in the urban category.

According to the census report of Rangpur District-1981. The urban population of Badarganj upazila is recorded as 17,258 persons. The density of urban population of the upazila is higher than that of the surrounding rural areas. It is not possible to determine the rate of migration from rural areas towards the urban centre, because it is the first time that the all rural upazila centres of Bangladesh have been treated as urban irrespective of its area, population and level of urbanization. Under this circumstances, it may be assumed that due to upgradation of upazila, a considerable number of population have been migrated to the upazila centre.

TABLE NO. 3
Badarganj Upazila
Rangpur Zila
Distribution of population and Settlement.

	Area in sq. km.		Households 1981		Population 1974		Population 1981		Density of Population 1981		Rate of Growth 1974 - 1981	
	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban
Badarganj Upazila	301	25.6	32998	N/A	144878	N/A	173284	17258	577	674	2.56	N/A
Rangpur Zila	2313	92.4	316051	23847	1380623	728229	1703367	206937	679	2240	3.00	6.09

Source : 1. Rangpur District Statistics - 1983
Table No. 1.02 and 1.03 pages : 4-5
2. Upazila Statistics Vol. I 1985
Table No. 2.03, Page-57.
3. District Population Census, Rangpur-1981
Bangladesh Bureau of Statistics.

3.3 Economic Performance and Transport Linkages.

Employment and Underemployment :

Zila :

The total population of Rangpur Zila (new) is 1,707,264 persons out of which 879,071 persons are male and 828,193 persons are female. The total number of population at the age group of 10 years and above is 1,108,801 or 64.94 percent of the total of Zila population. The total number of employed is 491,554 persons or 44.33 percent and the rest 55.67 percent are house-wives, students and underemployed. In the total employment the percentage of male are 92.36 and that of female are 8.64 percent.

The total number of employed persons of Rangpur Zila (new) are 491,554, out of which 326,886 persons or 66.50 percent are employed in agriculture. In non-agricultural sector 164,668 persons or 33.50 percent are engaged. For details Table No. 4 and 5 may be seen.

Upazila :

The total number of population of Badarganj upazila is 173,525 persons out of which 88,495 persons are male and 84,767 persons are female. The total number of population at age group of 10 years and over is 112,366 persons or 64.75 percent. The total number of employed is 47,908 persons or 42.63 percent and the rest 57.35 percent are house-wives, students and underemployed. The percentage employment of upazila labour force is less than 1.7 percent that of the zila. In the total employment, the participation of males are 84.45 percent and that of female are 15.55 percent. The total number of employed are 47,908 persons out of which 38,466 persons or 80.29 percent are engaged in agriculture. In non-agricultural sector 17,443 persons or 19.71 percent are employed. For details Table No. 4 may be seen.

Income and Expenditure :

The data on income and expenditure structure of the Zila and upazila are not available. The data on income and expenditure structure of the people of study area have been collected through the questionnaire survey which will be discussed in the section of socio-economic data analysis of this report.

TABLE NO. 4
Badarganj Upazila
Rangpur Zila
Population and Labour Force - 1981.

Locality	Total	Population		Population 10 years +			Labour Force	
		Male	Female	Total	Male	Female	Male	Female
Upazila	173,525	88,495	84,757	112,366	58,078	54,288	40,460	7,448
Zila	1,707,264	879,071	828,193	1,108,801	577,743	531,554	449,072	42,482

Source : 1. Upazila Statistics. Vol. 1, 1985
Table No. 2.02, Page-42
Bangladesh Bureau of Statistics.

TABLE NO. 5
Badarganj Upazila
Rangpur Zila
Occupational Classification of Population -1981.

Locality	Agriculture		Non-agriculture		Others
	Cropping	Non-cropping	Manufacture	Business	
Upazila	28,730	1,735	1,138	3,658	12,647
Zila	321,656	5,230	16,148	36,835	111,685

Source : 1. Upazila Statistics Vol. I, 1985
Table No. 2.04, page-72
Bangladesh Bureau of Statistics.

Agriculture and Non-agriculture :

The total area of Rangpur Zila (new) is 571,520 acres. The agricultural land amounts to 566.826 acres or 99 percent of the available land and 4,694 acres or 1.00 percent is under non-agricultural use.

TABLE NO. 6
Badarganj Upazila
Rangpur Zila
Agricultural and Non-agricultural Land use 1981-1982.

(Area in Acres)

Locality	Total Area	Agricultural	Non-agricultural
Rangpur Zila	571,520	566,826	4,694
Badarganj Upazila	74,240	73,383	857

Source : Rangpur District Statistics - 1983.
Table No. 1.01 and 5.05, Pages 3 and 23
Bangladesh Bureau of Statistics.

The total area of Badarganj upazila is 74,240 acres. Out of which 73,383 acres or 98.80 percent are available for agriculture. The total of non-agricultural land amounts to 857 acres or 1.10 percent of the upazila.

Transport Linkages :

In the new zila of Rangpur, there are 5447.69 kilometres road network out of which 211 kilometres are metalled 46.69 kilometres are semi-metalled and rest 5190 kilometres are non-metalled.

The total network of roads in the Badarganj upazila is 877.42 kilometres, out of which 6.44 kilometres are metalled, 6.44 semi-metalled and rest 864.54 kilometres are non-metalled.

There are 16 kilometre railway line within the upazila of Badarganj having three railway stations. Waterways do not play any dominant role in transportation. (For details of transport linkages table no. 7 may be seen).

TABLE NO. 7
Badarganj Upazila
Rangpur Zila
Road Kilometres by type, Distance and Modes
of Communication-1981-1982.

	Road Kilometre by type			Distance from D.H.Q.	Modes
	Metalled	Semi-metalled	Non-metalled		
Upazila	6.44	6.44	864.54	30.59	Train, Buses
Zila	211.00	46.69	5190.00	-	Auto-rickshaws Rickshaws

Source : Upazila Statistics, Vol. I, 1985.
Table No. 6.01, Page - 201.
Bangladesh Bureau of Statistics.

The upazila headquarters of Badarganj is well connected with the zila headquarters both by rail and roads. The distance between the zila headquarters and the upazila headquarters by roads and rail are 30.59 and 24.20 kilometres respectively.

The mode of transportation are train, buses, auto-rickshaws and rickshaws. In rainy season small country boats also play a little role. The bullock carts really play a dominant role in transportation.

3.4 Social and Economic Infrastructures of Upazila Region :

Markets/ Commerce :

Village markets are the centre of commerce and play an important role in the rural economy of Bangladesh. According to the information collected from upazila headquarters, there are 34 markets/centre of commerce in Badarganj upazila. They meet once or twice in a week. Most of the markets have daily morning bazar facilities. According to the census report of 1981, the total population of the upazila is 173,284 persons. There is one market serves 5,096 persons.

Education :

There is a college in Badarganj upazila located in the upazila headquarters on 13.78 acres of land. There are 30 high schools including high madrasa, which means one high school for 5,776 persons. There are 74 primary level schools and madrasas in the upazila. One primary school for 2,342 persons.

Health and Welfare :

There are 5 health and welfare centres in the upazila. One of them is the Badarganj Upazila Health Complex having 10 hospital beds. There is one hospital bed for 17,328 persons.

Urban Services and Utilities :

There is only one police station in the Badarganj upazila. There are 14 post and subpost offices in the upazila. One post office is serving 12,774 persons. There is electricity in four unions of the upazila serving 223 households of 8 villages. A metalled road passes through three unions. Playing fields exist in almost all unions of the upazila. There is a cinema hall in the upazila centre having 455 seats. There are six Bank Branches in the upazila. Telephone and telegraph services are available only in the upazila centre.

3.5 Current Development Projects (1986 - 87) :

In Badarganj Upazila, projects have been undertaken by Govt. of Bangladesh (GOB), Upazila Parishad (UJP) and CARE. Information as to cost and progress of these projects are given below :

Table : Projects of GOB, UZP and CARE

Projects	GOB UZP CARE	Nos.	Estimated Cost Tk.	Progress %	Rmks
1. Transport & Communication	GOB	12	11,13,389	98%	
2. Socio-Economic Sector	GOB	14	3,79,927	100%	
3. Renovation ...	GOB	27	74,225	100%	
4. Agriculture and Irrigation	UZP		7,42,255	100%	
5. Cottage Industries	UZP		1,85,563	100%	
6. Socio- Economic	UZP		3,79,927	100%	
7. Housing ...	UZP		3,71,129	100%	
8. Health and Welfare	UZP		78,344	100%	
9. Sports and Culture	UZP		1,85,563	100%	
10. Rural Works ...	UZP		1,85,563	100%	
11. Renovation Works	UZP		74,225	100%	
12. Miscellaneous Works	UZP		1,86,563	100%	
13. Badarganj-Bishnupur Road, 6'x6' RCC Box Culvert	CARE	1	62,335	100%	
14. Radhanagar-Saidpur DC Road 6'x5' RCC Box Culvert	CARE	1	70,629	100%	
15. 20'-0" Span RCC Bridge in Kutubpur Union	CARE	1	3,01,538	100%	
16. 14'-0" Span Open Culvert in Modhupur Union	Care	1	1,60,825	100%	

Source : Upazila Engineer, Local Govt. Engineering Bureau, Badarganj.

It is apparent from the above table that GOB undertook works in three sectors involving 53 projects which are all complete except two in item No. 1.

Badarganj Upazila Parishad undertook projects in nine sectors. All projects have been duly completed.

CARE took up four projects, mostly small Bridge and Culverts all of which are complete.

3.4.6 Synthesis :

Identification of Hierarchy of Settlements in the Upazila.

In the upazila region of Bangladesh, functions are found neither concentrated in one particular centre nor fully dispersed. They have unique characteristics of their own and differ from one region to another. Sometime commercial activities are found to be concentrated with social activities and sometime they are also found located in different places. For this reason, it will be a wise policy to determine the hierarchy of settlements on mouza basis to find out the exact location at functions. Determination of hierarchy of settlements on mouza basis will be more specific and would be meaningful to show on upazila map diagrammatically. Hierarchy of settlements has been determined depending on population, economic and social infrastructures provisions, transport linkages and related other characteristics.

To determine the hierarchy of settlements 18 main socio-economic indicators have been selected (see Table No. 8). Data on selected indicators have been collected on mouza basis from the upazila headquarters during the field survey in the month of September-1986. The distribution of socio-economic indicators have been shown in Table No. 9.

Selected socio-economic indicators have been given assumed weightage for each (see Table No. 8). According to the given weight, the gravity of each function located in related union have been calculated (see Table No. 10). Finally, the total weight of each mouza have been found out. According to the respective weights, ranking of each mouzas have been found out. The mouza centres are connected with the upazila centre by shortest road linkages. According to the analysis, the highest score is gained by Badarganj mouza where the upazila administrative headquarters is located and the lowest score is obtained by Dalua mouza. It is also found that most of the important functions are located in the upazila centre.

TABLE NO. 8
Badarganj Upazila
Rangpur Zila
Indicators of Hierarchy of Settlements and
their weights.

Sl. No.		Abbrivation	Weight
1.	Public Institution ...	Pi	5-10
2.	Commerce ..	Ch	1-5
3.	Industrial Establishment ...	In	1-5
4.	Police Station ...	Ps	1-5
5.	Health and Welfare ...	Hw	1-5
6.	College ...	Ec	5-10
7.	High School ...	Eh	3-6
8.	Primary School ...	Ep	1-2
9.	Post Office ...	Po	1-5
10.	Telegram and Telephone ...	Tt	2-5
11.	Electricity ...	Et	2-5
12.	Religious Institutio ...	Ri	1-5
13.	Road Pucca ...	Rp	1-5
14.	Station (Rail, Water, Bus) ...	St	1-5
15.	Recreation (Park, Playing Field, Cinema ...	Re	1-5
16.	Bank ...	Bk	1-5
17.	Area 500 Acres ...	Ar	1-6
18.	Population 5001 persons ...	Pn	1-6

TABLE NO. 9
Badargand Upazila
Rangpur Zila
List of Indicators of Hierarchy of Settlements.

JT. No.	Name of Mouzas	Pi	Ch	In	Ps	Hw	Ec	Eh	Ep	Po	Tt	Et	Ri	Rp	St	Re	Bk	Ar	Pn	
	Dilalpur	1	1	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	2124	5231
14	Dadhanagar	-	1	1	-	1	-	1	1	1	-	-	-	-	-	1	-	1782	5902	
13	Radhanagar Pathan Para	-	1	-	-	-	-	1	1	-	-	-	1	-	-	1	-	1226	3023	
27	Ramkrishnapur	1	1	1	-	-	-	-	1	-	-	-	1	-	-	-	-	1210	3275	
84	Choto Hazipur	1	1	1	-	-	-	1	1	-	-	-	1	-	-	1	-	927	3166	
87	Csmarpur	-	-	1	-	-	-	1	1	-	-	-	1	-	-	1	-	2371	3461	
88	Dalua	-	1	1	-	-	-	1	1	-	-	-	-	-	-	1	-	421	592	
76	Jamubari (UNO)	1	1	1	-	-	1	-	1	-	-	1	1	1	-	1	-	1913	4139	
74	Badarganj	1	1	1	1	-	-	2	3	1	1	1	1	1	1	2	3	834	6847	
75	Sankarpur	1	1	1	-	-	-	-	1	-	-	-	1	-	-	-	-	1847	3820	
64	Gopalpur	-	1	-	-	1	-	1	1	-	-	-	1	-	-	1	-	1420	3320	
65	Raja Rampur	1	1	1	-	-	-	-	1	-	-	-	1	-	-	1	-	2463	5535	
94	Gopalpur	1	1	1	-	-	-	1	1	1	-	-	-	-	-	-	-	2396	5582	
98	Kutubpur	1	1	1	1	1	-	1	1	-	-	-	1	-	-	1	-	1666	3243	
89	Nohani para	1	1	1	-	-	-	1	1	1	-	-	1	-	-	1	-	2416	3429	
29	Shahapur	1	-	1	-	1	-	1	1	-	-	1	1	-	-	1	-	809	2452	

TABLE NO. 10
Badarganj Upazila
Rangpur Zila

Determination of Hierarchy of Settlement by Weightage Method.

Sl. No.	Name of Mouzas	Pf	Ch	In	Ps	Hw	Ec	Eh	Ep	Po	Tt	Et	Ri	Rp	St	Re	Bk	Ar	Pn	Total
12	Dilalpur	2	2	-	-	-	-	-	1	2	-	-	1	-	-	1	-	4	6	19
14	Radhanagar	-	2	3	-	2	-	6	1	2	-	-	-	-	-	1	-	3	6	26
13	Radhanagar Pathan Para	-	2	-	-	-	-	6	1	-	-	-	1	-	-	1	-	3	6	20
27	Ram Krishna pur	2	2	2	-	-	-	-	1	-	-	-	1	-	-	-	-	3	6	17
84	Choto Hazipur	2	2	-	-	-	-	6	1	-	-	-	1	-	-	1	-	2	6	23
87	Osmangur	-	-	2	-	-	-	6	1	-	-	-	1	-	-	1	-	5	6	22
88	Dalna	-	2	2	-	-	-	5	1	-	-	-	-	-	-	1	-	1	1	14
76	Jamuberi	5	3	3	-	-	5	-	1	-	-	2	2	2	-	2	-	4	6	35
74	Badarganj	7	4	4	5	-	-	6	3	3	3	3	2	3	4	2	5	2	6	62
75	Sankarpur	2	2	2	-	-	-	-	1	-	-	-	2	-	-	-	-	4	6	19
65	Raja Rampur	2	2	2	-	-	-	-	1	-	-	-	1	-	-	1	-	5	6	20
94	Gopalpur	2	2	2	-	-	-	6	1	2	-	-	-	-	-	-	-	-	6	24
98	Kutubpur	2	2	2	3	3	-	6	1	-	-	-	1	-	-	1	-	3	6	30
98	Nohanipara	2	2	1	-	-	-	6	1	-	-	2	1	-	-	1	-	2	5	24
29	Shahapur	2	-	2	-	2	-	6	1	-	-	2	1	-	-	1	-	2	5	24

4. SOCIO-ECONOMIC CONDITION OF THE STUDY AREA.

According to the instruction given in the scope of work 4.3 of the TOR, the socio-economic survey for the study area of Badarganj Upazila Shahar was completed. The main objective of socio-economic survey was to find out the socio-economic conditions of the people of study area. The results of analysis of socio-economic data may help to locate adequate provision of functions of government's services and facilities of basic needs in the upazila shahar which may bring some significant improvements in the quality of life of the rural people. The data thus collected are analysed in the following paragraphs.

4.1 Population Characteristics :

Population Growth :

The socio-economic survey was completed for 60 households containing 335 persons, out of which 190 persons are male and 145 persons are female. There are 131 males for 100 females in the study area. It is possible to assume that due to upgradation of the upazila, economic activities have been started in the upazila headquarters of Badarganj which resulted in generation of jobs. Males have come to the upazila headquarters for job leaving their families behind.

Age and Sex Composition:

The age and sex composition of the people of the study area showed that the age group of 11-35 years contains 55.50 percent of the population. Above this age group population of the study area falls gradually.

Literacy :

According to the socio-economic survey, out of 288 in the age group of 5 years and above persons 65 are literate. The rate of literacy is 22.38 percent. The rate of literacy of the upazila as a whole is 17.30 percent only and that of the national is 23.80 percent. The rate of literacy of the study area of Badarganj is higher than that of the upazila and lower than of the national.

4.2 Household Characteristics :

Household Size :

It has been observed that there is a tendency of increasing the households in the study area. But the exact number of households could not be ascertained. According to the socio-economic survey 60 dwelling houses contains 335 persons that is the size of households is 5.58. But according to the census report of 1981, the average size of households of the upazila was 5.6 persons. Accordingly, the size of households of the study area is little smaller than that of the upazila.

TABLE NO. 11
Badarganj Upazila
Rangpur Zila
Age and Sex Composition of Population of the Study Area,
September - 1986
Households Surveyed = 60

Age group	Population			Percentage
	Total	Male	Female	Total
0 - 5 Years	47	27	20	14.00
6 - 10 "	47	29	18	14.00
11 - 15 "	43	21	22	12.80
16 - 20 "	38	18	20	11.30
21 - 25 "	36	21	15	10.70
26 - 30 "	26	16	10	8.30
31 - 35 "	25	18	7	7.40
36 - 40 "	16	5	11	4.80
41 - 45 "	13	6	7	3.90
46 - 50 "	16	11	5	4.80
51 - 55 "	12	7	5	3.90
56 - 60 "	7	5	2	2.00
61 + above	9	6	3	2.10
	335	190	145	100.00

Household Structures :

According to the socio-economic survey for 60 households, there are 4 pucca structures. Most of the structures are kutcha. The structural conditions of households of the study area is poor. The classification of the household structures are shown in Table No. 12.

TABLE NO. 12
Badarganj Upazila
Rangpur Zila
Households Structures of Study Area.
September-1986.

Type of Structures	No. of Households	Percentage
Pucca	4	6.67
Semi-pucca	14	23.33
Tin-shade	2	3.33
Tin-bamboo	15	25.00
Thatched	25	41.67
All Category	60	100.00

4.3 Economic Performance :

Employment and Underemployment :

The total number of population of age group 10 years and above is 251 persons, out of which 106 persons or 42.23 percent are employed in different sectors of economy. The number of persons unemployed are 136 or 54.19 percent which includes housewives, students and underemployed. Some 3.58 percent are invalid.

TABLE NO. 13
Badarganj Upazila
Rangpur Zila
Employment structures of study area, September-1986

S.I. No.	Employment Structures	Persons	Percentage
1.	Employed	106	42.23
2.	Unemployed	136	54.19
3.	Invalid	9	3.58
	10 + Population	251	100.00

Professional Structures :

The total population of age group 10 years and above is 251 persons, out of which 34 persons or 13.60 percent are agricultural labour force. Percentage of agricultural labour force is low because there are many rice mills and jute godowns in and around the upazila shahar of Badarganj. The number of professional and technical labour forces are 56 persons or 22.20 percent. Employment in other sectors of economy amounts to 16 persons. The number of students dominates and occupies 28.70 percent. There are 59 housewives accounting 23.50 percent. The number of underemployed persons are 14 including the invalids. For details Table No. 14 may be seen.

TABLE NO. 14
Badarganj Upazila
Rangpur Zila
Professional Structures of Study Area,
September-1986

Sl. NO.	Profession	No. of persons	Percentage
1.	Agriculture	34	13.60
2.	Professional and Technical	56	22.20
3.	Administrative and Management	6	2.40
4.	Clerical	2	0.80
5.	Sales	4	1.60
6.	Production and Transport	4	1.60
7.	Student	72	28.70
8.	Housewives	59	23.50
9.	Underemployed	14	5.60
		251	100.00

Income and Expenditures :

The annual income of 20 households or 33.33 percent of the total households is between taka 8,000 to 25,000/- only. The income of highest income group lies between taka 26,000/- to 50,000/-. In this income group there are 40 percent households. Only 1.66 percent of households have income between Tk. 101,000/- to 125,000/- only.

The annual expenditure of 20 households or 33.33 percent of the total households are between 8,000 to 25,000 only. The expenditure of 26 households or 43.33 percent of households are between taka 26,000/- to 50,000/- only. The expenditure of 1.66 percent of households are inbetween taka 101,000/- to 125,000/- only.

The lowest income of households is taka 8,000/- only. The highest income of households is taka 125,000/- only. The average income and expenditure of the households are taka 39,880/- and 39,560/- respectively. The average annual savings of households are taka 320/- only. For details Table No. 15 may be seen.

TABLE NO. 15
Badarganj Upazila
Rangpur Zila
Average Annual Income and Expenditure of Study Area,
September-1986.

Rank in Thousand Tk.	Income		Expenditure	
	Households	Percentage	Households	Percentage
8...+ 25	20	33.33	20	33.33
26 - 50	24	40.00	26	43.33
51 - 75	14	18.33	10	16.66
76 - 100	4	6.66	3	5.00
101 - 125	1	1.66	1	1.66

According to the survey, the main sources of income of households are agriculture and business. The mentionable fields of expenditure are food and dress. Only a small amount of money is spent for education.

4.4 Small scale and cottage industries :

There are 19 small scale and cottage industries in the study area of Badarganj. Most of them are rice husking and flour mills. Ther is one ice-cream factory and one saw mills.

The average number of workers in a mill are 8 persons. The highest number of workers in a rice mill are 40 persons. Even a single person works in a rice husking mill.

The average of the worker's distance are 4.16 km. Highest distance of a worker is 8 km. Most of workers come from 2 to 5 km. distant.

4.5 Educational Institutions :

Primary Schools :

There are 9 primary schools in the study area having 2,083 children. The average of enrolment capacity of a primary school are 230 children. The average of teachers in a school are 5 persons. There is one teacher for 46 children. Most of the primary schools are devoid of drinking water and toilet facilities. Out of 9 primary schools only 4 structures are pucca.

Secondary Schools :

There is one secondary school for boys and one secondary for girls. The area of the boys' secondary school enrolls 548 students. The total number of teachers are 16 persons. The ratio of teacher and student is 1:34. There is a secondary school for girls. There are 274 girls and 8 teachers in this school. The ratio of teacher and student is 1:34.

College :

There is a college in the study area named the Badarganj Degree College. The Badarganj Degree College enrolls 613 males and 157 females students. There are 22 teachers and 102 staff in the college. The ratio of teacher and student is 1:35 only.

4.6 Administrative Institutions :

Administrative institutions include both the public institution and semi-government institutions. Besides the upazila complex, there are five other offices. The total number of officers are 9 and that of staff are 35 only. The commuting distance of officers and staff ranges 4 - 12 km.

4.7 Financial Institutions :

There are 3 financial institutions in the study area namely the Agrani Bank, the Sonali Bank and the Bangladesh Krishi Bank. There are 13 officers and 59 staff working in these banks.

4.8 Health and Welfare :

There is only one health centre in the study area called the Badarganj Upazila Health Complex. There are 10 hospital beds in this health complex. The number of doctors and employees are 8 and 74 respectively. The average of outdoor patients per day is 125 only.

4.9 Recreational Facilities :

There are playing fields attached to the college and the boys' secondary school. There is no stadium for general sports and games. There are clubs which are not notable. In Badarganj upazila study area, there are two cinema halls namely "The Kathakoli" and "Mita Cinema Hall" having 450 seats in each. The total number of employees are 37 persons.

4.10 Distance of Important Places from Homes :

The distance of main roads, working places and other services centres from residences of the people is needed to analyse the adequacy of services in any urban area. The following Table No. 16 shows the distances of service facilities from the residences.

Main Road :

The distance of 19 households or approximately 32 percent of households is 0 - 0 km. The distance of 37 households or 62 percent of the households is within 0.5 km. Almost all the households are located within a kilometre distance from the main road. The road service is quite good in the study area.

Working place :

The place of working is very nearer for most of the people of the study area. The distance 45 households or 75 percent of the households is within 0.5 km. The maximum distance of working place from the households is 2.5 km. only.

Primary School :

The distance of 45 households or 75 percent of households is within 0.5 km. from the primary schools. This distance is the walking distance of primary school children. The distance between 15 households and primary school is more than the walking distance of the that age group children. It is necessary to locate more primary schools in the study area.

TABLE NO. 16
Badarganj Upazila
Rangpur Zila
Distance of No. of Households from Service Centres
Survey data for 60 households.
September - 1986.

Distance	Distance in Km.					
	0 - 0.5	0.5 - 1.0	1.0 - 1.5	1.5 - 2.0	2.0 - 2.5	
1. Main Road	19	37	3	1	-	-
2. Working place	21	24	3	3	5	4
3. Primary School	2	43	5	4	6	-
4. High School	2	37	7	10	3	1
5. Market	6	35	7	9	2	1
6. Hospital	6	21	12	2	16	4
7. Post office	4	21	26	5	3	1
8. Rail/Bus Stations	6	22	25	5	1	1

Primary School :

The distance of 45 households or 75 percent of households is within 0.5 km. from the primary schools. This distance is the walking distance of primary school children. The distance between 15 households and primary school is more than the walking distance of the that age group children. It is necessary to locate more primary schools in the study area.

High school :

This distance between the 47 households or 78 percent of the households and the high school is within 1 km. One kilometre distance may be considered as desirable walking distance of high school going boys and girls. Fourteen households or 23 percent of households lie more than 1 km. distance.

Hospital :

Thirty-eight households lie within a radius of 1 km. from the hospital.
Rest 22 households lie within 2.5 km. from the hospital.

Post office :

The postal service of the study area is quite good. About 51 households or 85 percent of households live within 1 km. radius from the post office.

Rail/Buss Stations :

The distance of 53 households or 88 percent of the households lie within 1 km. distance from the bus/rail station of the study area.

4.11 Available Facilities :

According to our socio-economic survey, the employment facilities in the study are very poor. Even the trade and commerce are yet to be developed. The linkage facilities for all is available. There are facilities of education, health and sports for most of the people of the study area. Electricity is available in the study area and 33 households or 55 percent of the households have so far been provided with electricity. The main source of drinking water is tubewell. Tube-well water is available for only 45 households or 75 percent of the households. For rest 25 percent of households there is no specified source of drinking water. The telephone service in the study area is very inadequate and only 1.66 percent of households have telephone.

5. THE UPAZILA HEADQUARTERS.

5.1 Definition of Sphere of Influences/Attractiveness :

Functions located in space have dynamic influences on surrounding areas. It may be assumed that the zone of influence of any functional centre varies directly with the potentiality of the centre. Physical barriers and discontinuation of settlements are the main constraints of the zone of influence. But specialized function have greater zone of influences.

In an upazila shahar, located government services have their zone of influences over whole of the upazila region. The social functions like hospital, college, sports stadium etc. may have greater zone of influences even spreading beyond the territorial boundaries of the upazila region.

The zone within the commuting distance of a upazila shahar may be called the catchment area. The information and data collected during our socio-economic survey from the upazila headquarters have been analysed and described in the preceeding chapter on "socio-economic condition" of the study area. Here a little light thrown on socio-economic analysis.

The Badarganj upazila headquarters lies on Parbatipur-Rangpur railway line. A semi-metalled road also joins the headquarters with Rangpur District headquarters. Therefore, officials both government and non-government, workers in industries and customers of Badarganj bazar can commute from distant places. Studies on commuting distances of government officials showed that their average distance is 8 km. The industrial workers come from average distance of workers is 4 km. The buyers and sellers of Badarganj Hat and Bazar from 8 km. distances.

Due to the location of upazila headquarters on railway station the above analysis showed a special facilities of commuting. But walking distances must be considered here to define the zone of influences. From analysis and assumptions it may be said that zone for influence may vary 5-7 km. distance from the headquarters of Badarganj upazila (see the map of hierarchy of settlements).

Details of area, population, households and labour force of the catchment area are shown in the table No. 17 and 18.

TABLE NO. 17
 Badarganj Upazila Shahar
 Rangpur Zila
 Area and population of the Catchment Area 1961, 1974 and 1981.

Sl. No.	Total Area		Involved Area		Total population			Involved population			Growth rate		
	Acres	Hec-tors	Acres	Hec-tors	1981	1974	1981	1961	1974	1981	'61-'74	'74-'81	'61-'81
1. Mostafapur	1157	468	1157	468	1488	2110	2728	1488	2110	2728	2.73	3.67	3.06
2. Rajarampur	1655	670	1655	670	3052	3753	5535	1536	2335	3690	1.59	5.55	2.95
3. Antulmsti	1953	791	1300	526	2303	3402	3654	1535	2268	2450	3.00	1.02	2.30
4. D. Mukudpur	892	361	892	361	1745	1841	3110	1163	108	2093	0.41	7.49	2.89
5. Sahapur	809	328	809	328	1040	1651	2452	1040	1651	2452	3.55	5.65	4.25
6. Badarganj	634	338	834	338	4033	4847	6847	3718	1067	1644	1.41	4.93	2.65
7. U. Baochandi	690	279	690	279	3052	4178	5081	1017	1747	2540	2.41	2.79	2.55
8. Kismat Ghatabil	698	283	698	283	569	615	940	569	615	940	0.60	5.06	2.51
9. Ghatabil	695	281	695	281	890	1251	1458	890	1251	1458	2.62	2.19	2.47
10. Jamubari	1913	775	1913	775	2287	2876	4139	1464	1841	2649	1.76	5.20	2.96
11. Sankarpur	925	374	925	374	2002	3160	3820	1001	1580	1950	3.51	2.70	3.23
12. D. Baochandi	337	136	337	136	1517	2092	2414	305	435	532	2.47	3.18	2.72
Catchment Area	12,558	5084	11905	4819	23978	31776	42378	15706	18608	25117	2.17	4.11	2.85

Source : 1. Bangladesh Population Census-1981, Thana Series, Table No. Col and Co4 Pages ; 47-50 and 379-383.
 2. Bangladesh Population Census 1974, Village Population Statistics, Rangpur District, Pages- 32-35.
 3. District Census Report, Rangpur-1961, Pages : V-75 V-83.

TABLE NO. 18
Badarganj Upazila
Rangpur Zila

Area, Households, Population and Labour Force of
the Catchment Area - 1981.

Sl. No.	Name of Mouza	Area in Acres	Households	Population	Labour force
1.	Mostafapur	1,157	538	2,728	1,844
2.	Rajarampur	1,655	698	3,690	1,783
3.	Anrulbari	1,300	512	2,450	1,606
4.	D. Muksudpur	892	390	2,093	1,346
5.	Shahapur	809	449	2,452	1,675
6.	Badarganj	834	1,109	6,847	4890
7.	U. Baochandi	690	465	2,540	1,578
8.	Kismat Chalabil	698	183	940	607
9.	Ghatabil	695	273	1,458	944
10.	Jamubari	1,913	814	4,139	2,815
11.	Sankarpur	925	350	1,950	990
12.	D. Baochandi	337	108	523	245
	Catchment Area	11,905	4,819	31,810	20,323

Source : Bangladesh Population Census - 1981
Thana Series, Table No. Co1 and Co4
Pages : 47-50 and 379-383.

5.2 Definition of Shahar Area :

To prepare the land use plan for Badarganj upazila shahar in order to serve as locational guidelines indicating places of work, residence and recreation and to facilitate public and private developments at the upazila centre through physical planning approach, a detailed plot to plot survey of current uses of land was completed for 3,040 acres of land in and around the upazila headquarters. The survey map was analysed very carefully and found that most of the non-agricultural functions including the residential areas have been concentrated in and around the upazila centre. The land of peripheral areas of centre are mainly under the use of agriculture with a few home steads. Finally, 1277 acres of land have been included in the shahar area of Badarganj. The shahar area includes part of Badarganj, Shahapur, Sankarpur and Jamubari mouzas. For details, existing land use map and the table No. 19 and 20 may be seen.

5.3 Existing Land Use; Facilities and Utilization Characteristics :

The planning area of Badarganj Upazila Shahar includes 1277 acres of land. According to the survey, the current uses of land of Badarganj Upazila Shahar have been classified as shown in Table No. 21. The facilities and utilization characteristics have been discussed in the following paragraphs.

Agriculture and Forestry :

Land covered by agriculture are amounts to 862.00 acres or 67.50 percent of the designated shahar area. The builtup area is surrounded by agricultural lands from almost all directions. On the north, adjacent to the upazila headquarters, the shahar is bounded by low lands.

Commerce and Industries :

Land covered by commerce and industries are amounted to 26.25 acres or 2.07 percent of the shahar area. Commerce covers 10.00 acres and industries covers 16.25 acres. Land used by commerce is located on the north-west of the railway station in mouza Badarganj. The industries mostly of which are rice mills are located on the northern edge of the builtup area. Another industrial zone is located on the north of the UNO complex in mouza Jamubari.

TABLE NO. 19
 Badarganj Upazila Shahar
 Rangpur Zila
 Area, Population and Rate of Growth of the Shahar Area 1961, 1974 & 1981.

Sl. No.	Name of Mouza	Total Area		Total Population			Area Involved		Population Involved			Growth Rate		
		Acres	Hectars	1961	1974	1981	Acres	Hectars	1961	1974	1981	'61-74	'74-81	'61-81
1.	Badarganj	835	338	4033	4847	6847	340.00	137.60	3121	3743	5158	1.41	4.93	2.65
2.	Jamubari	1914	775	2287	2876	4159	590.50	238.96	814	1020	1472	1.76	5.20	2.96
3.	Shahapur	810	328	1040	1651	2452	310.00	125.45	586	814	1384	3.55	5.68	4.29
4.	Sankarpur	1847	748	2002	3160	3820	36.50	14.77	40	62	77	3.51	2.70	3.23
.	Shahar Area	5406	2189	9362	12534	17258	1277.78	516.78	4561	5639	8091	2.24	4.57	3.06

TABLE NO. 20
Badarganj Upazila
Rangpur Zilla

Area, Households, Population and Labour Force of
the planning Area - 1981.

Sl. No.	Name of Mouza	Area in Acres	House-holds	Population	Labour force
1.	Badarganj	340	840	5158	3698
2.	Jamubari	590.50	291	1472	1003
3.	Shahapur	310	251	1384	950
4.	Sankarpur	36	7	77	33
	Shahar Area	1277	1392	8091	5684

Administrative :

The upazila complex and other government and semi-government officers cover 26.25 acres or 2.07 percent of the available land. Almost all the administrative officer are located on the north-west of the railway line. The upazila complex is located in mouza Jamubari about half a mile south-east of the old core area where other government and semi-government officer are located. They are connected by Badarganj-Rangpur metalled road.

Socio-Cultural :

For socio-cultural functions 20.00 acres or 1.57 percent of the designated shahar area are used. For education 5.75 acres of land are used. The Badarganj Degree College is located on the east of the railway station in mouza Jamubari. The boys and girls high schools are located in old core area of Badarganj. The health complex is located in mouza Shahapur. The Edgha and the burning ghat are located on the north of present buildup area in mouza Badarganj. There is a community centre located in the UNO Complex.

Urban Services :

Land used for urban services amounts to 23.50 acres or 1.84 percent of the available land. The police station is located on the north of the old core area in mouza shahapur. The railway station covers 17.00 acres of Badarganj mouza. The post office and the telephone exchange is located in the old core area.

Recreational :

For recreational purposes 3.50 acres of lands are used. For sports 2.00 acres of lands of Badarganj mouza are used. Two cinema halls located in old core area use 1.50 acres of land.

Roads :

Roads cover 100.00 acres or 7.84 percent of the designated shahar area. For major roads 50.00 acres of lands are used. Major roads include railway track. Secondary roads cover 15.00 acres. Local roads cover 25.00 acres.

Residential :

For residential purpose 103.00 acres of lands are used. In Badarganj mouza 50.00 acres of land are used for residential purposes. In shahapur and Jamubari mouzas 26.00 and 24.00 acres of lands are used for residential purposes respectively.

Water Bodies :

Water bodies cover 112.00 acres or 8.77 percent of the available land. There is a low land on the north of shahar area. For details of existing land uses Table No. 21 may be seen.

5.4 Physical Opportunities and Constraints :

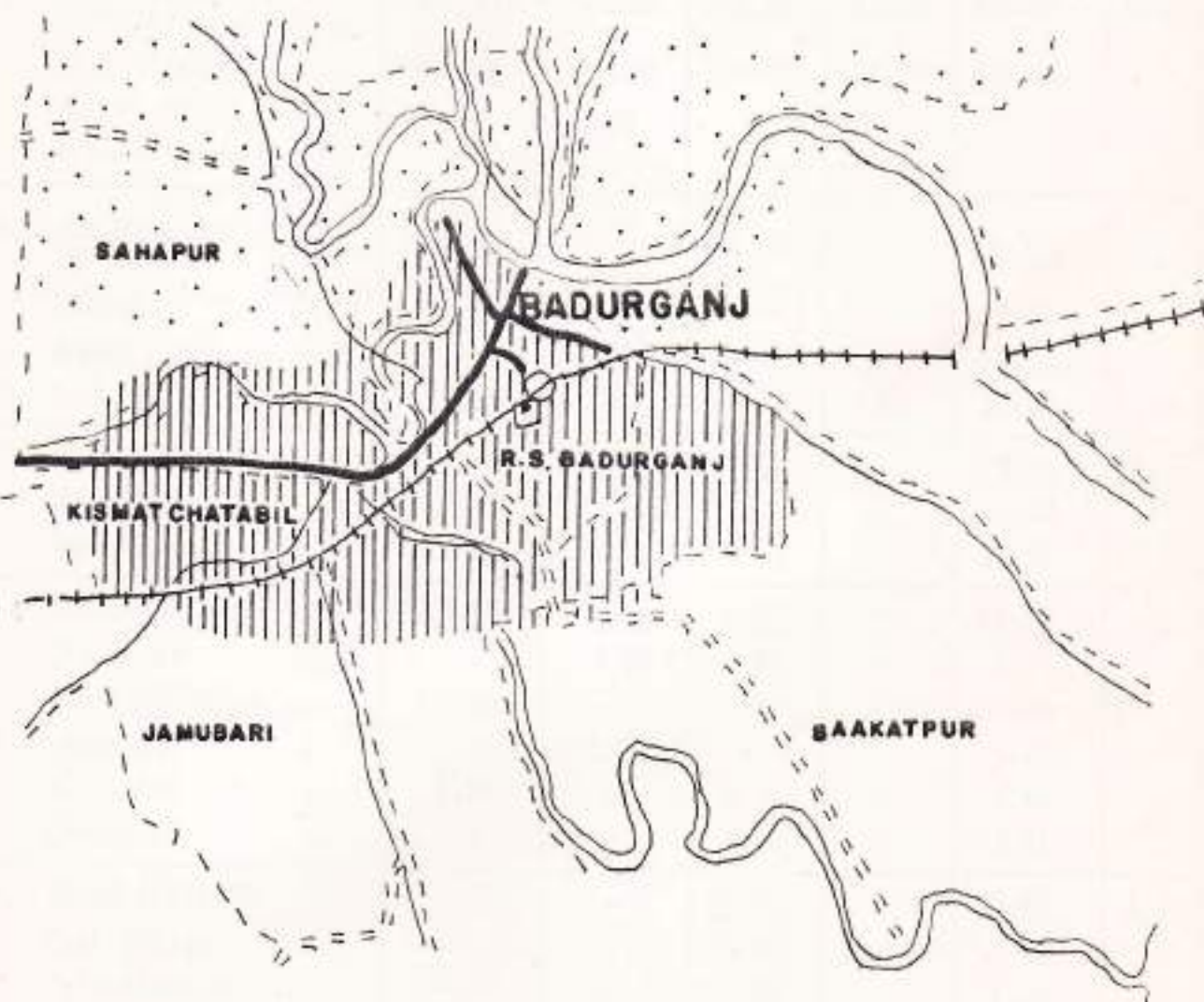
Just on the north, half a kilometre away from the centre of the upazila shahar the river Jamuneshari passes. This land along the river is low and mostly water logged. Although most of urban functions have been located on the northern areas, even then any more development toward the north should not be proposed. On the south fertile agricultural lands are present and they should be reserved for their present use. The railway line from Rangpur to Parbatipur passes east-west through the upazila shahar. A metalled road

MAP OF PHYSICAL OPPORTUNITIES AND CONSTRAINTS

BADURGANJ UPAZILA SHAHAR



SCALE: 1" = 1 MILE



LEGEND

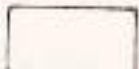
1 BUILDABLE LANDS



2 LOW LANDS



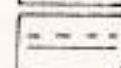
3 LANDS OF HIGH
AGRICULTURAL VALUE



4 PUCÇA ROAD



5 SEMI PUCÇA ROAD



6 MOUZA BOUNDARY

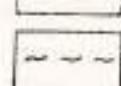


TABLE NO. 21
Badarganj Upazila Shahar
Existing Land Use Analysis

Function	Mouzas	Shahapur	Janiubari	Badar-ganj	Sankar-pur	Total	Per-centage
1. AGRICULTURE AND FORESTRY.....		<u>237.00</u>	<u>472.00</u>	<u>127.00</u>	<u>26.00</u>	<u>862.00</u>	<u>67.50</u>
Agricultural...		237.00	472.00	127.00	26.00	862.00	
Ag. Firms							
Others (high land)							
2A. COMMERCE AND INDUSTRY				<u>10.00</u>	-	<u>10.00</u>	<u>0.79</u>
Market...		-	-	7.00	-	7.00	
Shops		-	-	3.00	-	3.00	
2B. Industry		1.25	9.00	6.00	-	16.25	1.28
3. ADMINISTRATIVE		<u>0.25</u>	<u>18.00</u>	<u>8.00</u>	-	<u>26.25</u>	<u>2.07</u>
UNO Complex		-	15.50		-	15.50	
Seni-Govt.		0.25	2.50	8.00	-	10.75	
4. SOCIO-CULTURAL		<u>6.50</u>	<u>4.50</u>	<u>9.00</u>	-	<u>20.00</u>	<u>1.57</u>
Education		-	3.50	2.25	-	5.75	
Health/Welfare		5.00	-	-	-	5.00	
Community		-	1.00	-	-	1.00	
Religious		1.50	-	3.00	-	4.50	
Cemetery		-	-	3.75	-	3.75	
5. URBAN SERVICES		-	-	<u>23.50</u>	-	<u>23.50</u>	<u>1.84</u>
Post Office		-	-	0.50	-	0.50	
Tele-exchange		-	-	1.00	-	1.00	
Police Station...		-	-	5.00	-	5.00	
Bus/ Rail Station...		-	-	17.00	-	17.00	
Garbage disposal...		-	-				

Functions	Mouzas	Shahapur	Jamubari	Badar-ganj	Sankar-pur	Total	Per-centage
6. RECTEATIDNAL		<u>2.00</u>	-	<u>1.50</u>	-	<u>3.50</u>	<u>0.27</u>
Sports	...	2.00	-	-	-	2.00	
Parks	...	-	-	-	-	-	
Cinema	...	-	-	1.50	-	1.50	
7. ROADS	...	<u>7.00</u>	<u>41.00</u>	<u>50.00</u>	<u>2.00</u>	<u>100.00</u>	<u>7.84</u>
Major Rail	...	-	20.00	30.00	-	50.00	
Secondary	...	-	5.00	10.00	-	15.00	
Local	...	7.00	16.00	10.00	2.00	35.00	
8. RESIDENTIAL	...	<u>26.00</u>	<u>24.00</u>	<u>50.00</u>	<u>3.00</u>	<u>103.00</u>	<u>8.07</u>
Existing	...	26.00	24.00	50.00	3.00	103.00	
H. Estate	...						
H. for others	...						
9. WATER BODIES	...	<u>30.00</u>	<u>22.00</u>	<u>55.00</u>	<u>5.50</u>	<u>112.00</u>	<u>8.77</u>
Ponds & Canals	...	30.00	22.00	55.00	5.50	112.00	
Historical	...	-					
		310.00	590.50	340.00	36.50	1277.00	100.00

passes from the centre of the shahar towards the west upto Khalahati. Urban development may take place inbetween the railway line and the metalled road along the them. Buildable lands exist encircling the present centre excepting toward the north.

Land Tenure :

The land tenure system in Rangpur is similar to that of almost whole of Bangladesh. The land revenue system introduced by the British Ruler was inherited after Independence in 1947. By a legislation known as the East Bengal Estate Acquisition and Tenancy Act 1950 all proprietary rights of the middlemen that is the Zamindars and other sublessees were abolished and transferable rights in their hands. They were entitled to use the land in any way they liked. They were to pay rent direct to the government. Thus direct relation was established between government and the majority of the governed and the tillers of the soil became also its real proprietors.

But the local system of land tenure is little deviated and according to the District Statistics of Rangpur-1983, the number and area of farm holdings by tenure in 1977 are discussed here for the Badarganj Upazila. The reliable data on land tenure system were not available for the study area.

The total number of farm holdings Badarganj Upazila are 20,862 which include 92,339 acres of land. The number of owners holdings are 10,206 which amounts to 50,914 acres or 55.14 percent of the total arable land. The number of tenant holdings are 305 which includes 640 acres or 0.69 percent of the cultivated land. The number of owner-cum tenant holdings are 10,352 which contains 40,785 acres or 44.17 percent of agricultural lands.

Land Value :

As the information collected during the field survey, the value of land in and around the upazila headquarters has greatly been increased due to the upgradation upazila. At present the value of an acre of residential land ranges from 45,000 to 2,80,000 taka. The value of fertile agricultural land ranges from taka 25,000 to 60,000 per acre. The value of medium agricultural land which produces two crop in a year lies between taka 15,000 to 40,000.

The value of poor agricultural land which produces one crop or no crop in a year ranges from taka 10,000-30,000 per acre. The poor agricultural land includes low land and high land of the upazila. The mouza-wise land in detail has been shown in Table No.22.

TABLE NO. 22
Badarganj Upazila
Rangpur Zila
Badarganj Upazila Shahar Study Area Value of per
acre of land in Taka (mouza-wise).
September-1986

Sl. No.	Name of Mouza	Category of Lands			
		Residential Land	Fertile Ag. Land	Medium Ag. Land	Poor Ag. Land
1.	Badarganj	2,80,000	60,000	40,000	30,000
2.	Sankarpur	45,000	35,000	25,000	15,000
3.	Janubari	2,60,000	60,000	40,000	15,000
4.	Shahapur	2,60,000	45,000	30,000	25,000
5.	Rajarampur	45,000	25,000	15,000	10,000
6.	Average	1,78,000	45,000	30,000	19,000

Source : Sub-Register Office
Badarganj, 14.09.86

Land Suitable for Building :

In the upazila shahar and surroundings buildable high land is available. The high lands in the upazila are not suitable for agriculture. They can not be brought under agriculture because they need very intensive irrigation which may be costly. On the other hand the agricultural land around the shahar is fertile and land value is high. It may therefore be assumed that the high lands in and around the shahar are suitable for building.

Land Reserved for Agriculture and Other Specific Uses :

The agricultural lands on the east, south, west and the north-west should not be brought under any non-agricultural urban use. They are very fertile agricultural lands. The said agricultural lands are low. Therefore, they are not suitable for urban use and should be reserved. There is a canal passes from the north towards the south just skirting present developed area of the shahar. In future, there is a possibility that the shahar area will be extended toward the west. Then the canal will be passing through the shahar. Another canal passes from the west and meets the first one at the western apex of the canal. Both the canal should be kept reserve for future drainage of the shahar. There are two low lands on the west of the shahar. They should be reserved for fish cultivation and irrigation.

Land Liable for Flooding and Similar Disadvantages :

The land on the north of the present built up area is very low and easily flooded. Even they remain under water in most seasons of the year. The river Jamunashari shifts its course every now and then. It may therefore be suggested here that the shahar should not be allowed to grow towards the north. There are low lands on the north-west of the shahar area which are easily flooded. The north-eastern areas of the shahar are also low where urban development cannot be taken place. It may be concluded here that the shahar may develop toward the west and toward the south.

6. FORECASTS :

6.1 Population Projection :

In order to estimate the amount of land may be required for various functional uses, it is necessary to estimate the growth of population of the planning area as well as the Catchment Area. To achieve the above objectives the population projection for the years upto 2001 A.D. were prepared with fine year intervals. The population projection were estimated based on the data collected during field survey in the later part of the year 1984.

One of the main objectives of Governments administrative decentralization policy is to provide employment opportunity locally, so that people from commuting distance can come to work in the upazila shahar and go back to their own residences. We may also assume that in most of the cases the upazila shahar will be a small service centre for the catchment area as well as for the upazila region.

Under above circumstances, instead of taking into account the rate of normal migration the amount of induced population has been taken under the consideration of population projections. The following are the major assumption for base population and for fertility as well as mortality.

1. Assumption for base population are :
 - a) the population of the shahar and or catchment area are 8091 and 31,810 & 33,925 in 1981 (1).
 - b) due to the establishment of new administrative headquarters at upazila shahar, population will increase in Public, Private and Service Sectors by 1 : 0.5 : 0.5.
 - c) the population projections catchment area including the population of the shahar area will be made.
2. The assumption for fertility are :
 - a) high fertility but showing decline over the period from 6.3 in 1981 - '85 to 5.7 in 1996 - 2000 (2).
 - b) medium fertility, assuming a considerable fertility decline from 6.0 in the first period to 4.8 in the last period figure of 6.0 refers to 1980-'85 and assumed that a decline has already taken from 6.3 in 1981.

- c) low fertility, assuming an even larger decline since 1981 to 5.6 averaged over 1981-'85, continuing to 3.8 for the period 1995-2000.
3. the mortality rate assumptions are :
- a) assumed high mortality with a slight increase from 48 in 1981 to 49 for the 1981-'86 period rising to 52 from 1995-2000.
 - b) assumes medium mortality, that average of 50 for the 1981-'85 period and risen to 56 by the 1996-2000 period.
 - c) assumes low mortality rate, with an even greater improvement in life expectancy from an assumed 50 average for the 1981-'85 period to 60 for the 1995-2000 period./

On these above assumption the High, Medium and Low projections of population for both the shahar area and and catchment area are estimated seperately. According to the High, Medium and Low projections the population fo the shahar area will be 18,626, 17,230 and 13,952 in 2001 A.D. and that of the Catchment Area will be 59,726, 55,035 and 44,416 respectively in 2001. For details of population projection table No. 23 & 24 may be seen.

According to the organizaion chart, the total number of government officials will be 225 persons.¹¹ It may be therefore be assumed that the total number of induced population in the upazila shahar will be $225 \times 2 \times 6 = 2,700$ persons.

Projections of Households (Shahar Area)

To estimate the requirements of land for residential pruposes, it is necessary to forcast the number of households may be required for the shahar are upto the year 2001 A.D. The average size of households in dwelling units are found 5.6 for the upazila, 5.4 for the zila and 5.8 for the nation. In estimating the number of households may be required for the shahar area, the size of households are used 5.4 for high 5.6 for medium and 5.8 for low projections. The projections of households are calculated dividing the number

11. Letter No. S-VIII/ IE-58/ 82/ 315 dated 21.9.82 Ministry of Local Govt.

TABLE NO. 23
Badarganj Upazila
Rangpur Zila
Population Projection of the Shahar Area
(1981 - 2001 A.D.)

Projections	1981	1985	1991	1996	2006
High Projections	8,091	10,607	13,627	15,920	18,626
Medium Projections	8,091	10,509	13,304	15,177	17,230
Low Projections	8,091	10,287	12,635	13,112	13,952

Total of assumed induced population = 2,700 persons.

50% " " " = 1,350 " which are
added to the projected population of 1986 and 1991 in High,
Medium and Low Projections.

RATE OF GROWTH OF POPULATION

Fertility	Mortality	1981-1986	1986-1991	1991-1996	1996-2001	2001-2006
High	Low	2.73	2.97	3.16	3.19	3.25
Medium	Medium	2.51	2.61	2.67	2.57	2.45
Low	High	2.01	1.87	1.65	1.25	1.00

Source : Working Paper Two - 1984, Page.....National Physical Planning Project,
Urban Development Directorate.

TABLE NO. 24
Badarganj Upazila
Rangpur Zila
Population Projections of the Catchment Area

Projections	1981	1986	1991	1996	2001
High Projections	31,810	37,746	43,694	51,048	59,726
Medium Projections	31,810	37,357	42,493	48,477	55,035
Low Projections	31,810	35,138	38,548	41,835	44,516

Note : Induced population as assumed in shahar area will be 2,700 persons of which 50 percent or 1,350 persons are added to the projected population of 1986 and rest 50 percent or 1,350 persons are added to the projected population at 1991.

RATE OF GROWTH OF POPULATION

Fertility	Mortality	1981-1985	1985-1990	1990-1995	1995-2000	2000-2005
High	Low	2.73	2.97	3.16	3.19	3.25
Medium	Medium	2.51	2.61	2.67	2.57	2.45
Low	High	2.01	1.87	1.65	1.25	1.00

Source : Working Paper Two-1984, Page.....
National Physical Planning Project....
Urban Development Directorate.....

of projected population of the shahar area by the size of households. For details table No. 25 may be seen.

Projections of Density of Population :

It is needed to determine the density of population to accommodate the estimated population in a rational way. According to the census report of 1981, the population of the shahar area are 8,091 persons. The landuse survey of the upazila shahar is completed at the end of 1986. According to the survey, residential area covers 103 acres of land. According to the medium projection, the population of the shahar area amounts to 10,509 persons in 1986. Therefore, the average net density of population is $10\,509/103 = 102$ persons per acre.

According to the TOR, the average net density of population in the shahar area will be 100 persons per acre. This statement is not rational and will not hold good in this particular case. because no legislation exists to control the private use of land. It may be assumed that the density of population will increase in the existing residential areas and to accomodate the estimated population, extention and creation of new residential areas will be needed.

According to the medium projection, the population of the shahar area will be 17,230 persons in 2001 A.D. and let us assume that the density of population in the existing residential areas will be 120 persons per acre in 2001 A.D. Therefore, $103 \times 120 = 12\,360$ persons will be acomodated in the existing residential areas through the method of intensification of population and $17,230 - 12,360 = 4870$ persons will be required to distribute through the method of extension of residential areas. A housing estate of 10 acres with density 100 persons per acre is proposed which will accomodate $10 \times 100 = 1000$ persons. Remaining $487 - 1000 = 3870$ persons are needed to distribute through the method of extension areas around the existing residential areas. It is possible to assume that the density for the new area will be 75 persons per acre. Therefore, $2870/75 = 52.00$ acres (approx) of new land for residential purposes will be needed.

TABLE NO. 25
Badarganj Upazila
Rangpur Zila
Projections of Households Shahar Area

Projections	H.H.Size 1981	No. H.H. 1986	No. H.H. 1991	No.H.H. 1995	No. H.H. 2001
High Projections	1,392	1,464	2,523	2,948	3,449
Medium Projections	1,392	1,877	2,375	2,710	3,077
Low Projections	1,392	1,773	2,178	2,260	2,405

Note : The average size of household for the shahar area. Upazila and Zila are 5.8, 5.6 and 5.4 respectively. The assumed size of households of the shahar area for High, Medium and Low projections are 5.4, 5.6 and 5.8 persons.

Aspects of Migration :

The cause and affect of administrative decentralization on concentration of functions in the upazila shahar have been stated in the introductory chapter of this report.

From the analysis of socio-economic data of the upazila region and the upazila shahar, the main aspect of migration of population may be summarised as follows :

- a) the induced population to the upazila shahar due to upgradation of the upazila.
- b) concentration of population in private and service sectors for perceived employment and income.

Projections of Labour Force and Employment :

To findout the requirements of land for various urban functions, it is necessary to estimate the amount of labour force for the year upto 2001 A.D. For the estimated labour force necessary provisions of jobs may be created and they will be located in space. For labour force projections, the rates at growth of labour force are determined based on the estimate of World Bank. The World Bank estimate that the national rate of growth of labour force per annum in Bangladesh in 1977-2001 A.D. is 2.7 percent as compared with respective rate of population growth 2.6 percent (see World Bank Development Report-1979, P. 162).

The rate of growth of labour force may be assumed to be 2.8, 2.7 and 2.6 percent for high, medium and low projections respectively.

According to the socio-economic survey, 42.43 percent of labour force are employed in different sectors of economy. The analysis of professional structures also shows that only 13.60 percent are employed in agriculture. It is felt that the employment in non-agricultural sectors are increasing. To provide those labour force in non-agricultural sectors, provisions of jobs should be created locally and they should be located in space in the upazila shahar.

According to the high, medium and low projections, the labour force the catchment area will be 37,747, 37,037 and 36,340 persons in 2001 A.D. For details Table No. 26 may be seen.

TABLE NO. 26
Badarganj Upazila
Rangpur Zila
Projections of Labour Force (Catchment Area)

Projections	1981	1985	1991	1996	2001	Rate of growth
High Projections	20,323	24,195	28,639	32,879	37,747	2.8
Medium Projections	20,323	24,087	28,375	32,418	37,037	2.7
Low Projections	20,323	23,969	28,113	31,963	36,340	2.6

Note : World Bank estimate that the national rate of growth of labour force/annum in Bangladesh in 1977-2000 is 2.7% as commercial with the respective rate of Population growth of 2.6% (see World Bank Development Report 1979, P. 162). The rate of growth of labour force may be assumed to be 2.8, 2.7, 2.6 percent for High, Medium and Low Projections respectively.

6.1.4 Land Requirements According to the Provisional Standards :

Land allocations are provided in multiples of the unit provisions quoted in pages 7 and 8 of the TOR. It may be noted that land use standards, except residential, relate to the whole of catchment area of the upazila shahar. Residential land allocations are made for the shahar population only. Whenever amount of land use allocations are found to be deviated from the provisional standards, necessary strong reasons are provided in support. Land use allocations are made and explained with reasons in the following paragraph and shown in Table No. 27. It is very important to note here that the medium population projections of catchment area and shahar area will be used in estimating the requirements of land for different urban functional uses. According to the medium projection, the population of shahar area and that of the catchment area are 17,230 and 55,035 persons respectively for 2001 A.D.

Table No. 27

Badarganj Upazila Shahar

Land Requirements According to the Provisional Standards
Upto 2001 AD in Acres

Functions	Catchment/ Shahar Area	Standards as per TOR	Land Req- uirements asper TOR	Existing	Proposed
A) Commerce and Industry (Shops, Office, small scale Industry)	Catchment	1.5 ac per 1,000	82.55	26.25	60.00
B) Social, Adminis- trative, Cultural and Urban Services					
<u>Education :</u>					
Nursery / Primary School	Shahar	2.0 ac per 5,000	6.90		
Secondary School	Catchment	5.00 ac/ 20,000	13.76	5.75	17.00
College	-do-	-do-	13.76		
<u>Health :</u>					
Dispensary/ Maternity/ Child Care	-do-	1.00 ac per 5,000	11.00	5.00	10.00
Health Centre, Hospital	-do-	5.00 ac/ 20,000	13.76		
Administrative Judiciary (includ- ing Officers' Residences)	Upazila	12.00 ac/ Upazila	12.00	26.25	30.00
<u>Recreation :</u>					
Parks, Open Space	Shahar	1.00 ac per 1,000	17.23	5.50	12.00
Cinema, Closed Space	Catchment	0.50 ac/ 20,000	1.38	1.50	1.50
Sports Stadium	-do-	3.00 ac/ 20,000	8.25	2.00	9.00

Table No. 27 ... contd.

Functions	Catchment/ Shahar Area	Standards as per TOR	Land Req- uirements asper TOR	Existing	Proposed
<u>Social, Cultural</u>					
Community Centre	Shahar	1.00 ac/ 20,000	0.86	1.00	1.00
Religious facilities	-do-	0.50 ac/ 5,000	1.72	4.50	9.00
Cemetary	-do-	5.00 ac/ 20,000	4.30	3.75	6.75
<u>Urban Services</u>					
Post Office	Catchment	0.50 ac/ 20,000	1.38	0.50	0.50
Telephone Exchange	-do-	-do-	1.38	1.00	1.00
Police Station	-do-	2.00 ac/ 20,000	5.50	5.00	5.00
Bus / Ghat / Rail Station	-do-	1.00 ac/ 20,000	2.75	17.00	17.00
Others	-do-	-do-	2.75	Nil	3.00
C) <u>Roads :</u>					
Major	Shahar	5 to 10 per cent	89.25 to 170.50	100.00	89.72
Secondary	-do-				
Local	-do-				
D) Residential	-do-	1.00 ac per 100	172.30	103.00	158.00
E) Urban Deferred	-do-	10%	27.50	Nil	27.50
F) Reserve : Ponds Canals	-do-		94.00	112.00	100.00

7. THE LAND USE PLAN

7.1 Approach :

Since there was no effective legislative basis to control the use of private urban land nor the means to enforce such a control, it was decided that the plan should not be a land use plan which would regulate the type and intensity of private residential and commercial development in the traditional zones of development control. Instead the plan could realistically aim at achieving only planned and controlled development of public sector projects for which purpose legislative provisions and institutional framework exists.

However, it was felt that private residential and commercial development can be forecasted in terms of location and intensity of development. It was realized that forecasting of private land use development together with planned public sector development projects mainly roads, industrial estates, public, housing, and community facilities can produce a minimum land use plan. This plan may not create an optimal urban land use development, but will be much more rational than the present uncontrolled and uncoordinated development. The main features of the adopted land use planning approach are then :

- 1) Forecasting of land use development and,
- 2) Identification and locational planning of public sector projects on the basis of the present and future needs.

7.2 Concept :

The land use planning of upazila used headquarters means the land use plan of the upazila shahar. In the Government's policy of administrative re-organization, the upazila has been recognised the most significant tier of the administration.

According to the Government's policy, it is needed to determine the hierarchy of settlements within the upazila as a whole, based on population, economic activities, social infrastructure provisions, transport linkages and related other characteristics.

Emphasis on sectoral development of economy such as agriculture, industries, transportation, education, health and rural electrification etc. in the upazila region will result in diversification of activities and also urban and regional development at this level. This requires identification and development of probable activities and services not only for the shahar itself but also for the upazila region. The upazila shahar will be the nodal point in a well articulated system for linking urban and rural functions providing facilities for administrative and socio-economic infrastructural services.

7.3 Planning Principles

The planning of upazila includes the land use zoning plan of the upazila shahar in the context of regional planning. Practically it encompasses the entire field of urban and regional planning. To start with it was, therefore, necessary to analyse traditional land use and then rationalise the future use of land through physical planning approach.

The site for upazila headquarters has been selected before the preparation and formal approval of the land use plan. It is now needed to prepare an integrated urban land use plan for the upazila shahar. Due to the pre-selection of the site for upazila administrative zone, it has become difficult to organise the rational urban land use in the upazila shahar because some of the functions has already been developed in a scattered any.

In land requirements estimation, the approved terms of reference of Urban Development Directorate has been followed. Based on the population projections, land requirements for functional uses have been calculated.

7.4 Plan Description :

Commerce and Industries :

According to the existing land use survey commerce cover 10.25 acres of land in the upazila shahar and for industrial purposes 16.25 acres of land is used. According to the provisional standards 82.55 acres of land are needed for commerce and industries to serve the population of catchment area upto the year 2001 A.D. Considering the existing land use for

this group, it may be assumed that 60.00 acres of land will serve the purpose. For commerce 30.00 acres and for industry 30.00 acres may be needed. Table No. 28 shows the details.

TABLE NO. 28
Badarganj upazila Shahar
Distribution of Commerce and Industries
(Area in Acres)

Functions	Existing	Extention	Proposed	Location	Total Area
Commerce	10.00	-	-	Badarganj	10.00
Shopping Centre	-	-	9.00	Shahapur	9.00
Shopping Centre	-	-	1.00	Jamubari	1.00
Shopping Centre	-	-	7.00	-do-	7.00
Shopping Centre	-	-	3.00	Badarganj	3.00
Industry	6.00	6.25	3.00	-do-	15.25
-do-	9.00	1.50	-	Jamubari	11.50
-do-	1.25	-	-	Shahapur	1.25
-do-	-	-	2.00	Badarganj	2.00
	26.25	7.50	25.00	Shahar Area	60.00

2. Administratives :

At present 26.25 acres of land are used for administrative purposes. The Upazila Complex covers 15.50 acres and Govt. and semi-govt. departments cover 10.75 acres. The upazila complex is located on the south of Badarganj Rangpur road in mouza Jamubari. More 3.00 acres of land may be needed for administrative purpose.

TABLE NO. 29
Badarganj Upazila Shahar
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total Area
UNO Complex	15.50	-	3.00	Janubari	18.50
T & T	1.00	-	-	Badarganj	1.00
Govt. Godown	1.00	-	-	-do-	1.00
Dakbanglow	0.50	-	-	-do-	0.50
U. Parishad	1.00	-	-	-do-	1.00
UNO Annexed	1.00	-	-	-do-	1.00
Sub-Register	0.50	-	-	-do-	0.50
Other Govt. Deptt.	3.00	-	-	-do-	3.00
Govt. Deptt.	1.00	-	-	Shahapur	1.00
Total	27.00	-	3.00	Shahar Area	30.00

3. Socio-Cultural :

It may be assumed that 4 Primary / Nursery schools of 2.00 acres each will be needed for the year upto 2001 A.D. That is the requirement of land for Primary / Nursery schools are amounted to 8.00 acres. At present two primary schools are located in the compass at boys and girls secondary schools.

According to the provisional at stands for secondary schools 13.76 acres of lands are needed. At present the Girls' Secondary school is located on 1.25 acres of lands near the bazar. No land is available for its expansion. The Boys' Secondary school is located on approximately 1.00 acres of land. No more land is available for its expansion. Keeping the primary sections, the secondary schools should be relocated. The Girls' Secondary school may be relocated on the existing playing field of 2.00 acres in mouza shahapur and the playing field is shown on 3.00 acres of vacant land as shown. Near this new playing field the Boyes' Secondary school will be located on 4.00 acres.

The college is located on 3.50 acres of land. For its extension more 1.50 acres of land have been earmarked.

TABLE NO. 30
Area and Distribution of Educational Institutions
(Area in Acres)

Institutions	Existing	Extension	Proposed	Location	Total Area
Primary School	1.00	-	-	Badarganj	1.25
-do-	1.00	-	-	-do-	1.00
-do-	-	-	2.00	-do-	2.00
-do-	-	-	2.00	Janubari	2.00
Boys' S. School	(Relucted)	-	4.00	Shahapur	4.00
Girls' S. School	-do-	-	2.00	-do-	2.00
College	3.50	1.50	-	Janubari	5.00
	5.75	1.50	20.00		17.00

Health and Welfare :

According to the provisional standards approximately 24.75 acres of land are needed for health and welfare. The Upazila Health Complex is located on 5.00 acres of land. No more land is needed for it. For this upazila centre there should have two maternity centres of 2.00 acres each. For distribution of health and welfare the Table No. 31 may be seen.

TABLE NO. 31
Badarganj Upazila Shahar
Distribution of Health and Welfare Centre
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total Area
Upazila Health Complex	5.00	-	-	Shahapur	5.00
Maternity and Child Centre	-	-	2.00	-do-	2.00
-do-	-	-	2.00	Badarganj	2.00
All	5.00	-	4.00	Shahar	9.00

Community Centre :

According to the provisional standard 0.86 acre of land is needed for it. Community centre is located on one acre of land more more land is needed for this purpose.

Religious :

At present 4.50 acres of land are used for religious purpose. For a central mosque 3.00 acres of land may be needed and earmarked in Janubari mouza.

Canetary :

At present 3.75 acres of land are used for a burning ghat. For a graveyard 5.00 acres of land have been earmarked in Shahapur mouza.

TABLE NO. 32
Badarganj Upazila Shahar
Distribution of Religious Functions.

Functions	Existing	Extension	Proposed	Location	Total Area
Community Centre	-	-	1.00	Jamubari	1.00
Central Mosque	-	-	4.00	Shahapur	4.00
Edgha	4.50	-		Badarganj	.50
Graveyard	-	-	5.00	Shahapur	5.00
Burning Ghat	3.75	-	-	Badarganj	1.75
All	8.25		10.00	Shahar	18.25

5. Urban Services :

At present 25.50 acres of land are used for urban services. For a post office 1.38 acres of land are required. The present post office is located on 0.50 acre of land. More land is needed for this post office as there is no scope for its extension. For a telephone exchange centre 1.38 acres of land are needed according to the provisional standards. The telephone exchange centre is located on 1.00 acre of land. No more land is needed. The present police station is located on 5.00 acres of land. No more land is needed for this purpose. The railway station covers 17.00 acres of land. There is no organized bus station and 1.00 acre of land is earmarked for a bus station. There is no place for garbage disposal. For garbage disposal 3.00 acres has been earmarked in mouza. For distribution of urban services Table No. 33 may be seen.

TABLE NO. 33

Distribution of Urban Services
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total Area
Post Office	0.50	-	-	Badarganj	0.50
Tele-exchange	1.00	-	-	-do-	1.00
Police Station	5.00	-	-	-do-	5.00
Bus Terminal	-	-	1.00	-do-	1.00
Rail Station	17.00	-	-	-do-	17.00
Garbage Disposal	-	-	3.00	-do-	3.00
Grand Total	23.50	-	4.00	Shahar Area	27.50

6. Recreational :

At present only 3.50 acre of land are used for recreational purposes. For two Cinema Halls 1.50 acres are reused and for planning field 2.00 acre used. According to the provisional standards a sports stadium is meant for catchment area population and requirement of land are 8.25 acres. It may be assumed that a sports stadium of 7.00 acres will fulfil the requirements.

Park is meant for Shahar population. This upazila shahar requires 17.2 acres of land for park. It may be assumed that 12.00 acres of land will be sufficient. The Table No. 34 shows the detailed distribution of recreational facilities.

7. Roads :

At present roads of all category including the railway track cover 100.00 acres of land. The planned roads including the existing rail track and highary cover 50.00 acres. For details Table No.35 may be seen.

TABLE NO. 34
Distribution of Recreational Facilities
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total Area
Stadium	-	-	7.00	Badarganj	7.00
Park	-	-	8.00	Shahapur	8.00
Park	-	-	4.00	Badarganj	4.00
Cinema Hall	1.50	-	-	-do-	1.50
Playing Field	2.00	-	-	Shahapur	2.00
Grand Total	3.50		19.00	Shahar Area	22.50

TABLE NO. 35
Badarganj Upazila Shahar
Land Use of Roads
(Area in Acres)

Roads	Existing Length	Proposed Length	Existing Area	Proposed Area	Total Length	Total Area
Rail Track width-150	9,900'	-	34.10	-	9,900	34.10
Road width-60'	3,960'	6,600'	5.45	9.10	10,560	14.55
Road width-40'	9,240'	23,100'	8.49	21.21	32,340	29.70
Local-24'	5,610'	13,200'	3.10	7.27	18,810	10.37
Total	28,710	42,900	54.14	37.58	71,610	88.72

8. Residential :

At present residences cover 103.00 acres of land. According to medium Projection the population of 1986 are 10,509 persons. The present residential density $10,509 / 103 = 102$ persons per acre. According to the medium projection the population of the shahar area will be 17,230 person in 2001 A.D. For the existing residential areas, the density may be raised to 125 persons per acre. If so the existing residential areas will accommodate $103 \times 125 = 12,875$ persons. A housing estate of 10 acres may be created with density 100 persons per acre. Then the housing estate will accommodate $10 \times 100 = 1000$ persons. Remaining $17,509 - (12,875 + 1000) = 3,637$ persons will be accommodated extending the areas adjacent to the existing residences. For the extended area, the density may be assumed as 80 persons per acre. Therefore $3,637 / 80 = 45.46$ acres of new land be needed. The total requirements of land for residential purpose is amounted to $103 + 10 + 45 = 158$ acres. (Details have been discussed in density projection).

9. Urban Deferred :

Approximately 275 acres of land are proposed for urban functional reserve, 10 percent of planned land are kept as urban deferred which is amounted to 27.50 acres of land. They are shown in two different sectors mouza Anantaram.

10. Urban Reserve :

According to the existing land use survey, water bodies cover 112.00 acres of land. No land is used for historical purposes. Some of the water logged areas have brought under urban use and about 100 acres water bodies are kept as reserve.

11. Agriculture and Forest :

After land use proposal for urban functional uses, 844 acres are remained for agriculture. Out of these agricultural lands 20 acres may be used for agricultural firms which has been earmarked in mouza Anantaram.

TABLE NO. 36

Badarganj Upazila Shahar
Planned Land Use Analysis

Function	Mouzas	Shahapur	Jamubari	Badarganj	Sankarpur	Total	Percentage
1. AGRICULTURE AND FORESTRY.....		220.50	506.00	187.50	31.50	844.00	66.09
Agricultural...		220.50	486.00	187.50	31.50	824.00	
Ag. Farms		-	20.00	-	-		
Others (high land)							
2A. COMMERCE		9.00	8.00	13.00	-	30.00	2.35
Market...		-	1.00	10.00	-	11.00	
Shops ...		9.00	7.00	3.00	-	19.00	
2B. Industry		1.25	11.50	17.25	-	30.00	2.35
3. ADMINISTRATIVE ...		1.00	18.50	10.50	-	30.00	2.35
UNO Complex		-	18.50	10.50	-	29.00	
Govt. Deptt.		1.00	-	-	-	1.00	
Semi-Govt.							
4. SOCIO-CULTURAL ...		22.00	8.00	14.25	-	45.25	3.54
Education		6.00	7.00	4.00	-	17.00	
Health/Welfare		7.00	1.00	2.00		10.00	
Community		-	1.00				
Religious &		9.00	1.00	8.25		18.25	
Cemetery							
5. URBAN SERVICES ...		-	-	27.50	-	27.50	2.15
Post Office		-	-	0.50	-	0.50	
Tele-exchange		-	-	1.00		1.00	
Police Station...		-	-	5.00	-	5.00	
Bus/ Rail Station...		-	-	18.00	-	18.00	
Garbage disposal...		-	-	3.00		3.00	

Functions Mouzas	Shahapur	Jamubari	Badar- ganj	Sankar- pur	Total	Per- cen- tage
6. RECREATIONAL	<u>10.00</u>	-	<u>12.50</u>	-	<u>22.50</u>	<u>1.76</u>
Sports ...	2.00	-	7.00	-	9.00	
Parks ...	8.00	-	4.00	-	12.00	
Cinema ...	-	-	1.50	-	1.50	
7. ROADS ...	-	-	-	-	<u>88.72</u>	<u>6.95</u>
Major Rail ...	-	-	-	-	14.55	
Secondary 40' ...	-	-	-	-	29.70	
Local 24' ...	-	-	-	-	10.37	
8. RESIDENTIAL ...	<u>46.00</u>	<u>39.00</u>	<u>68.00</u>	<u>5.00</u>	<u>158.00</u>	<u>12.37</u>
Existing ...	26.00	24.00	50.00	5.00	103.00	
H. Estate ...	10.00	-	-	-	10.00	
Extension ...	10.00	15.00	18.00	2.00	45.00	
9. URBAN DEFERRED ...	-	-	-	-	<u>27.50</u>	<u>2.15</u>
10. URBAN RESERVE ...	-	-	-	-	<u>100.00</u>	<u>7.83</u>
	310.00	590.50	340.00	36.50	1277.00	100.00

8. PROGRAMME AND IMPLEMENTATION

8.1 Priority Actions and Cost Implications :

Priority have been given to the construction of UNO Complex and health complex. Some socio-cultural functions like the central mosque, community centre etc. inadequate. Recreational facilities like stadium, park etc. are totally absents in the Upazila Shahar of Pirgacha. To create living environment in an urban area, socio-cultural and recreational facilities are needed. An integrated land use plan needs the development of internal roads on priority basis.

Determination costs to implement all the proposed projects are out of scope of this report. Only the preparation of the land use plan is the objectives of the report. At present 173.25 acres of lands are used for urban functions (including private residential lands and water bodies). For planned development 305.97 acres of land will be needed. The requirements of new lands are $305.97 - 173.25 = 132.72$ acres. Studies of lands values showed that the average value of an acre, buildable land is Tk. 1,20,000/- only. Therefore, to acquire the lands required for planned development will cost Tk. 1,20,000/- $\times 132.72 =$ Tk. 1,59,26,400/- only.

8.2 Phasing and Urban Deferred :

Development projects earmarked on the plan may be divided into two main phases. Phase-I, upto the year 1990 and Phase-II 1991-2001 A.D.

Phase - I

Internal roads showed be developed periority basis which will help to integrate the existing and proposed functions resulting in accelating the rate of growth and development. It was already been mantioned that rhe upazila shahar of Pirgacha is lacking of social and recreational facilities. They showed be developed on priority basis in create living environment in the upazila shahar.

Phase - II

In the phase-II, remaining other functions like the housing estate, industrial developments, agricultural firms etc. will be developed. All other functions as proposed should be developed to create a healthy, pleasant and functionally efficient living environment in the upazila shahar. Details of phasing are shown in Table - 36 depending on growth of population and priority of projects.

For urban deferred 38.75 acres of lands have been earmarked in three different sectors. They will be developed if the allocated lands do not fulfil the requirements. They may be kept as deferred for next plan period. It may be noted here that the urban deferred land will continue their present use until they are required to be developed for any urban use.

8.3 Development Control :

The implementation of the land use plan will spread over many years and planning is a continuous process. It is essential that all planning matters should be administered by a single authority and should be a subject to control. It is an essential part of the upazila administration. The land use plan must be kept under continuous reviews, but in itself only constitute a small part of the planning work. Urban planning is a profession in its own right and is recommended that an experienced planner should take its charge.

8.4 Monitoring and Review :

The monitoring of all activities regarding the implementation of the upazila shahar should remain under the charges of the UNO who is well aware of whole of activities of the upazila region. If possible an officer of Urban Development Directorate may be placed in every Division to look after the proper implementation of land use plan of upazila shahar.

The land use plan prepared will fulfil the stated objectives of the TOR. The land use plan may be reviewed here in the light of land use organizations and distribution of lands for different functional uses.

It is very important to note here that the present use of land should not be disturbed and will continue until the land are required to be developed for urban use as proposed.