

URBAN DEVELOPMENT DIRECTORATE

MINISTRY OF WORKS

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

REPORT -IV

FINAL REPORT AND PLAN

LAND USE PLAN

KAUNIA UPAZILA SHAHAR
RANGPUR ZILA

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GANIBANGLA LIMITED

CONSULTING ENGINEERS

823, ROAD 19, DHANMONDI, DHAKA-9, BANGLADESH. CABLE: GANIBANGLA, PHONE: 313131, 312324

ENGINEERING - PLANNING - RESEARCH - DEVELOPMENT

মোঃ আবুল মনজুর সরকার

বি. এ. বি. এড

চেয়ারম্যান,

উপজেলা পরিষদ, কাউনিয়া, রংপুর।

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পরিচালক,
নগর উন্নয়ন অধিদপ্তর,
৮২, মেগুন বাগিচা, ঢাকা।
স্বাধীনতা সড়ক, বাংলাদেশ সরকার।

বিষয় :- কাউনিয়া উপজেলা শহর প্লাবন রিপোর্ট এর উপর মনুবা।

স্বনামসংকী মেসার্স গান বাংলা নিমিটেট কর্তৃক তৈরী কাউনিয়া
উপজেলা শহরের খপড়া প্লাব ও রিপোর্ট আমরা উপজেলা পর্যায়ে পর্যালোচনা
করিলাম। খপড়া প্লাব শকার্কে আমাদের বিশেষ কোন মনুবা নাই। আমরা প্লাবটির
আধু বাধুবান্বের জন্য পদক্ষেপ গ্রহণের অনুরোধ জানাইতেছি।


মোঃ আবুল মনজুর সরকার
চেয়ারম্যান,
উপজেলা পরিষদ, কাউনিয়া
রংপুর।

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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 upzila 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 upzila 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 upzila 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 centre . 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 of 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 Land Use 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 land use 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 make all provisions necessary for modern civic life.

It is a promise to the potential dwellers of the headquarters for a healthy, pleasant and functionally efficient living environment. Preparation of land use 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 land use plan itself will require to be given legal cover 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 land use 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 land use plan for some of the upazila shahar of Bangladesh.

2. METHODOLOGY

The Objectives and scope of services for preparing the land use 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.

2.1 Existing Land Use Survey :

Mouza maps in the scale of 1 inch equal to 330 feet were collected from the DLR^{*} covering whole of the designated study area, traced out with plot boundaries and numbers. Thus the field survey sheets were prepared. A detailed plot to plot uses of land were completed and marked on the survey sheets. The layout of the special features like mosques, schools, offices, mazars etc. were drawn on the survey sheets as well as on the survey note book. Thus the survey for the whole of the designated study area was completed.

2.2. Preparation of Existing Land Use Map :

The survey sheets were compiled and existing land use map was prepared. The land use map was examined and analysed and finally shahar area was delineated. According to the instructions given in page-11 of the TOR, the base map of existing land use was prepared in graphics.

2.3 Existing Land Use Analysis :

The quantity of land under different uses were calculated by grid method and a table on it was prepared. The percentage of land under different uses were also calculated.

2.4 Socio-Economic Survey :

A format of questionnaire containing four pages was prepared and administered to collect data on socio-economic condition of the people of the shahar area. Five percent of the 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 shahar area.

* DLR : Directorate of Land Records

2.5 Detailed Land Use Survey :

A detailed land use survey was conducted and completed by the survey team for 200 acres of core area of upazila shahar using a map in the scale of RF 1:1000. Layouts of all man-made and physical structures were plotted to the correct scale. The level of land and flooded area were demarcated through physical verification of land in and around upazila shahar. Contour maps were collected from the BWDB and compared with the survey map. Finally, the contours were interpreted on the survey map in the correct scale.

2.6 Determination of Hierarchy of Settlements :

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 weightage to find out the functional gravity of each mouza. According to the weights rankings have been made.

2.7 Determination of Catchment Area and Shahar Area :

To determine the sphere of influence or the catchment area, data on commuting distance of the upazila shahar were collected during the field survey. The physical features in and around the upazila shahar were analysed. The catchment area was determined and delineated through studies on commuting distance, service area and physical features of surrounding of the upazila shahar. The shahar area was determined on analysis of existing land use survey. Trend of development of settlements, availability of buildable land and physical features of surroundings have been given due consideration.

2.8 Forecasts :

The projections of population and labour force were made for the years 1986, 1991, 1996 and 2001 AD. The population and labour force of 1981 were used as base year data. The past trend of rate of growth of population and labour force, the rate of migration and specially the induced population due to upgradation were given due consideration in the projections. Thus the low, medium and high projections were made.

2.9 Planning the Landuse :

The requirements of land were calculated on the basis of guidelines on planning provision standards as specified in the pages 8 to 11 of TOR. As the guidelines do not have legal enforcement, enough good reasons were provided during allocation of lands for various urban functional uses. A new type of Land Use Plan was developed which would be realistic and implementable in the present day circumstances.

2.10 The Final Plan :

A comprehensive and integrated land use plan was prepared for the development of the upazila shahar. Special attention was given in organising the functional uses of lands.

3. THE UPAZILA IN ITS DISTRICT CONTEXT

3.1 Physical Characteristics

Historical Background of the Upazila :

It is generally believed that the upazila as a Thana was created in 1887. The local people are of the opinion that the Upazila derived its name from the name of old village Kaunia which had gone into the bed of the river Tista in the long past. In the Government's recent policy of overall administrative re-organization, the thana of Kaunia has been upgraded as an upazila. At present it includes 6 unions containing 80 mouzas. Its headquarters is located on Nijpara and Hariwar mouzas.

Location of the Upazila :

Kaunia is one of the upazila of 8 upazilas of Rangpur Zila (New). The distance between the upazila headquarters is 20.93 km. (13 miles) and located on the east of the zila headquarters. Kaunia Upazila lies between $25^{\circ}-41'$ and $25^{\circ}-49'$ north latitude and $89^{\circ}-17'$ and $89^{\circ}-28'$ east longitude. It is bounded from the north by Lalmonirhat Upazila, from the south by Pirgacha Upazila, from the east by Rajarhat Upazila and from the west by Gangachara and Rangpur Upazilas. The total area of Kaunia Upazila is 150 sq. km. (58 sq. miles) including a river area of 5.6 sq. km.

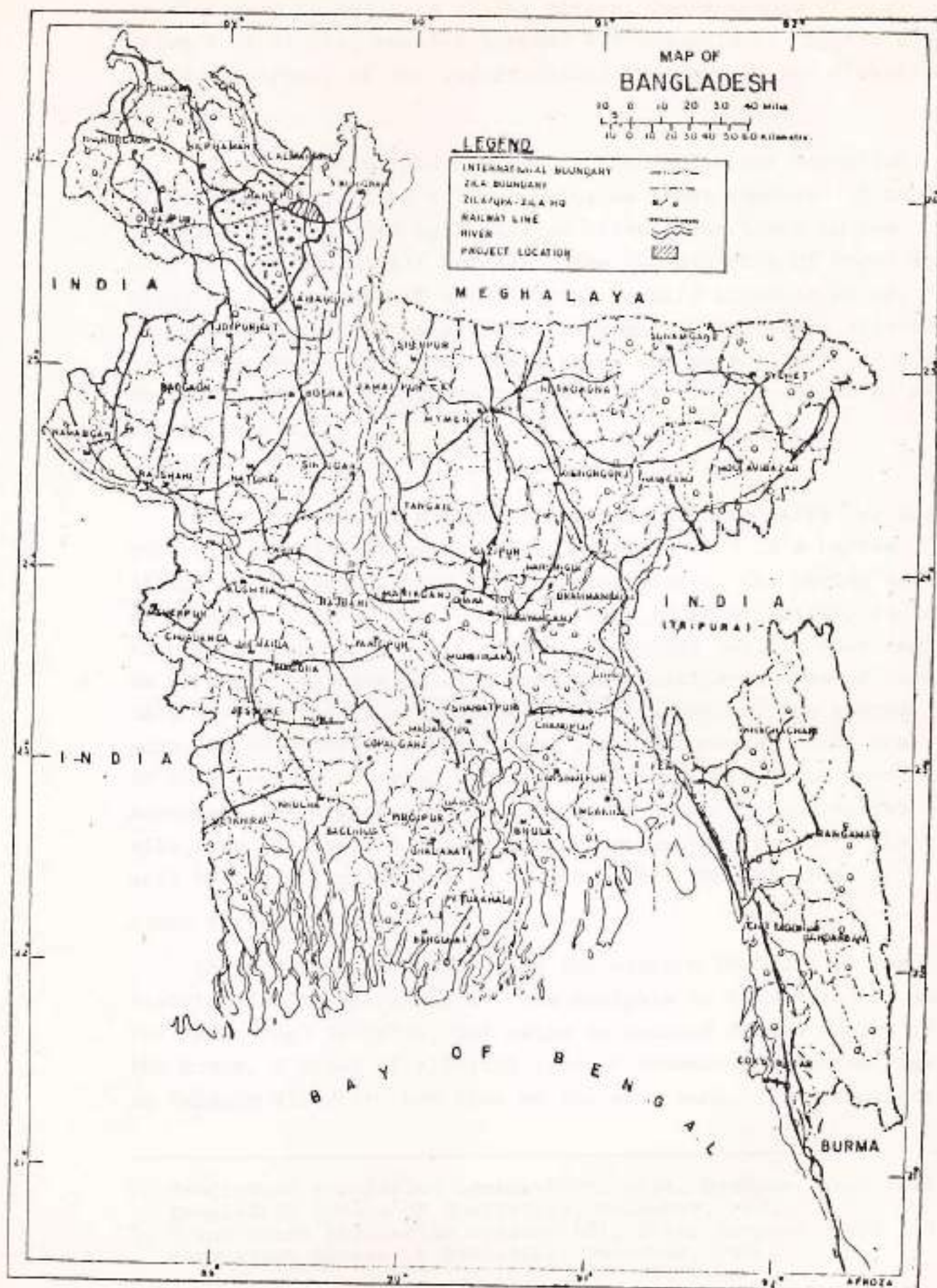
Location of Upazila Headquarters :

The upazila headquarters of Kaunia is located on $25^{\circ}-44'$ north latitude and $89^{\circ}-24'$ east longitude. The railway line from Pirgacha and Rangpur to Lalmonirhat passes through the upazila headquarters. It is a railway Junction. A highway from Rangpur to Lalmonirhat also passes through the headquarters.

Topography :

The district of Rangpur (old) is a vast alluvial plain without any natural elevation. There are large extent of high sandy plains. A strip of high land is found is also found along the west. The rest of the district, specially towards the east is low level most of which are inundated during the rains. The surface gently slopes down from the north-west to the south-east

1. Map of Police Station Kaunia, Scale 1" = 1 Mile, District Rangpur



as displayed by the flow of the rivers. The presence of the network of rivers, smaller streams and channels is exposes a vivid appearance of the topographical features of the district.

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 Himalayan rivers. The tract in the west and the south-west bordering the old district of Bogra and Dinajpur, is composed of old alluvial locally known as Khyar. The greater part of the district is composed of recent alluvium locally known as poli. The chars which are generally found along the banks of the rivers are formed only by the deposits of most recent origin."²

Soils :

"The district is generally divided into two parts for the purposes of soil classification. The first part is a narrow stripe in the west, which is a continuation of the Barind tract of Dinajpur and Rajshahi and is locally known as Khyar. It is mainly as outcrop of stiff reddist clay. The soil in this region is strongly impregnated with iron and contains nodules of carbonate of lime and is of reddish or greyist colour. The second part, is composed of new alluvium locally known as pali. The of this area consists of varying poportion of clay and sand. Moreover, the higher lands in the north which do not receive silt from the beels and rivers as known as bala or reti. The soil of these lands consists of more sands than of clay."³

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 of Rowamari, which belongs to Rangpur district, now lies on the east bank. The Brahmaputra

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

is navigable by big country boats and steamers throughout 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 feature 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, Samkas and Dudkumar.

Climate :

"The climate of the District of Rangpur (old) is that of a sub-tropical country with special characteristics derived from its physical conformation, the proximity at the Himalayan and the Garo Hill. Thus climate is mild with equable temperature, high humidity and plenty of rainfall. The average maximum temperature in the district during summer becomes 31°C while the average minimum temperature in winter becomes 12.5°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 respectively as 577 and 346 in 1982."⁴

Agricultural Land Use :

Total arable land of Rangpur Zila (new) is 566,282 acres and that of Kaunia upazila is 36,551 acres. The net cropped area of the zila is 409,321 acres or 72.28 percent of the total area in 1981-82 and the net cropped of Kaunia upazila is 25,150 acres or 68.80 percent of the total area in the same period. But the intensity of cropping of Kaunia upazila is much higher than that of the zila and is recorded as 209,83 for the upazila and 148.93 for the zila. The triple cropped land of the zila amounts to 58,971 acres or 10.41 percent. The triple cropped land of the upazila is recorded as 8,722 acres or 23.86 percent in 1981-82. For details of agricultural land use table No. 1 may be seen.

4. Bangladesh Population Census-1981, Dist. Rangpur, Page-XXVII. Bangladesh Bureau of Statistics, December - 1984

Table No. 1
Kaunia 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
Kaunia Upazila	36551	1759	6252	10176	8722	25150	52770	209.83
Rangpur Zila	566282	9340	120660	229690	58971	409321	756952	148.93

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

Land Capability :

According to the District Statistics of Rangpur-1983, 80 percent of soils of Kaunia is doash, only 17 and 03 percent of the soils are sandy and etel respectively. From agricultural point of view the soils of Kaunia Upazila is very fertile and capable of producing more crops. It may be possible to cultivate the soils of Kaunia more intensively.

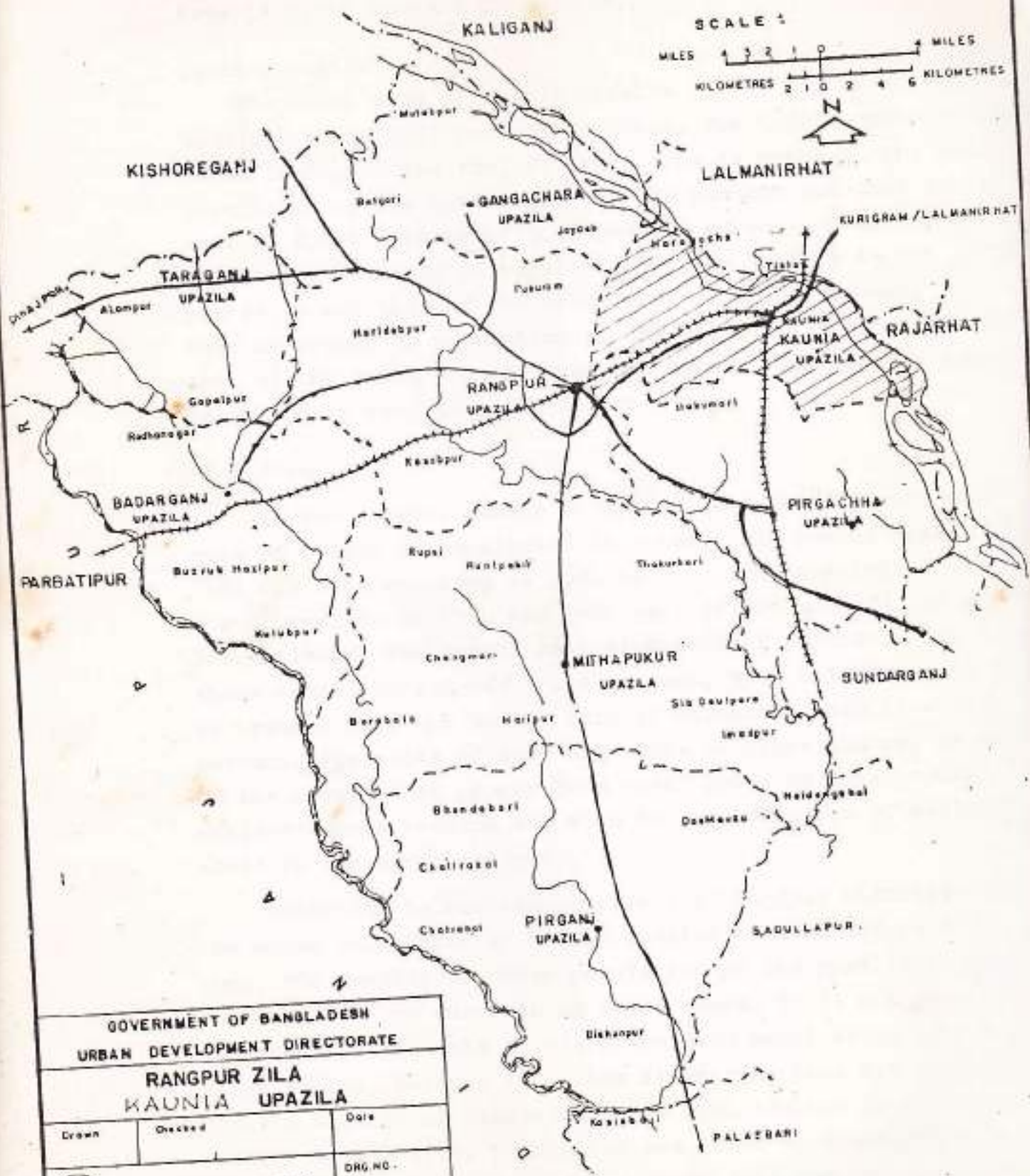
3.2 Population and settlement Distribution :

Rangpur Zila :

According to the district census report of Rangpur-1981, the total area of Rangpur Zila (new) is 2313 sq.km out of which 92.4 sq.km or 3.99 percent of the area of the zila is urban. According to the same report the total population of the zila is 1,703,367 persons of which 206,937 persons or 12.15 percent 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 6.09 percent respectively. The Rangpur town is the only paurashava area in the zila.

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
KAUNIA UPAZILA

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The area of Rangpur Town is 38.60 sq.km having population of 153,174 persons. The density of population of Rangpur Paurashava area is 3,968 persons per sq. km.

Kaunia Upazila :

The total area of Kaunia Upazila is 150 sq. km out of which 6.50 sq. km or 4.33 percent is urban. The total number of households is 66,622 and that of urban area is unknown. The total population of the upazila is 135,719 persons and that of the urban area is 8,061 persons or 5.94 percent of the upazila population. The average density of population of the upazila is 909 persons per sq.km and that of the urban area is 1,240 persons. The annual rate of growth of population of the upazila is 2.95 percent and that of the urban area 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 $10.62 - 2.54 = 8.06$ 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 Kaunia upazila is recorded as 8,061 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 all the 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 migrated to the upazila centre.

Table No.2

Kaunia Upazila
Rangpur Zila(New)

Distribution of Population and Settlements.

	Area in Sq. Km.		Households 1981		Population 1974		Population 1981		Density of Pop. 1981		Rate of Growth 1974-1981	
	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban
Kaunia Upazila	150	6.5	65,622	N/A	110389	N/A	135719	8061	902	1240	2.95	N/A
Rangpur Zila	2313	92.4	316,051	23874	1380623	72829	1703367	206937	679	2240	3.00	6.09

Source: 1. Rangpur District Statistics-1983, Table No.1.02 and 1.03, Page-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 Linkage

Employment and under employment :

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 number of population at the age group 10 years and over are 1,108,801 persons or 64.94 percent, the number of employed are 491,554 persons or 44.33 percent and the rest 55.67 percent are house-wives, students and under-employed. In the employment structure, the percentage of male are 92.36 and that of female are 8.64.

In agricultural sector 326,886 persons or 66.50 percent are employed and in non-agricultural sectors 164,668 persons or 33.50 percent are engaged.

For details Table No.3 and 4 may be seen.

Upazila :

The total number of population of Kaunia Upazila is 136,521 persons, out of which 70,058 persons are male and 66,463 persons are female. The number of population at the age group 10 years and over are 87,038 persons or 63.75 percent. The number of employed are 47,908 persons or 47.83 percent and the rest 53.12 percent are house-wives, students and underemployed. The employment rate of upazila is higher than that of zila by 3.55 percent. In the total employment the participation of male are 87.64 percent and that of female are 12.36 percent.

In agricultural sector 22,536 persons or 54.15 percent are engaged. In non-agricultural sectors 19,134 persons or 45.85 percent are employed. For details Table No.4 and 5 may be seen.

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. 3
Distribution of Settlements
Rangpur Zila (New)

	Urban Settlements		Rural Settlements	
	Upazila Shahar	Municipal Town	Mouzas	Union Headquarters
1. Sadar Upazila	1	1	149	12
2. Kaunia	1	-	80	6
3. Gangachara	1	-	73	8
4. Mithapukur	1	-	310	17
5. Pirganj	1	-	308	15
6. Pirgacha	1	-	170	9
7. Badarganj	1	-	64	10
8. Taraganj	1	-	40	5
Zila	8	1	1194	82

Table No.4

Kaunia Upazila
Bangpur Zila(New)

Population and Labour Force
1981

Locality	Population			Population 10 Years +			Labour Force		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Upazila	138,521	70,058	68,463	87,038	46,178	41,860	41,870	36,519	5,151
Zila	1,707,364	870,070	838,193	1,108,301	577,743	531,554	491,334	449,072	42,482

Source : 1. Upazila Statistics. Vol.1, 1985

Table No.3.02, Page-42. Bangladesh Bureau of Statistics

2. Socio-Economic Questionnaire Survey, September-1986

TABLE NO. 5
Kaunia Upazila
Rangpur Zila (New)
Occupational Classification of population -1981

Locality	Agriculture		Non-Agriculture		Others
	Cropping	Non-Cropping	Manufac-ture	Business	
Upazila	22,174	362	8,313	3,457	7,364
Zila	321,656	5,230	16,148	36,835	111,685

Source : 1. Upazila Statistics, Vol.1, 1985
Table No. 2.04, page 72
Bangladesh Bureau of Statistics (BBS)

Income and Expenditure :

available

Data on income and expenditure are/ neither for the zila nor for the upazila. Therefore, it is not possible to analyse the income and expenditure structure of the zila and upazila. Data on income and expenditure have been collected through socio-economic survey for the study area and analysed in the section of 'Socio-Economic condition of the Study Area'.

Agriculture and Non-Agriculture :

Total area of Rangpur zila (New) is 571,520 acres out of which 566,826 acres or 99.00 percent are agricultural lands and 4,694 acres or 1.00 percent is under non-agricultural use. For details Table No. 6 may be seen.

TABLE NO. 6
Kaunia Upazila
Rangpur Zila (New)
Agricultural and non-Agricultural Land Uses 1981-1982

Locality	Total Area	Agricultural	Non-Agricultural
Rangpur Zila	571,520	566,826	4,694
Kaunia Upazila	37,120	36,551	569

Source : BBS, Rangpur District Statistics - 1983
Table No.1.01 and 5.05, Pages 3 & 23

The total area of Kaunia Upazila is 37,120 acres, out of which 36,551 acres or 98.47 percent are arable land. The total of non-agricultural lands are 569 or 1.53 percent.

Transport Linkages :

In the new zila of Rangpur, there are 5,144.69 km road network, out of which 211 km are metalled, 46.69 km are semi-metalled and rest 5,190 km are non-metalled.

The total network of roads in the Kaunia upazila is 167.43 km, out of which 17.70 km are metalled, 5.10 km are semi-metalled and rest 144.63 km are non-metalled.

There are 15 km Railway line in the upazila having three Railway stations. Waterways do not play any dominant role in in communication.

TABLE NO. 7
Kaunia Upazila
Rangpur Zila (New)
Road Kilometres by Type, Distance and Modes of
Communications 1981-1982

Area	Road kilometre by type			Distance from D.HQ	Modes
	Metalled	Semi-Metalled	Non-Metalled		
Upazila	17.70	5.10	144.63	20.93	Train, Buses
Zila	211.00	46.69	5190.00	-	Auto-Rickshaws Rickshaws

Source : BBS. Upazila Statistics, Vol. 1, 1985
Table No. 6.01, Page 201

The upazila headquarters of Kaunia is well connected with the zila headquarters both by rail and roads. The distance between the zila headquarters and the upzila headquarters by road is 20.93 km.

The mode of transportation are train, buses, auto-rickshaws and rickshaws. In rainy seasons small country boats also play a nominal role. The bullock carts really play an important 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 the upazila headquarters, there are 21 markets or centre ocommerce in Kaunia 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 Kaunia Upazila is 135,719 persons. Therefore, one market serves 6,463 persons.

Education :

There are two colleges in Kaunia Upazila. One is located at Kaunia upazila headquarters ana the other at Sarai Union. One college is located for 67,860 persons. There are 14 high schools in the upazila. There is atleast one high school in each union except Haragacha. There is one high school for 9,694 persons. The total number of primary schools are 52 only. There is one primary school for 2,610 persons. For details Table No. 8 may be seen.

TABLE NO. 8
Kaunia Upazila
Number of Educational Institution, Teachers and Students
1982

Institutions	No. of Institutions	No. of Teachers		No. of Students	
		Male	Female	Male	Female
Primary Schools	52	233	9	7,182	4,650
Secondary Schools	13	105	11	2,775	800
Colleges	1	10	-	208	25
Madrasha	8	85	-	1,800	66
Gonosikhya Kendra	53	180	5	4,167	581

Source : BBS. Upazila Statistics, Vol. 1
Table No. 4.01, Page 121

Health and Welfare :

There are 4 health and welfare centres in the upazila. The Kaunia Upazila Health Complex is provided with only 31 hospital beds. There is one hospital bed for 4,378 persons. There are 8 doctors and one doctor for 16,967 persons.

Urban Services :

There is only one police station in the Kaunia Upazila. In Kaunia Upazila, there are 6 post and sub-post offices and 4 telegraph and telephone offices. Currently electricity and sanitary facilities are available in the upazila. Out of 83 villages of the upazila, 8 villages have so far been provided with electricity. Out of 6 unions a metalled road passes through 5 unions. There is a Cinema hall and other recreational facilities. There are 10 bank branches in the upazila.

3.5 Current Development Projects (1986 - 87)

In Kaunia Upazila, development projects have been undertaken by (1) Upazila Parishad and (2) CARE. They are shown below :

Table : Projects of Upazila Parishad

Projects	Allocation Tk.	Expendi- ture Tk.	Progress %
1. Agriculture, Irrigation & Fisheries	10,00,000	all	100%
2. Small and Cottage Industries	2,50,000	"	100%
3. Transport and Communication	15,00,000	"	100%
4. Housing and Settlements	6,00,000	"	100%
5. Education ...	5,00,000	"	100%
6. Health and Welfare ...	4,00,000	"	100%
7. Sports and Culture ...	1,50,000	"	100%
8. Rural Works ...	3,50,000	"	100%
9. Miscellaneous ...	2,50,000	"	100%

Source : Upazila Engineer, Kaunia

2. Project of AARE

CARE undertook only one RCC Bridge project costing Tk.4,38,792/- and the progress is hundred percent.

Synthesis : Identification of Hierarchy of Settlements in the Upazila :

In the upazila region of Bangladesh, functions are neither concentrated in one particular centre nor fully dispersed. They have unique characteristics of their own and differ from one region to another.. Sometimes 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 hierachy of settlements on mouza basis to find out the exact location of functions. Hierachy of settlements has been determined depending on population, economic and social infrastructures provisions, transportlinkages and related other characteristics.

To determine the hierarch of settlements, 18 main socio-economic indicators have been selected (See Table No.9). Data on selected indicators have been collected 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.10.

Selected socio-economoc indicators have been given assumed weightage for each (See Table No.9). According to the given weight the gravity of each function located in related mouza have been calculated (See Table No.11). Finally, the total weight of each mouza have been found out.

According to the respective weights, ranking of mouza have been made. They are connected with the upazila centre by shortest roads. According to the analysis, the highest score is gained by Harswar mouza. Second position is obtained by Nizpara mouza. Mouza having score below 10 have been avoided.

TABLE NO. 9
Kaunia Upazila
Indicators of Hierarchy Of Settlement s and their
Weights

Sl. No.	Infrastructures	Abbreviation	Weights
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 Institution	Ri	1 - 5
13.	Road Pucca ...	Rp	1 - 5
14.	Station ...	St	1 - 5
15.	Recreational Facilities	Re	1 - 5
16.	Bank ...	Bk	1 - 5
17.	Area 500 Acres ...	Ar	1 - 6
18.	Population 500 persons	Pn	1 - 6

Table No. 10
Kaunia Upazila

List of Indicators of Hierarchy of Settlements.

JL No.	Name of Mouzas	Pi	Ch	In	Ps	Hw	Ec	Et	Ep	Po	Tt	Et	Ri	Rp	St	Re	Bk	Ar	En
1	Sarai	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	18
11	Dhumer Kuthi	1	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	964	4959
16	Vagirath Machbari	-	1	-	-	-	-	-	1	-	-	-	1	-	-	1	-	471	1455
3	Baragach	1	1	1	-	1	1	1	1	1	1	1	1	1	-	1	1	266	6059
6	Nazirdaha	-	1	1	-	-	-	-	1	-	-	-	1	-	-	1	-	2336	6546
22	Mahesa	1	1	-	-	-	-	-	1	-	-	-	1	-	-	1	-	437	1537
40	Purba Chandghai	-	1	1	-	-	-	-	1	-	-	-	1	-	-	1	-	779	2468
51	Harishwar	1	1	1	1	-	1	1	1	1	-	1	1	1	1	1	1	647	4287
54	Nizpara	1	-	1	-	1	-	1	1	1	1	1	1	1	1	1	2	700	3684
56	Shabbaj	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	255	590
75	Baze Nazkur	-	1	-	-	-	-	-	1	1	-	-	1	-	-	1	-	633	1503

Table No. 11
Kaunia Upazila

Determination of Hierarchy of Settlement by Weightage Method

JL. No.	Name of Mouza	Pi	Ch	In	Ps	Hw	Ec	Eh	Ep	Po	Tt	Et	Ri	Rd	St	Re	Rk	Ar	Pn	Total
1	Sarna	5	3	2	-	-	-	3	2	2	-	-	2	2	-	2	-	2	5	30
11	Dhuner Koti	5	-	-	-	-	-	5	2	-	-	-	2	-	-	2	-	2	5	24
16	Vagirath Machhary	-	3	-	-	-	-	6	2	-	-	-	2	-	-	2	-	1	3	19
3	Haragach	5	3	2	-	2	5	6	2	3	3	3	2	2	-	2	2	1	5	47
6	Nazirdaha	-	2	2	-	-	-	6	2	-	-	-	3	-	-	3	-	5	5	28
23	Mahesa	5	2	-	-	-	-	6	2	-	-	-	2	-	-	2	-	1	3	23
40	Purba Chandghat	-	2	2	-	-	-	6	2	-	-	-	2	-	-	2	-	2	5	19
51	Hariswar	7	4	3	5	3	5	6	2	3	3	3	2	3	3	2	2	1	5	62
54	Nizpara	5	-	2	-	3	-	6	2	3	3	3	2	3	3	2	4	2	5	48
56	Shabbaz	5	-	-	-	-	-	6	2	-	-	-	-	-	-	-	3	1	2	19
75	Baze Maskur	-	2	-	-	-	-	-	2	2	-	-	2	-	-	2	-	2	3	15

Note : Weightage used on assumptions.

Grade A, above 40
Grade B, 21 - 40
Grade C, below 21

4. SOCIO-ECONOMIC CONDITION OF THE STUDY AREA :

According to the instructions given in the scope of work 4.3 of the TOR, the socio-economic survey for the study area of Kaunia Upazila Shahar was completed. The results of analysis of socio-economic data may help to locate adequate 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 rural people. The data thus collected are analysed in the following parafraphs.

4.1 Population Characteristics :

Age and Sex Composition :

The socio-economic survey for 52 households containing 325 persons was completed, out of which 175 persons are males and 150 persons are females. There are 117 males ^{every} for 100 females. From the analysis, it may be assumed that government officials posted in the upazila headquarters are residing leaving their families behind. It is also possible to assume that due to the upgradation, some economic activities have already been started in the upazila headquarters which resulted in generation of emplyment. Consequently, people of younger age group of 11-35 years accounting 58.77 percent of the total population has been concentrated in the study area of Kaunia Upazila Shahar. It has also been noticed that beyond this age group, the percentage of of population falls sharply. For details Table No. 12 may be seen

Literacy :

According to the socio-economic survey, 239 persons are found in the age group 6 years and above of which 63 persons are literate. The rate of literacy is 21.30 percent. The rate of literacy of the upazila as a whole is 17.30 percent and that of the national is 23.80.percent.

Table No. 12
Kaunia Upazila Shahar
(Study Area)

Age and Sex Composition of Population
September - 1986

Age Group	Population			Percentage
	Total	Male	Female	Total
0 - 5 years	32	17	15	9.84
6 - 10 "	34	18	16	10.46
11 - 15 "	36	19	17	11.08
16 - 20 "	37	21	16	11.38
21 - 25 "	40	22	18	12.30
26 - 30 "	41	20	21	12.62
31 - 35 "	37	19	18	11.39
36 - 40 "	21	11	10	6.46
41 - 45 "	15	8	7	4.61
46 - 50 "	12	7	5	3.70
51 - 55 "	8	5	3	2.47
56 - 60 "	5	3	2	1.54
61 - above	7	5	2	2.15
	325	175	150	100.00

Source : Socio-Economic Survey

4.2 Household Characteristics :

Household Size :

It has been observed that there is a tendency of increasing the number of households in the study area. But the exact number of households could not be ascertained. According to the socio-economic survey 52 dwelling houses contains 325 persons that is the size of households is 6.25 persons. But according to the census report of 1981, the average size of households of the upazila was 5.6 persons.

Household Structures :

According to the socio-economic survey, there are 4 pucca households. Most of the households are kutchas. The structural condition of households of study area is poor. Table No.13 may be seen for details.

TABLE NO. 13
Kaunia Upazila
Households structures of the Study Area.
September-1988.

Type of Structures	No. of households	Percentage
Pucca	4	7.70
Semi-pucca	33	5.77
Tin-shade	14	26.92
Tin-bamboo	20	38.46
Thatched	11	21.15
All Category	52	100.00

4.3. Economic Performance.

Employment and Underemployment :

The total number of population of age group 10 years and above is 260 persons, out of which 120 persons or 46.15 percent are employed in different sectors of economic activities. The number of unemployed persons are 132 or 53.85 percent which includes housewives, students and underemployed. Eight persons are found invalid. For details Table No.14 may be seen.

TABLE .14.
KAUNIA UPAZILA SHAHAR
(Study Area)
Employment Structure, September-1986

Sl No	Employment Structure	Persons	Percentage
1.	Employed	120	46.15
2.	Unemployed	132	50.77
3.	Invalid	8	3.08

Professional Structures :

The total population of age group 10 years and above is 260 persons, out of which 28 persons or 10.77 percent are agricultural labour force. Percentage of agricultural labour force is low because there are many rice mills, jute godowns, hosslary, printing press at the upazila centre of Kaunia. The number of professional and technical labour force are 32 persons or 12.31 percent. Employment in other sectors amount to 27 persons. The number of students dominates in this age group accounting for 41.92 percent. There are 50 housewives accounting for 19.23 percent. The number of underemployed persons are 14 including the invalids. for details of professional structures Table No. 15 may be seen.

Table No. 15
Kaunia Upazila Shahar (Study Area)
Professional Structures, September-1986

Sl. No.	Profession	No. of Persons	Percentage
1.	Agriculture	28	10.77
2.	Professional & Technical	32	12.31
3.	Adminitration& Management	10	3.85
4.	Clarical	10	3.85
5.	Sales ...	4	1.54
6.	Production and Transport	3	1.15
7.	Student ...	109	42.92
8.	Housewives ...	50	19.23
9.	Underemployed ...	14	5.38
		260	100.00

Income and Expenditures :

The annual income of 15 households or 28.85 percent of households is upto Tk.25,000.00 only. The income of 28 households or 53.85 percent of households lies between Tk.26,000.00 to Tk.50,000.00. The income of 8 households or 15.38 percent of households ranges from Tk.51,000.00 to Tk.75,000.00.

The annual expenditure of 15 households or 28.85 percent of households is upto Tk.25,000.00. The expenditure of 30 households or 57.69 percent of households are between Tk.26,000.00 to Tk.50,000.00 only. The expenditures of 11.54 percent of households are between Tk.51,000.00 to Tk.75,000.00. The expenditure of one (1) household lies between Tk.76,000.00 to Tk.100,000.00 only.

The lowest income of a household is Tk.7,000.00 and the highest income of a household is Tk.80,000.00 only. The average income and expenditure of the households are Tk.38,365.00 and Tk.38,340.00 respectively. The average of annual savings of households are Tk.25.00 only. For details Table No. 16 may be seen.

Table No. 16
Kaunia Upazila Shahar (Study Area)
Average Annual Income and Expenditure
in Thousand Taka

Rank in Thousand Tk.	Income		Expenditure	
	Households	Percentage	Households	Percentage
... + 25	15	28.85	15	28.85
26 - 50	28	53.85	30	57.69
51 - 75	8	15.38	6	11.54
76 -100	1	1.92	1	1.92
	52	100.00	52	100.00

According to the survey the main sources of income of households are agriculture and service or both. 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 12 small scale and cottage industries in the study area of Kaunia. Most of them are rice husking and flour mills. There are one ice-cream factory, one hosiery and one printing press.

The average number of workers in a mill is approximately 4 persons. The highest number of workers in a rice mill is 10 persons. Even a single person works in a rice husking mill.

The average of the worker's distance is 5.75 km. Highest distance of a worker is 8 km. Most of workers come from 5 to 8 km. distance.

4.5. Educational Institutions :

Primary Schools :

There are 5 primary schools in the study area having 1,035 children. The average of enrolment of a primary school is 207 children. The average of teachers in a school is 5 persons approximately. There is one teacher for 38 children. Most of the primary schools are devoid of drinking water and toilet facilities. Out of 5 primary schools only 3 school buildings are semi-pucca and two are tin-shade.

Secondary Schools :

There is one secondary school for boys and one for girls. The boy's secondary school enrolls 464 students. the total number of teachers are 13 persons. The ratio of teacher and student is 1:36. There is a secondary school for girls. There are 181 girls and 10 teachers in this school. The ratio of teacher and student is 1:18. The girl's school is under enrollment.

College :

There is a college in the study area named the Kaunia Degree College. The college enrolls 377 male and 94 female students. There are 20 teachers in the College. The ratio of teacher and student is 1:23 only.

4.6. Administrative Institutions :

Administrative institutions includes both the public and semi-government institutions. Besides the upazila complex, there are 9 other offices. The commuting distance of officers and staff ranges 4-16 km.

4.7. Financial Institutions :

There are 3 financial institutions in the study area namely the Janata Bank, the Sonali Bank and the Bangladesh Krishi Bank. There are 7 officers and 30 staff working in these banks.

4.8. Health and Welfare :

There is only health centre in the study area called the Kaunia Upazila Health Complex. There are 31 beds in this hospital. The number of doctors and employees are 8 and 61 respectively. The average of out-door patients per day is 200 only.

4.9. Recreational Facilities :

There are playing fields attached to the college and the boys secondary school. There is a stadium for general sports and games. There are clubs which are not mentionable. In Kaunia Upazila study area there is no cinema hall.

4.10 Distance of Important Places from Home :

The distance of main roads, working places and other service centres from residence of the people is needed to analyse the adequacy of services in any urban area.

Main Road :

The distance of 23 households or 44.23 percent of households is 0 - 0.5 km. Rest of the households are located within a kilometre distance from the main road. Road service is quite good in the study area.

Working Place :

The place of working is not very nearer for most of the people of the study area. The distance of only 10 households or 19.23 percent of the households is within 0.5 km. The distance of 7 households from the working place is one kilometre. The distance of rest of the households is more than one kilometre.

Primary School :

The distance of 27 households or 52 percent of households is 0.5 km. Twelve households lie within a radius of one kilometre of primary schools. Rest of the households are located more than one kilometre from the primary school. It is necessary to locate more primary schools in the study area.

Secondary Schools :

Thirty two households or 61.54 percent of the households lies within one kilometre of secondary schools. One kilometre distance may be considered as desirable walking distance of high school going boys or girls. Rest of the households or 38.46 percent of households lie at a distance more than one km.

Post Office :

The postal service of the study area is quite good. About 30 households or 57.69 percent of households lies within 1 km. radius from the post office. Rest of the households lie within 2.5 kms.

Hospital :

Thirty households lie within a radius of 1 km. from the hospital. Rest 22 households lie within 1.5 to 2.5 km. from the hospital.

Rail/Bus Stations :

The distance of 33 households or 63.46 percent of the households lie within 1 km. distance from the Bus/Rail Station of the study area. Rest of the households e 1.5 to 3.00 kms.

4.11. Available Facilities :

exists

According to socio-economic survey, the employment facilities/ in the study area. Trade and Commerce yet to be upto mark. The linkage facilities for all is available. there are facilities of education, health and sports for most of the people of the study area. Supply of electricity exists in the study area and 21 households or 40.38 percent of the households have so far been provided with electricity. The main source of drinking water is tube-well. The tube-well water is available for only 40 households or 77 percent of the households. For the rest there is no specified source of drinking water. The telephone service in the study area is inadequate and only 3.85 percent of households have so far been provided with telephones.

5. THE UPAZILA HEADQUARTERS.

5.1. Definition of Sphers of Influences/Attractiveness :

Functions located in space have dynamic influences over 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 influences. But specialised functions have greater zone of influence.

In an upazila headquarters, 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 spreading even beyond the territorial boundaries of the upazila region.

The zone within the commuting distance of the shahar may be called the catchment area. The information and data collected during socio-economic survey have been analysed in the chapter on 'Socio-economic Condition of the Study Area'. Here a little light is thrown on it.

The Kaunia upazila headquarters lies on Parbatipur - Rangpur and Pirgacha - Muhendranagar railway junction. A metalled road also passes through the headquarters. Therefore, officials both government and non-government workers in industries and customers to the market can commute from distant places. The commuting distance of officials is 8 km. The industrial workers come from 5 km. to 8 km. The buyers and sellers of Kaunia hat and bazar come from 3 to 10 km. distances.

The above analysis showed a special case due to location of upazila headquarters on railway junction. But walking distances of people considered here to define the zone of influences. From analysis and assumptions it may said that the zone of influence may vary 5-7 km. from the headquarters of Kaunia (See the hierarchy map). The area included in the zone of influence amounts to 7,331 acres. There are 4,636 house-holds containing 23,082 persons in 1981.

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

5.2. Definition of Shahar Area :

The prepare the land use plan for Kaunia 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, detailed plot survey of current uses of land were completed for 1807 acres of lands. The survey map was analysed very carefully and found out that most of the non-agricultural functions including the residential areas have been concentrated around the upazila centre. The land of pheripheral areas are mainly under the use of agriculture, which should not be brought under any non-agricultural use. Finally, 1164 acres of land containing 1040 households and 6554 persons have been included in the shahar area of Kaunia. The designated shahar area includes part of Nijpara, Gadai, Hariwar, Shahabaz, Haldibari and Taluk Shabaj mouzas. For details, existing land use map of Kaunia Upa-Shahar and the Table No. 19 and 20 may be seen.

5.3. Existing land use, Facilities and Utilization Characteristics :

The area of Kaunia Upazila Shahar includes 1,164 acres of land. The current uses of land of Kaunia Upazila Shahar have been classified mouza-wise as shown in Table No. 21. The facilities and utilization characteristics have been discussed in the following paragraphs.

Agriculture and Forestry :

The total land covered by agriculture and forestry amounts to 877.75 acres or 75.40 percent of the shahar area. Agriculture alone covers this amount of land. There is no forestry land use. In the designated shahar area no-agricultural land uses are concentrated in along the boarding line of mouza Nijpara (Sheet No.2) and Hariwar (Sheet No. 2) mouzas. They are also found along and in between the Rail line and high way. Non-agricultural lands are surrounded by the agricultural lands. Residential areas are found scattered through out the shahar area.

Table No. 17

Kaunia Upazila Shahar

Area, Population and Growth Rate of the Catchment Area 1961, 1974 & 1981

Sl. No.	Name of Mouza	Total Area		Total Population			Area Involved		Population Involved			Growth Rate	
		In Acres	Hectares	1961	1974	1981	Acres	Hectares	1961	1974	1981	'61-'74	'74-'81
1.	Hariwar	647	262	2,299	2,894	4,287	647	262	2,299	2,894	4,287	1.77	5.61
2.	Mijpara	700	283	1,510	2,331	2,884	700	283	1,510	2,331	2,884	3.33	3.04
3.	Shabbaz	255	103	376	712	890	255	103	376	712	890	4.91	3.19
4.	Arazi Hariwar	298	121	281	448	617	298	121	281	448	617	3.58	4.57
5.	Bhutchhara	133	54	670	936	1,208	133	54	679	936	1,208	2.47	3.64
6.	Arazi Sahabaz	156	63	148	383	395	156	63	148	383	395	7.31	0.03
7.	Bargra	147	59	260	440	518	147	59	260	440	518	4.04	2.33
8.	Batubari	175	71	354	616	557	175	71	354	616	557	4.26	-
9.	Dhushmara	570	231	117	265	432	570	231	117	265	432	6.39	6.96
10.	Gadal	404	163	240	568	826	404	163	240	568	826	6.52	1.39
11.	Ganganarayan	221	89	351	556	593	221	89	351	556	593	3.54	0.03
12.	Gopidanga	164	66	294	317	376	164	66	294	317	376	0.03	2.51
13.	Halidibari	259	117	516	991	1,197	259	117	516	991	1,197	5.02	2.70
14.	Haricharan	808	327	1,047	1,879	1,949	808	327	1,047	1,879	1,949	3.53	2.13
15.	K.G. Balapara	270	109	391	628	599	270	109	391	628	599	3.64	-
16.	Kopati	395	160	724	1,340	1,457	395	160	724	1,340	1,457	7.73	1.19
17.	Panjurbhanga	516	209	494	876	879	516	209	494	876	879	4.40	-
18.	Taluk Shabbaz	649	263	1,155	1,761	2,003	649	263	1,155	1,761	2,003	3.24	1.83
19.	Sibu (Part)	534	216	2,210	2,300	3,200	534	216	2,210	2,300	3,200	3.33	3.33
20.	Baje Nazkur	433	175	805	1,336	1,503	433	175	805	1,336	1,503	3.90	1.67
Catchment Area		7,764	3,142	14,252	21,572	25,452	7,764	3,142	13,437	19,703	23,052	3.54	3.24

Source : 1. Bangladesh population Census - 1981, Thana Series, Table No. Col58 and Col4, Page 56-68 and 389-391.
 2. Bangladesh population Census - 1974, Rangpur District, Village Population Statistics, Pages 42-47.
 3. Bangladesh population Census - 1961, District Series, Table No. Col58 and Col4, Page 56-68 and 389-391.

Table No. 18.

Kamrin Upazila Shahar

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

Sl. No.	Name of Mouza	Area in Acres	Households	Population	Labour Force
1.	Hariswar	647	615	4,287	2,954
2.	Nijpara	700	480	2,884	1,939
3.	Shahabaz	255	177	890	595
4.	Arazi Hariswar	298	199	617	382
5.	Bhutchhara	133	33	208	138
6.	Arazi Shahabaz	156	78	395	236
7.	Bangran	147	79	518	347
8.	Batubari	175	117	557	360
9.	Dhushmara	570	86	432	263
10.	Gadai	404	107	626	415
11.	Ganganarayan	221	129	593	390
12.	Gopidanga	164	70	378	247
13.	Haldibari	289	203	1,197	767
14.	Haricharan	808	338	1,949	1,271
15.	K.G. Balapara	270	86	599	394
16.	Kopati	395	262	1,457	882
17.	Panjurbhanga	516	159	879	549
18.	Taluk Shahabaz	649	363	2,003	1,315
19.	Sibu (Part)	534	274	800	496
20.	Baje Mazkur	433	279	1,503	947
	Zone of Influence :	7,764	4,536	23,052	14,887

Source : Bangladesh Population Census - 1981.
Thana Series, Table No. Co 156 and Co 4
Pages 56-58 and 389-391.

Table No.19

Kaunia Upazila Shahar

Area, Population and Rate of Growth of the Shahar Area
1961, 1974 and 1981.

Sl. No.	Name of Mouza	Total Area		Total Population			Area Involved		Population Involved			Growth Rate	
		Acres	Hectors	1961	1974	1981	Acres	Hectors	1961	1974	1981	61-74	74-81
1.	Nijpara (Part)	700	283	1,510	2,331	2,864	403	163	906	1,398	1,730	3.33	3.04
2.	Gadai (Part)	404	163	240	568	620	42	17	19	27	46	3.11	4.10
3.	Hariswar (Part)	647	262	2,289	2,684	4,267	375	152	1,808	2,402	3,558	1.77	5.61
4.	Shahbaz (Part)	255	103	376	712	890	180	73	270	512	641	4.92	3.21
5.	Haldibari (Part)	289	117	516	991	1,194	100	40	180	347	419	4.52	3.69
6.	Gangasarnyan (Part)	221	89	351	556	593	64	26	95	160	160	3.31	-
Shahar Area :		2,516	1,017	5,292	8,052	10,474	1,164	471	3,377	4,036	6,554	2.76	4.84

Table No. 20.
Kusuria Upazila Shahar

Area, Householder, Population and Labour Force of
the Planning Area - 1981.

Sl. No.	Name of Mouza	Area in acre	Households	Population	Labour Force
1.	Nijpara (Part)	403	288	1,730	1,130
2.	Gadai (Part)	42	8	46	30
3.	Hariswar (Part)	175	510	3,558	2,330
4.	Shahabaz (Part)	180	127	641	100
5.	Haldibari (Part)	100	72	419	270
6.	Gangannarayan (Part)	61	35	160	105
Planning Area :		1,161	1,040	6,554	3,965

Table No. 21,
KAUNIA UPAZILA SHAHAR

Mouza-wise Existing Land Use Analysis

Function Mouza	Nij- para	Gadi	Iaria- war	Shabaz	Indi- bari	Ganga- nagar	Total	Per- cen- tage
1. AGRICUL- CULTURE & FORESTRY	319.10	31.00	233.00	153.00	78.00	64.00	877.75	75.40
2A. COMMERCE	1.00	-	4.50	-	-	-	5.50	0.45
Market	1.00	-	3.00	-	-	-	4.00	
Shops	-	-	1.50	-	-	-	1.50	
2B. INDUSTRY	-	-	-	-	-	-	-	-
3. ADMINISTRA- TIVE	5.25	-	5.50	2.00	-	-	12.75	1.05
UNO Complex	3.50	-	5.00	-	-	-	8.50	
Govt. Deptt.	1.00	-	0.50	2.00	-	-	3.50	
Semi-Govt.	0.75	-	-	-	-	-	0.75	
4. SOCIO CUL- TURAL	5.40	-	10.10	-	-	-	15.50	1.30
Educational	1.40	-	6.60	-	-	-	8.00	
Health Welfare	3.50	-	3.50	-	-	-	7.00	
Religious	0.50	-	-	-	-	-	0.50	
5. URBAN SERVICES	20.75	-	39.25	-	-	-	60.00	5.10
Post Office	-	-	0.75	-	-	-	0.75	
Tele- Exchange	0.75	-	-	-	-	-	0.75	
Police Station	-	-	3.50	-	-	-	3.50	
Bus/Rail Station	20.00	-	35.00	-	-	-	55.00	

Contd...

Table No. 21 (Contd.)

Function Mouza	Nij- para	Gadi	Haria- war	Shahbaz	Haldi- bari	Ganga- nagar	Total	Per- cen- tage
6. ROADS	24.00	1.00	37.00	4.00	8.00	1.00	75.00	6.40
Major 60'	16.00	-	30.00	1.00	8.00	-	55.00	
Secondary 40'	8.00	-	-	1.50	-	-	9.50	
Local 24'	-	1.00	7.00	1.50	-	1.00	10.50	
7. RESIDENTIAL	26.00	1.00	35.00	11.50	12.00	3.00	88.50	7.50
8. WATER BODIES (Ponds and Canals)	7.50	9.00	10.00	5.00	2.00	-	33.50	2.80
9. RECREA- TIONAL	-	-	-	-	-	-	-	-
Grand Total-	403.00	42.00	325.00	180.00	100.00	64.00	1164.00	100.00

Commerce And Industry :

Commerce and Industry together cover 5.50 acres or 0.45 percent of the available land. Market and shops cover 4.50 acres and 1.50 acres respectively. For small scale and cottage industrial purposes no land is used. The bazar is located on the north of the Rail way line on Hariswar mouza and covers 3.00 acres of lands. Another 1.00 acre of land is covered by market near railway station also lies on Hariswar mauza. One and half acres of lands are covered by shops located in different places of Nijpara mauza.

Administrative :

The total land used for administrative purposes amounts to 12.75 acres or 1.05 percent of the designated shahar area. The UNO complex alone uses 8.50 acres of land. The land used by the other government departments amounts to 3.50 acres only. The BWAPDA Office covers 0.50 acres of land. The Upazila Complex is located in both the mouzas of Nijpara and Hariswar.

Socio- Cultural :

The total land used for socio-cultural activities amounts to 15.50 acres or 1.30 percent of the shahar area. For educational institutions 8 acres of land are used. The Upazila health complex covers 7 acres of land. For religious purpose 0.50 acre of land is used. The boys high school and college are located in mouza Hariswar and separated by Kaunia-Rangpur Railway tract. The girls high school is located on Kaunia Rangpur high way in mouza Hariswar and Nijpara.

Urban Services :

The total land used for urban services amounts to 60.00 acres or 5.10 percent of shahar area. Post offices located in Hariswar covers 0.75 acre of land. Telephone exchange office uses 0.75 acre of land of mouza Nijpara. The land used by the police station amounts to 3.50 acres and is located in mouza Hariswar on the south of the railway track. The railway junction uses 55.00 acres of lands.

Recreational :

There is no organised playing fields and no specific land is used for recreational purposes. The upazila centre is lack of recreational facilities.

Roads :

Roads cover 75.00 acres or 6.40 percent of land of the shahar area. The Kaunia - Rangpur high way and the rail way line together cover 55.00 acres of land. The secondary roads cover 9.50 acres of land. Local roads cover 10.50 acres of land.

Residential :

Existing residences, cover 88.50 acres or 7.50 percent of the shahar area. Most of the residential areas are found in mouza Hariswar and Nijpara.

Water Bodies :

Ponds and canals cover 33.50 acres or 2.80 percent of the shahar area. They cannot be brought under any urban use. They should be reserved for fish cultivation as well as for irrigation. The ponds are found with residences scattered throughout the shahar area.

5.4. Physical Opportunities and Constraints :

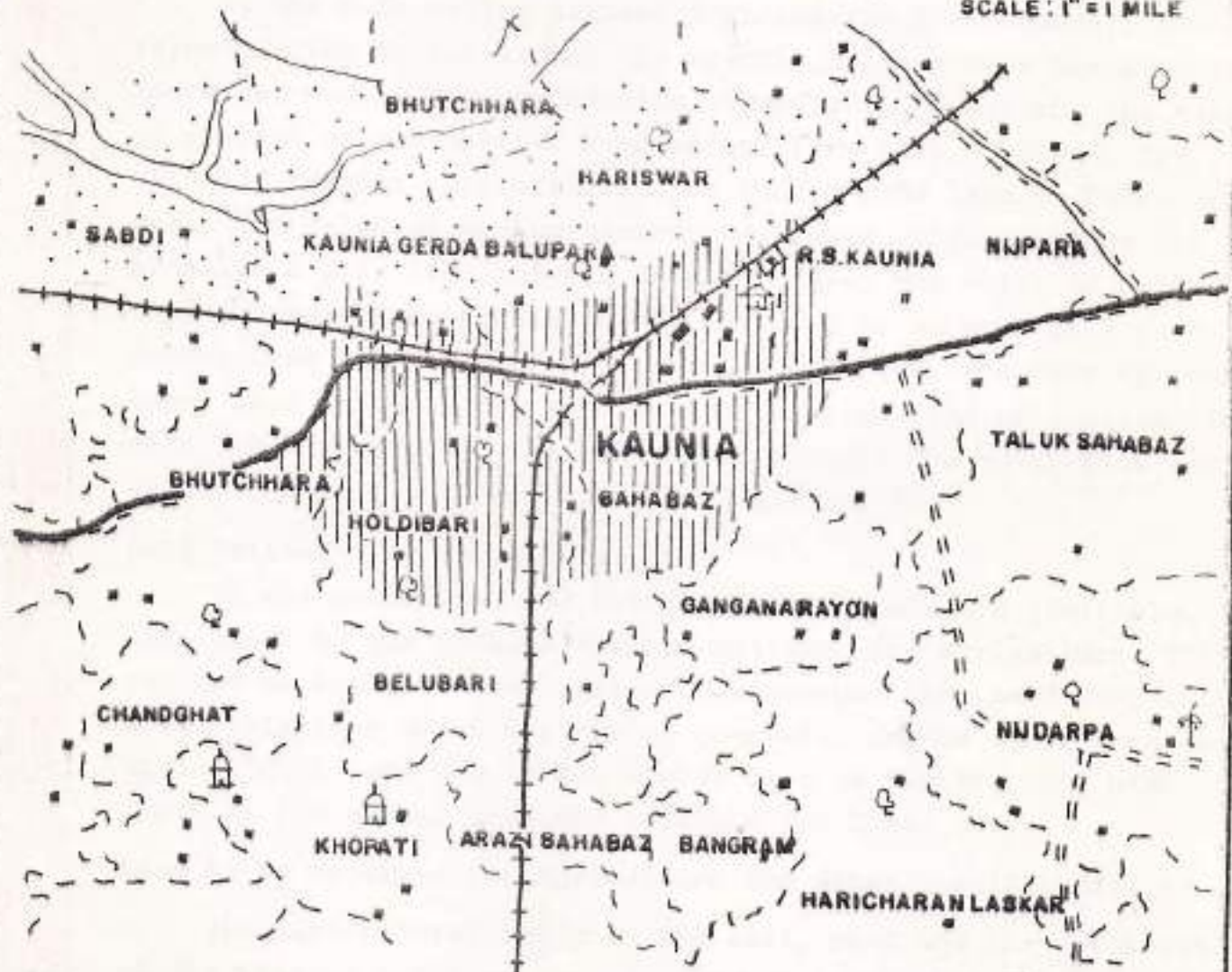
The land tenure system in old Rangpur zila is similar to that of almost whole of Bangladesh. The land revenue system introduced by the British Ruler was inherited after independence in 1947. By a legislation known as the East Bengal Estate Acquisition and Tenancy Act 1950, all proprietary rights of the middle men that is the Zaminders and other sublessees were abolished and agricultural tenants were given permanent, heritable 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 Kaunia Upazila. The reliable data on land tenure system were not available for the shahar area.

MAP OF PHYSICAL OPPORTUNITIES AND CONSTRAINTS KAUNIA UPAZILA SHAHAR



SCALE: 1" = 1 MILE

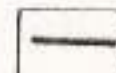


LEGEND

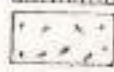
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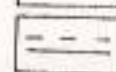
4 PUCCA ROAD



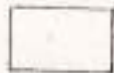
2 LOW LANDS



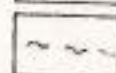
5 SEMI PUCCA ROAD



3 LANDS OF HIGH
AGRICULTURAL VALUE



6 MOUZA BOUNDARY



The total number of farm holdings are 20,862 which include 92,339 acres of lands. The number of owners holdings are 10,205 which amounts to 50,911 acres or 55.14 percent of the total arable lands. 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 containing 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 increased due to the upgradation of upazila. At present the value of an acre of residential land ranges from taka 50,000/-. The value of fertile agricultural land ranges from taka 60,000/- per acre. The value of medium agricultural land which produces two crops in a year lies between taka 40,000/-. The value of poor agricultural land which produces one crop or no crop in a year ranges from taka 25,000/- to 50,000/- per acre. The poor agricultural land includes low land as well as high land of upazila. The high land is suitable for urban development. The mouza-wise land value in detail has been shown in Table No. 22.

Land Suitable for Building :

In the upazila shahar buildable high lands are 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 not be economic. On the other hand the agricultural land in the shahar area is fertile. The high lands in the shahar area are suitable for urban use.

Land to be Reserved for Agriculture and Other Specific Uses :

The agricultural lands on the east, west and the north-west of the present built up area should not be brought under any non-agricultural 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.

Land Liable for Flooding and Similar Disadvantages :

The land on the north of the present built up area is very low and easily flooded. The river Tista shifts its course every

now and then. It may therefore suggested here that the shahar should not be allowed to grow towards of north. 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 the south.

Table No. 22
Kaunia Upazila Shahar
Mouza-wise Land Value (Per Acre in Tk.)
September 1986

Sl. No.	Name of Mouza	Residential	Fertile Ag. Land	Medium Ag. Land	Poor Ag. Land
1.	Hariawar	500,000	80,000	70,000	50,000
2.	Nijpara	450,000	75,000	60,000	55,000
3.	Ganga Narayan	65,000	80,000	70,000	50,000
4.	Shahbaj	300,000	75,000	50,000	40,000
5.	Haldi Bari	75,000	70,000	60,000	40,000
6.	Gadai	50,000	60,000	45,000	20,000
7.	Taluk Shahbaj	100,000	80,000	50,000	40,000

6. FORECASTS :

Population Projection : In order to estimate the amount of land may be required for various functional uses, it is necessary to forecast the growth of population of the Shahar Area as well as the Catchment Area. To achieve the above objectives the population projection for the years upto 2001 A.D. were made with five year intervals. The population projections were made based on the Census data of 1981.

One of the main objectives of Governments administrative decentralization policy is to provide employment opportunity locally, so that people from communiting distances can come to work in the upazila shahar and go back to their own residences. The upazila shahar will also be a 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 consideration in population projections. The following are the major assumption for population base and for fertility as well as mortality rate.

1. Assumptions for population base are :
 - a. The population of the shahar and of catchment area are 6,554 and 23,052 respectively in 1981.
 - b. due to the establishment of new administrative headquarters at upazila shahar, population will increase in public, private and services sectors by 1 : 0.5 : 0.5.
 - c. the projections of catchment area includes the population of shahar area.
 - d. the rate of growth of population of shahar and catchment areas in 1961 - 74 and 1974 - 81 have not been avoided because they do not conform with each other.
2. The assumption for fertility are :
 - a. high fertility but showing decline over the period from 4.3 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 place from 6.3 in 1981.

c. low fertility, assuming an even larger decline since 1981 to 5.6 averaged over 81-85, 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 81-85 period rising to 52 from 1995-2000.

b. assumes medium mortality, that average of 50 for the 1981-85 period to 56 for the 1996-2000 period.

c. assumes low mortality rate, with an even greater improvement in life expectancy from an assumed 50 average for the 81-85 period to 60 for the 1996-2000 period.

According to the organization chart, the total number of Govt. officials will be 225 persons . It may therefore be assumed that the total number of induced population in the upazila shahar will be $225 \times 2 \times 6 = 2,700$ persons (6 per per family).

On these above assumption the high Medium and Low projections of population for both the shahar area and catchment area estimated separately. According to the High Medium and Low Projections the population of the shahar area will be 15,846; 14,604 and 12,441 in 2001 A.D. and that of the Catchment Area will be 45,715 ; 42,179 and 35,528 ; 53,642 ; 47,605 and 37,340 in 2001 A.D. For details Table No. 23 and 24 may be seen.

Projections of Households (Shahar Area) :

To estimate the requirements of land for residential purpose, it is necessary to forecast the number of households may be required for the shahar area 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 may be used 5.4 for high, 5.6 for medium and 5.8 for low projections. The projections of households may be calculated

simply dividing the number 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 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 6,554 persons. The landuse survey of the upazila shahar is completed at the end of 1986. According to the survey, the residential area covers 88.50 acres of lands. According to the medium projection, the population of the shahar area amounts to 8,769 persons in 1986. Therefore, the average net density of population is $8,769/88.90 = 99$ persons per acre.

According to the TOR, the average net density of population in the shahar 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 accommodate the estimated population, extension and creation of new residential areas will be needed.

According to the medium projections, the population of the shahar area will be 14,604 persons and let us assume that the density of population will be 120 persons per acre in 2001 A.D. Therefore, $88.50 \times 120 = 10,620$ persons accommodated in the existing residential areas through intensification of population and $14,604 - 10,620 = 3,984$ or say 4000 persons will be required to distribute through extension of residential areas. A housing estate of 10 acres with density 100 persons per acre is proposed which accommodate $10 \times 100 = 1000$ persons. Remaining $4000 - 1000 = 3000$ 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 new area will be 75 persons per acre. Therefore, $3,000/75 = 40$ acres of new lands for residential purposes will be needed.

Table No. 23
Kaunia Upazila Shahar
Population Projections of the Shahar Area (1981-2001 A.D.)

Projections	1981	1986	1991	1996	2001
High Projections	6,554	8,849	11,593	13,544	15,846
Medium Projections	6,554	8,769	11,276	12,864	14,804
Low Projections	6,554	8,590	10,774	11,692	12,441

Total of assumed induced population = 2,700 persons.

50% " " " = 1,350 " which are
added to the projected population of 1985 and 1990 in High,
Medium and Low Projections.

RATE OF GROWTH OF POPULATION

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

Source : Working Paper Two - 1984, Page - 6 (its related tables).

National Physical Planning Project
Urban Development Directorate

Table No.24

Kaunia Upazila Shahar

Population Projections of the Catchment Area (1961-2001 A.D.)

Projections	1981	1986	1991	1996	2001
High Projections	23,052	27,725	33,444	39,073	45,715
Medium Projections	23,052	27,444	32,567	37,153	42,179
Low Projections	23,052	26,814	30,766	33,389	35,528

Note : Induced population as assumed for the shahar area will be 2700 persons out of which 50 percent or 1350 persons are added to the projected population of 1986 and rest 50 percent or 1350 persons are added to the projected population of 1991.

RATE OF GROWTH OF POPULATION

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

Source : working Paper Two - 1984, Page - 6 (its related tables)
 National Physical Planning Project
 Urban Development Directorate

Table No. 25

Kaunia Upazila Shahar

Projections of Households for the Shahar Area (1981-2001)

Projections	Size of H. H.	H. H. 1981	H. H. 1986	H. H. 1991	H. H. 1996	H. H. 2001
High	5.4	1040	1624	2088	2382	2704
Medium	5.6	1040	1566	2014	2297	2608
Low	5.8	1040	1512	1944	2218	2518

H.H. Number of Households.

Note: Number of Households as found in the Census report 1981. In estimating the number of households population of medium projection are used.

Table No. 26

Kaunia Upazila Shahar

Projection of Labour Force (Catchment Area)

Projections	1981	1986	1990	1995	2001	Growth Rate
High	14,887	17,976	21,522	24,708	28,366	2.8
Medium	14,887	17,893	21,327	24,368	27,837	2.7
Low	14,887	17,810	21,134	24,028	27,318	2.6

Table 26 shows that 64.58 percent of the total populations constituted the labour force . It has been assumed that the total of induced population will be 2700 persons which means the number of induced labour force will be 1,770 persons . Fifty percent or 885 persons of the induced labour force are added to the projected labour force of 1986 and rest 50 percent are added to that of 1991 .

Aspects of Migration :

The cause and effect 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 the socio-economic data of the upazila region and upazila shahar, the main aspects of migration of population may be summerised 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 find out the requirements of lands for various urban functions, it is necessary to estimate the amount of labour force. 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 of growth of labour force are determined based on the estimate of World Bank. The World Bank estimates that the national rate of growth of labour force per annum in Bangladesh in 1977 - 2001 AD 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, 46.45 percent of the labour force are employed in different sectors of economy. The analysis of professional structure also shows that only 10.77 % are employed in agriculture. It is felt that the employment in non-agricultural sectors are increasing. To provide these labour force in non-agrcultural sectors, provisions of jobs should be created locally and they should be located in the space in the upazila shahar.

According to the high, medium and low projections, the labour force of the catchment area are 28,366; 27,837 and 27,318 persons in 2001 A. For details Table No. 26 may be seen.

Land requirements according to the provisional Standards (Upto 2001 AD.):

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 has been used in estimating the requirements of land for different urban functional uses. According to the medium projection of population of shahar area and that of the catchment area are 14,600 and 42,180 persons respectively.

Table No. 27
Kaunia Upzila Shahar
Land Requirements according to the Provisional Standards
(In Acres)

Functions	Catchment/ Shahar Area	Standards as per TOR	Land Req- uirements as per TOR	Existing	Proposed
a) <u>Commerce and Industry</u> Shops, Offices, Small Scale Industry	Catchment	1.5 ac per 1,000	63.27	5.50	45.00
b) <u>Social, Adminis- trative, Cultural and Urban Services</u>					
<u>Education :</u>					
Nursery/Primary School	Shahar	2.0 ac per 5,000	5.84		
Secondary School	Catchment	5.0 ac per 20,000	10.54	8.00	16.90
College	-do-	-do-	10.54		
<u>Health :</u>					
Dispensary/ Maternity/ Child Care	-do-	1.00 ac per 5,000	8.44	7.00	12.00
Health Centre/ Hospital	-do-	5.00 ac per 20,000	10.54		
<u>Administrative, Judiciary (includ- ing Offices)</u>	Upazila	12.00 ac/ Upazila	12.00	12.00	12.00
Other Govt. and Semi-Govt. Depts.	Upazila	12.00 ac/ Upazila	12.00	0.75	8.50
<u>Recreation :</u>					
Parks, Open Space	Shahar	1.00 ac per 1,000	14.60	Nil	12.00
- Cinema Hall, Closed Space	Catchment	0.50 ac/ 20,000	1.05	Nil	1.00
- Sports Stadium	-do-	3.00 ac/ 20,000	6.33	Nil	7.00

Table No. 27 .. contd.

Functions	Catchment/ Shahar area	Standards as per TOR	Land Req- uirements as per TOR	Existing	Proposed
<u>Social and Cultural:</u>					
- Community Centre	Shahar	1.00 ac per 20,000	0.73		1.00
- Cemetery	-do-	5.00 ac/ 20,000	3.65	0.50	4.00
- Religions	-do-	0.50 ac/ 5,000	1.46		2.50
<u>Urban Services :</u>					
- Post Office	Catchment	0.50 ac/ 20,000	1.05	0.75	1.00
- Telephone Exchange	-do-	-do-	1.05	0.75	1.00
- Police Station	-do-	2.00 ac/ 20,000	4.22	3.50	3.50
- Bus/Ghat/Rail Station	-do-	1.00 ac/ 20,000	2.11	55.00	55.00
- Others	-do-	-do-	2.11	Nil	3.50
c) <u>Roads :</u>					
- Major	Shahar	5 to 10 per cent	67.50 to 135.00	75.00	107.00
- Secondary					
- Local					
d) <u>Residential :</u>	Shahar	1.00 ac per 100	146.00	88.50	161.76
e) <u>Urban Deferred :</u>	Shahar	10%	35.00	Nil	35.00
f) <u>Reserve :</u>	Shahar	Nil	Nil	33.50	33.50

7. THE LAND USE PLAN

7.1 Approach :

Since there is no effective legislative basis to control the use of private urban nor the means to enforce such a control, it is decided that the land use plan will regulate the type and intensity of private residential and commercial development in the traditional zones of development control. The plan will aim at achieving only planned and controlled development of public sector projects for which purpose legislative provisions and institutional framework exists.

However, it is 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 unco-ordinated 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 projects on the basis of the present and future needs.

7.2 Concept :

The landuse planning of upazila 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 shahr 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 socioeconomic infrastructural services.

7.3 Planning Principles :

The planning of upazila shahar / the land use zoning plan of the upazila shahar ^{means}

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.

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

7.4 Plan Description :

Commerce and Industry :

covers

According to the existing landuse survey commerce/5.50 acres of land in Kaunia Upazila Shahar. There is no industry. According to the provisional standard, 63.27 acres of lands will be needed for commerce and industrial uses upto the year 2001.A.D. Considering the existing landuse for this group, it may be assumed that 45.00 acres of lands will serve the purpose. For commerce 25.00 acres and for industry 20.00 acres of land may be needed. The Table No. 27 shows the details of land allocation and distribution.

Table No. 28

Kaunia Upazila Shahar
Distribution of Commerce and Industries
(Area in Acres)

Functions	Exixting	Extension	Proposed	Location	Total
Market	3.00	-	-	Hariswar	3.00
Shops	1.50	-	-	-do-	1.50
Shops	1.00	-	-	Nijpara	1.00
Market	-	-	10.00	-do-	10.00
Shopping Complex with Commercial Offices	-	-	9.50	-do-	9.50
Industry	-	-	20.00	-do-	20.00
All	5.50	-	39.50	Shahar Area	45.00

2. Administrative :

At present 12.75 acres of lands are used for administrative purposes. According to the Government's decision the UNO complex including judiciary and officer's residences requires 12.00 acres. Studies and experiences revealed that almost same amount of land is need for other departments.

But in Kaunia upazila shahar 8.50 acres of land are used for UNO Complex. It may be said that more 3.50 acres of land are needed for this purpose. At present 4.25 acres of land is used for other departments. It may be assumed that more 4.25 acres of land may be needed for this purpose. Total requirements of lands for administrative purpose amounts to 20.50 acres . The Table No.29 shows the distribution of administrative lands.

Table No.29
Kaunia Upazila Shahar
Distribution of Administrative Lands
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total Area
UNO Complex	8.50	3.50	-	Nijpara& Hariswar	12.00
BNAPDA	0.75	0.25	-	Nijpara	1.00
Fisheries	0.20	0.80	-	-do-	1.00
Food Dept.	0.20	-	1.00	-do-	1.20
Food Godown	1.00	-	-	-do-	1.00
Fertilizer Godown	0.80	0.20	-	Shabaj	1.00
Women Training Centre	0.30	-	1.00	-do-	1.30
U. C. Office	0.30	0.70	-	Hariswar and	1.00
Banks	0.70	0.30	-	Shabaj	1.00
Grand Total	12.75	5.75	2.00	Shahar	20.50

3. Socio-Cultural :

Education : At present 9.00 acres of land are used for educational purposes. There is a primary school located in mouza Hariwar covers 1.00 acre of land. There is no space for its expansion. The population growth and characteristics of settlements showed that more three primary schools of 1.50 acres each are needed. The total land for primary/nursery schools amounts to 5.50 acres.

According to the provisional standards 10.54 acres of land are needed for secondary schools. At present the secondary school for girls covers 1.40 acres of land only. One acre of land is available for its expansion. The boy's secondary school is located on 4.00 acres of land. There is no space for its expansion.

The land requirement for the college amounts to 10.54 acres. At present the Kaunia Degree College covers 2.60 acres only. It may be assumed that more 2.40 acres of land are needed for its expansion.

Table No.30
Kaunia Upazila Shahar
Distribution of Educational Institutions
(Area in Acres)

Code No.	Educational Institutions	Existing	Extension	Proposed	Location	Total
E ₁	Primary School	1.00	-	-	Hariswar	1.00
E ₂	-do-	-	-	1.50	-do-	1.50
E ₃	-do-	-	-	1.50	Shabaj	1.50
E ₄	-do-	-	-	1.50	Nijpara	1.50
E ₅	Girl's S.School	1.40	1.00	-	-do- & Hariswar	2.50
E ₆	Boy's S.School	4.00	-	-	Hariswar	4.00
E ₇	Kaunia College	2.60	2.4	-	-do-	5.00
	Total	9.00	3.40	4.50	SHAHAR	16.90

Health and Welfare : For health and welfare 7.00 acres of land are used, out of which 6.00 acres are used for the upazila health complex and 1.00 acre for veterinary hospital. According to the provisional standard, 8.98 acres of lands are needed for this group of landuse. It may be assumed that the upazila health complex does require more land. The veterinary hospital requires more 1.00 acre of land. For this upazila shahar 2 maternity and childcare centres of 2.00 acres each will be required. Table No. 31 shows the distribution of health and welfare centres.

Table No. 31
Kaunia Upazila Shahar
Area and Distribution of Health and Welfare Centre
(Area in Acres)

Code No.	Functions	Existing	Extension	Proposed	Location	Total
W ₁	Upazila Health Complex	6.00	-	-	Nijpara & Hariswar	6.00
W ₂	Veterinary Hospital	1.00	1.00	-	Nijpara	2.00
W ₃	Maternity and Childcare	-	-	2.00	-do-	2.00
W ₄	-do-	-	-	2.00	Hariswar	2.00
	All	7.00	1.00	4.00	Shahar	12.00

Community Centre : At present there is no community community centre in the Upazila Shahar of Kaunia. According to the provisional standards 0.73 acre of land is needed for it. It may be assumed that 1.00 acre of land will full the requirements to a community centre

Religion : At present 0.50 acre of land is used for this purpose. According to the provisional standard 1.46 acres of land are needed. It may be assumed that fora central mosque and Eidgah 2.00 acres of land are needed.

Cemetary : No land is use for this purpose. According to the provisional standard 3.65 acres of land is needed for a cemetary. It may be assumed that 4.00 acres will do the needful.

Table No. 32
Kaunia Upazila Shahar
Distribution of other Socio-Cultural Centres
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total
Community Centre	-	-	1.00	Hariswar	1.00
Central Mosque & Eidgah	-	-	2.00	Nijpara	2.00
Religions	0.50	-	-	Hariswar	0.50
Cemetery	-	-	4.00	Hariswar	4.00
All	0.50	-	7.00	Shahar	7.50

5. Urban Services :

At present 60 acres of land are used for urban services. For a post office 1.19 acre of land is required. The present post office is located on 0.75 acre of land. More land is needed for this post office and extension of 0.25 has been made. For a telephone exchange station 0.75 acre of land is used. According to the provisional standard 1.05 acres of land are needed. It may be assumed that 1 acre of land will fulfil the requirement. According to the provisional standard 4.22 acres of land are needed for police station. The present police station is located on 3.50 acres of land. No more land is needed for this purpose. The railway station covers 55.00 acres of land. There is no organized bus station and 1 acre of land is needed for this purpose. There is no place for garbage disposal. Two and a half acres of land may be earmarked for garbage disposal.

Table No. 33
Kaunia Upazila Shahar
Distribution of Urban Services
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total
Post Office	0.75	0.25	-	Nijpara	1.00
Tele-Exch.	0.75	0.25	-	-do-	1.00
Police Stn.	3.50	-	-	Hariswar	3.50
Bus Terminal	-	-	1.00	Nijpara	1.00
Rail Station	55.00	-	-	Nijpara & Hariswar	55.00
Garbage Disposal	-	-	2.50	Hariswar	2.50
Grand Total	60.00	0.50	3.50	Shahar	64.00

6. Recreational :

At present, no land is used for recreational purposes. A sport sadium is meant for catchment area population and requirements of lands are 6.33 acres and assumed that 7.00 acres of land will fulfil the requirements.

A park is meant for shahar population. This upazila shahar requires 14.60 acres of land for park. It may be assumed that 12 acres of land will be sufficient. One cinema hall will be sufficient. One cinema hall will be located on 1.00 acre of land.

Table No. 34
Kaunia Upazila Shahar
Distribution of Recreational Facilities
(Area in Acres)

Functions	Existing	Extension	Proposed	Location	Total
Stadium	-	-	7.00	Shahabaj	7.00
Park	-	-	2.00	Nijpara	2.00
Park	-	-	9.00	Shahabaj	9.00
Park	-	-	1.00	Hariswar	1.00
Cinema Hall	-	-	1.00	Nijpara	1.00
Grand Total	-	-	20.00	Shahar	20.00

Table No. 35
Kaunia Upazila Shahar
Planned Land use Analysis.
(Area in Acres)

Function	Mouza	Nij-para	Gadai	Haris-war	Sha-baz	Holdi-bari	Ganga-narayan	Total	Per-centage
1. AGRICULTURE AND FORESTRY ...		<u>217.40</u>	<u>27.85</u>	<u>181.50</u>	<u>98.10</u>	<u>64.0</u>	<u>56.00</u>	<u>643.00</u>	<u>55.22</u>
Agriculture ...		217.40	27.85	161.50	98.10	64.00	56.00	623.00	
Ag. Firm ...		-	-	20.00	-	-	-	20.00	
2A. COMMERCE		<u>20.50</u>	-	<u>4.50</u>	-	-	-	<u>25.00</u>	<u>2.15</u>
Market ...		11.00	-	3.00	-	-	-	14.00	
Shops / Commercial Offices ...		9.50		1.50	-	-	-	11.00	
2B. Industry ...		<u>20.00</u>	-	-	-	-	-	<u>20.00</u>	<u>1.70</u>
3. ADMINISTRATIVE		<u>6.70</u>	-	<u>9.00</u>	<u>4.30</u>	-	-	<u>20.50</u>	<u>1.70</u>
UNO Complex ...		3.50	-	8.50	-	-	-	12.00	
Govt. Deptt. ...		2.20	-	0.50	4.30	-	-	7.00	
Semi-Govt. ...		1.00	-		0.50	-	-	1.50	
4. SOCIO-CULTURAL		<u>13.10</u>	-	<u>21.00</u>	<u>1.50</u>	-	-	<u>36.40</u>	<u>3.12</u>
Education ...		3.40	-	12.00	1.50	-	-	16.90	
Health/Welfare		7.50	-	4.50	-	-	-	12.00	
Community ...		1.00	-	0.50	-	-	-	1.00	
Religious ...		2.00	-	0.50	-	-	-	2.50	
Cemetery ...		-	-	4.00	-	-	-	4.00	
5. URBAN SERVICES		<u>22.00</u>	-	<u>42.00</u>	-	-	-	<u>64.00</u>	<u>5.40</u>
Post Office ...		-	-	1.00	-	-	-	1.00	
Tele-exchange...		1.00	-	-	-	-	-	1.00	
Police Station..		-	-	3.50	-	-	-	3.50	
Rail Station ...		20.00	-	35.00	-	-	-	55.00	
Garbage disposal		-	-	2.50	-	-	-	2.50	
Bus Terminal ...		1.00	-	-	-	-	-	1.00	

Contd ... P/83

Table No. 35 ... Contd.

Function	Mouza	Nij-pura	Gadai	Haris-war	Shah-daz	Holdi-tari	Ganga-narayan	Total	Per-centage
6. RECREATIONAL		<u>3.00</u>	-	<u>1.00</u>	<u>16.00</u>	-	-	<u>20.00</u>	<u>1.70</u>
Sports ...		-	-	-	7.00	-	-	7.00	
Parks ...		2.00	-	1.00	9.00	-	-	12.00	
Cinema ...		1.00	-	-	-	-	-	1.00	
Others ...									
7. ROADS		<u>33.00</u>	<u>3.15</u>	<u>47.00</u>	<u>9.85</u>	<u>12.00</u>	<u>2.00</u>	<u>107.00</u>	<u>9.70</u>
Major 60' ...		16.00	-	30.00	1.00	8.00	-	55.00	
Secondary 40' ...		8.00	-	-	1.85	-	-	9.85	
Local 24' ...		9.00	3.15	17.00	7.00	4.00	2.00	42.15	
8. RESIDENTIAL		<u>39.00</u>	<u>2.00</u>	<u>54.00</u>	<u>35.25</u>	<u>31.00</u>	<u>6.00</u>	<u>167.25</u>	<u>13.88</u>
Existing ...		26.00	1.00	35.00	11.50	12.00	3.00	88.50	
H. Estate ...		-	-	-	10.00	-	-	10.00	
Extension ...		13.00	1.00	19.00	13.75	12.00	3.00	63.25	
9. URBAN DEFERRED		<u>20.00</u>	-	<u>5.00</u>	<u>10.00</u>	-	-	<u>35.00</u>	<u>3.00</u>
10. URBAN RESERVE (Ponds & Canals)		7.50	9.00	10.00	5.00	2.00	-	33.50	<u>2.87</u>
Grand Total -		403.00	42.00	375.00	180.00	100.00	61.00	1164.00	100

7. Roads :

At present roads of all categories including the railway track cover 75.00 acres of land. The planned roads including the existing rail track and highway will cover 107.02 acres of lands. For details Table No. 36 may be seen.

Table No. 36
Kaunia Upazila Shahar
Land Use of Roads
(Length in Feet and Area in Acres)

Roads	Existing Length	Proposed Length	Existing Area	Proposed Area	Total Length	Total Area
Rail Track	8,910'	-	40.90	-	8,910	40.90
Road width - 60'	10,230	-	14.09	-	10,230	14.09
Road width - 40'	-	10,730	9.39	9.98	10,730	19.37
Local - 24'	-	43,560	-	24.00	43,560	24.00
Foot Path	33,000	-	18.18	-	33,000	18.18
Total	52,140	54,290	82.56	33.98	106,430	116.54

8. Residential :

At present residence cover 88.50 acres of lands. According to the medium projection, the population of 1986 will be 8,769 persons. The present residential density is 99 persons per acre. According to the medium projections, the population of the shahar area will be 14,600 persons in 2001 A.D. For the existing residential areas, the density may be raised to 120 persons per acre. If so, the existing residential area will accomodate 10,620 persons. A housing estate of 10 acres may be created with density 100 persons per acre. Then the housing estate will accomodated 1000 persons. Remaining 3000 persons will be will be accomodated extending the area adjacent to the existing residences. For the extended area, the density may be assumed as 75 persons per acre. Therefore 40 acres of new land will be needed. The total requirement of land for residential purpose is amounted to $88.50 + 10 + 40 = 138.50$ acres. (Details have been discussed in density projection).

9. Urban Deferred :

Approximately 350 acres of land are proposed for urban functional uses excepting roads and urban reserve , 10 percent of planned land are kept as urban deferred which amounts to 35 acres of land. They are shown in three different sectors in mouza Nijpara, Hariswar and Shahabaz.

10. Urban Reserve :

There are 33.50 acres of land under the use of water bodies. No land is used for historical purposes. Lands under water bodies may be kept as urban reserve.

11. Agriculture and Forestry :

After land use proposal for urban functional uses, 643.00 acres of lands are remained for agricultural use. Out of these agricultural land 20.00 acres may be used for agricultural firms which has been earmarked in mouza Hariswar.

8. PROGRAMME AND IMPLEMENTATION :

8.1 Priority Actions and Cost Implications :

Priority has been given to the construction of the UNO complex with all ancillary structures. At present, socio-cultural facilities are inadequate in the upazila shahar of Kaunia and recreational facilities are totally absent. To create living environment, socio-cultural and recreational facilities are needed. An integrated land use plan needs the development of local roads on priority basis.

Determination of costs to implement all the proposed projects are out of the scope of this report. Only the preparation of the land use plan is the objective of this report. At present 168.75 acres of lands are used for urban functions (excluding private residential land and water bodies). For planned development 357.90 acres of lands will be needed. The requirements of new lands are amounted to $357.90 - 168.75 = 189.15$ acres. Studies of land value showed that the average value of one acre of buildable land is Tk. 65,000/-. Therefore to acquire the lands required for planned development will cost Tk. $189.15 \times 65,000/- =$ Tk. 1,22,94,750/-.

8.2 Phasing and Urban Deferred :

Development projects earmarked in the plan may be divided into two main phases. Phase - I, up to the year 1991 and phase - II, 1991 - 2001 A. D.
Phase - I

Internal roads should be developed on priority basis which will help to integrate the existing and proposed functions and consequently accelerate the rate of growth and development. It has been mentioned before that the upazila shahar of Kaunia is lacking of social and recreational facilities. They should be developed on priority basis to create living environment in the shahar.

Phase - 11

In the next phase, remaining other functions like the housing estate, industrial development, agricultural firms etc. should 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 the Table No. 37 depending on population growth and priority of the projects.

For urban deferred 35.00 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 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 subject to control. It is an essential part of the Upazila shahar development. The land use plan must be kept under continuous review, but in itself only constitutes a small part of the planning work. Urban planning is a profession in its own right is recommended that an experienced planner should take its charge.

8.4 Monitoring and Review :

The monitoring of all activities regarding the implementation/plan of the upazila shahar should be left with a technical person who understands the job. Urban Development Directorate may look after the proper implementation of the upazila shahar.

The land use plan prepared will fulfill the stated objectives of the TOR. It is very important to note that the present use of land should not be disturbed and will continue until the lands are required to be developed for urban use as proposed in the plan.

Table No. 37
Kaunia Upazila Shahar
phasing of development proposals.

Phase - I up to 1990		Phase - II 1991 - 2001	
Project	Location	Project	Location
Shopping Complex	Nijpara	Market	Nijpara
Industrial Estate(50%)	Nijpara	Industrial Estate(50%)	Nijpara
UNO Complex	Nijpara & Hariswar		
Govt. & Semi-govt. Officer	(as show in Table of Distribution of adma. lands)		
Primary School	Hariswar	Primary School	Hariswar
- do -	Shahabaz	- do -	Nijpara
Extension of G.H.School	Nijpara & Shahabaz	Extension of Kaunia College	Hariswar
Maternity & Child Care	Nijpara		
- do -	Hariswar		
Community Centre	Hariswar	Central Mosque and Eidgha	Nijpara
Graveyard Disposal	Hariswar		
Bus Terminal	Nijpara		
Stadium	Shahabaz	Park	Nijpara
Park	Shahabaz	Park(50 y.)	Shahabaz
Cinema Hall	Nijpara	Park	Hariswar
Internal Roads	Shahar Area	Agricultural Firm	Hariswar
		Housing Estate	Shahabaz