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Socio-Economic and Environmental Impacts of Urbanization in Bogra Municipal Area of Bangladesh

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**SOCIO-ECONOMIC AND ENVIRONMENTAL
IMPACTS OF URBANIZATION IN BOGRA
MUNICIPAL AREA OF BANGLADESH**



By

Md. Rafiqul Islam Shaik

A Dissertation

Submitted to the Institute of Environmental Science (IES), Rajshahi
University in partial fulfillment of the requirements for the degree of

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In

Economics

Institute of Environmental Science (IES)

Rajshahi University

Rajshahi

Bangladesh

November 2006

Dedicated to My Parents

Hadji Shaiq Mohammod Ali

and

Late Jahura Khatun

DECLARATION

I do hereby declare that the dissertation entitled '*Socio-economic and Environmental Impacts of Urbanization in Bogra Municipal Area of Bangladesh*' has submitted to the Institute of Environmental Science (IES), Rajshahi University for the degree of '*Master of Philosophy in Economics*' is exclusively my own and original work. The sources, which have used in the dissertation have been referred in and quoted clarify. No part of it, in any form has been submitted to any other '*University*' or '*Institute*' for any degree, diploma or for other similar purposes.

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CERTIFICATE

It gives me an immense pleasure to certify that the dissertation entitled '*Socio-economic and Environmental Impacts of Urbanization in Bogra Municipal Area of Bangladesh*' is the original work of '*Md. Rafiqul Islam Shaik*', M. Phil. Research Fellow, Session: 2004-2005, Institute of Environmental Science (IES), Rajshahi University, Rajshahi, Bangladesh. As far as I know, this is the candidate's own achievement and is not a conjoint work. He has completed this dissertation under my guidance and supervision.

I also certify that I have gone through the draft and final version of the dissertation and found it satisfactory for submission in partial fulfillment of the requirements for the degree of '*Master of Philosophy in Economics*'.



11.11.06

(Dr. Md. Mohsin Ali)

Professor and Supervisor

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Bangladesh

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rickshaw / Bus / Mini bus / Truck / Mini truck owners association, Bogra; Programme for eco-social development office, Bogra; Light house, Bogra; Civil surgeon office, Bogra; Homeopathic doctors association, Bogra; Ayurvedic association, Bogra; Hawker labour union, Bogra; Janata bank, Bogra main branch; Shop owners association, Bogra; Bogra imam association; Hindu-Bauddho-Christian allied association, Bogra; Income tax office, Bogra circle; Central shop owners association, Bogra ; Bangladesh Bank, Bogra branch; Bogra sadar upazila sub register office; Bogra sadar upazila forest office; Bogra sadar upazila livestock office; Bogra sadar upazila fishery office; Bogra sadar upazila agriculture office; Department of environment, Bogra office and Bogra sadar thana for their sincere cooperation.

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ABSTRACT

Bangladesh is not only a developing country but also an over populated one. Its population is increasing rapidly day by day. We cannot control it successfully. The country is trying for development since 1971, after liberation. But its development is hindered due to lack of proper management of its growing population.

Urbanization in this country is increasing at a very high rate, but with this, urban facilities are not increasing at the required rate.

In this dissertation, the impact of urbanization on social characteristics like- age structure, educational facilities and literacy, health care and maternity services, family planning activities, migration, population density, traffic jam, women empowerment, social consciousness, norms and values and social recreational facilities have been examined.

Here it has also analyzed the impact of urbanization on economic characteristics like- financial classification, occupational structure, consumption pattern, housing pattern, sources of drinking water, electricity facility, transport and communication, financial institutions, land value, land ownership and house ownership as well as the impact of urbanization on environmental characteristics like- flora, fauna, cultivation, sanitary facilities, sewerage systems, pollution, slums, drug addiction, prostitution and law and order situation.

This dissertation is done by collecting primary data from grass root level through field survey. Fourteen (14) sets of questionnaire including one hundred and forty seven (147) '*closed*' and '*open ended*' questions were prepared for collecting information from the selected one hundred and thirty three (133) respondents.

The secondary data is collected from related published and reported materials including books, articles, research reports, official documents, theses and dissertations.

The collected data from primary and secondary sources are presented in tabular form.

Opinions have also been taken from the civil society to analyze the causes and effects of the impact of urbanization.

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Officer of Bogra Municipality and License Officer of
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CHAPTER ONE

INTRODUCTION

The territory constituting Bangladesh was under the Muslim rule for over five and a half centuries from 1201 to 1757 A.D. Subsequently, it was under the subjugation of the British after the defeat of the last sovereign ruler, Nawab Sirajuddowla, at the Battle of Plassey on the fateful day of June 23, 1757. With the termination of the British rule in August, 1947 the sub-continent was partitioned into India and Pakistan. Bangladesh was then a part of Pakistan and was known as East Pakistan. It remained so about 24 years from August 14, 1947 to March 25, 1971. It appeared on the world map as an independent and sovereign state on December 16, 1971 following the victory at the war of Liberation from March 25 to December 16, 1971. (Statistical Year Book of Bangladesh, 2002)

Bangladesh lies in the north eastern part of South Asia between latitudes $20^{\circ} 34'$ and $26^{\circ} 38'$ N [about 390 miles (625 km) from its extreme north and south extensions] and between longitudes $88^{\circ} 01'$ and $92^{\circ} 41'$ E [about 190 miles (305 km) from east to west]. To the south Bangladesh has an irregular coast line fronting the Bay of Bengal and is bordered on the south east of Myanmar (Burma). The Indian states of West Bengal to the west and north, Assam and Meghalaya to the north east and Tripura and Mizoram to the east line the border between Bangladesh and India. (The New Encyclopaedia Britanica, 2002, Volume-1).

The area of the country is 56,977 sq. miles or 1,47,570 sq. k.m. The limits of territorial waters of Bangladesh are 12 nautical miles and

the area of the high seas extending to 200 nautical miles measured from the base lines constitutes the economic zone of the country.

A network of rivers of which the Padma, the Jamuna, the Teesta, the Brahmaputra, the Surma, the Meghna and the Karnaphuli are important, and their tributaries numbering about 230 with a total length of about 24140 km. covering the country flow down to the Bay of Bengal. The alluvial soil is thus continuously being enriched by heavy silts deposited by rivers during the rainy season.

The total forest area covers about 13.36% of the land area. The country produces timber, bamboo, and cane.

Varieties of wild animals are found in the forest areas. Sundarban is the home of the world famous '*Royal Bengal Tigers*' and cheetas. Of other animals' elephants, bears, deer, monkeys, boars, leopard, and crocodiles are worth mentioning. A few hundred species and sub-species of birds are found in the country. Some of them are of seasonal and migratory types.

Bangladesh enjoys generally a sub-tropical monsoon climate. While there are six seasons in a year, three namely, Winter, Summer and Monsoon are prominent.

Now its population is about 14 crore. Dhaka is its capital. It is governed by a parliamentary form of government. The Prime-minister is the chief executive of the country. The country is divided into 6 divisions, 64 zilas and 507 upazilas.

The constitution provides for a unicameral legislature, which is called Jatiya Sangsad. It consists of 300 members directly elected by adult franchise. The members of Jatiya Sangsad elect another 45 female members. Thus, the total number of members of the Jatiya Sangsad is 345.

The highest judiciary in the country is the Supreme Court headed by the Chief Justice. The Supreme Court comprises the Appellate Division and the High Court Division. There are both criminal and civil courts at Zila head quarters to try criminal and civil cases.

Local government in urban and rural areas is entrusted to bodies elected by the people. Such bodies in the urban areas are called Municipalities or Pourashavas and in rural areas these are called Union Parishads (Union Councils). There are also Zila Parishad and Upazila Parishad at the Zila and Upazila levels respectively.

The foreign policy of Bangladesh is based on the principles of sovereign equality, territorial integrity, peaceful co-existence and non-interference in each others' internal affairs. Bangladesh strictly adheres to the policy of non-alignment.

Agriculture is the main occupation of the people employing 68.5% of the labour force. This sector directly contributes around 25% to the gross domestic products (according to Revised GDP Series based on 95-96 prices).

Bangladesh has got one of the most fertile lands but due to paucity of capital and lack of knowledge of new inputs and techniques its yield per acre is one of the lowest in the world. Rice, wheat, jute, sugarcane, tobacco, oilseeds, pulses and potatoes are the principal crops.

Bangladesh is rich in fish wealth. In the innumerable rivers, canals, tanks and other low-lying and depressed areas and paddy fields that remain under water for about 6 months in a year and cover nearly 12 million acres, tropical fish of hundreds of varieties are abound. With the Bay of Bengal in the south the country enjoys geographic advantage for marine fishing.

Bangladesh has a few proven mineral resources. The country has enormous deposit of natural gas.

Although Bangladesh is predominantly an agricultural country but a large number of large-scale industries based on both indigenous and imported raw materials have been set up. Among them jute and cotton textile, paper and newsprint, sugar, cement, chemicals, fertilizers and tanneries are important.

The industrial sector contributing about 15.40% of the GDP, is dominated by Jute processing followed by cotton textiles, cigarettes and garment industry.

Bangladesh Bank is the central bank of the country, which is responsible for promoting growth and development of banking system in the country and for overall control of the activities of all other banks. It has an issue and a banking control department to carry out its objectives, to implement the Government monetary policy and to manage international transactions. (Statistical Year Book of Bangladesh, 2002)

1.1 Statement of the Problem

The world's urban population continues to grow faster than the total population of the world. As a consequence, about 3 billion people or 48% of humankind is now (2003) living in urban settlements. The majority of all urban dwellers are living in smaller urban settlements, while less than 5% of the world population is living in mega-cities.

The world's urban population was estimated at 3 billion in 2003 and is expected to rise to 5 billion by 2030. The rural population is anticipated to decline slightly from 3.3 billion in 2003 to 3.2 billion in 2030.

The urban population reached 1 billion in 1960, 2 billion in 1985 and 3 billion in 2002. It is projected to attain 4 billion in 2017 and 5 billion in 2030.

While 48% of the world's population was estimated to live in urban areas in 2003, current projections indicate that the 50% mark will be crossed in 2007; thus, for the first time in history the world will have more urban dwellers than rural ones. The proportion of the population that is urban is expected to rise to 61% by 2030.

During 2000-2030, the world's urban population is projected to grow at an average annual rate of 1.8%, nearly double the rate expected for the total population of the world (almost 1% per year). At this rate of growth, the world's urban population will double in 38 years or in about half a lifetime of a person.

Population growth will be particularly rapid in the urban areas of less developed regions, averaging 2.3% per year during 2000-2030. Migration from rural to urban areas and the transformation rural settlements into urban places are important determinants of the high urban population growth anticipated in the less developed regions.

Almost all the growth of the world's total population between 2000 and 2030 is expected to be absorbed by the urban areas of the less developed regions. By 2017, the number of urban dwellers will equal the number of rural dwellers in the less developed regions.

The share of the population that is urban is lower in the less developed regions: 42% in 2003 and expected to rise to 57% by 2030. By 2030, Asia and Africa will each have more urban dwellers than any other major area, with Asia alone accounting for over half of the urban population of the world.

Over the last 50 years, the world has witnessed a dramatic growth of its urban population, the speed and the scale of this growth, specially concentrated in the less developed regions; continue to pose formidable challenges to the individual countries as well as to the world community. Monitoring these developments and creating sustainable urban environments remain crucial issues on the international development agenda. (World Urbanization Prospects: The 2003 Revision)

✓ Urbanization is a current issue throughout the world particularly in the developing countries. In fact, it is acclaimed as the instrument of economic development and socio-cultural changes. It is a fact that the level of urbanization is usually associated with the degree of modernization or process of industrialization.

Breese (1966), opines that if industrialization can be said to have been the first great and continuing revolution in recent times, certainly urbanization is the next one. Further, he adds that urbanization seems invariably to accompany the development of new countries.

There is hardly any important problem in public policy, which is ever considered original. By the time it becomes an important problem, some of its features will have been seen, their consequences felt and salvations but forward to deal with them. ✓ Urbanization is such a problem in public policy, specially when it is rampant, excessive, uncontrolled and unbalanced urban growth. (Pacific Conference on Urban Growth, 1968)

The rate of urban growth in the cities of Asia and the Far East is over rapid, specially in the capitals and other larger cities which have a tendency to grow faster than smaller urban areas. (United Nations, Centre for Housing, Building and Planning, 1966)

This fact has been experienced in case of Dhaka, the capital of Bangladesh. (Quadir, 1973, Volume-2)

Demographic characteristics of the world, Asia and Bangladesh (1950-2030) is shown in Appendix -01.

✓ Bangladesh is not only an over populated, but also a developing country. It is one of the least urbanized countries in the world. Now the country is undergoing rapid urbanization, which is essentially the product of colonial dependence has left deep imprints on the organization of economic space.

The towns became the centres of colonial economy and administration rather than a result of socio-economic development through an internal process of evolution of the origin itself, as manifested in their patterns of function and growth that bears the character '*parasitic*' urban centres rather than '*generative*'. [Elahi, 1972]

In Bangladesh, two major political changes i.e. the partition (1947) and the liberation (1971) accelerated the process of urbanization.

The main reasons for growth of urban population are as follows:

- a) natural increase of population,
- b) influx from rural areas, or urban to urban areas,
- c) changes in urban boundary and
- d) changes in the definition of urban areas.

It is evident that before partition urban population grew mainly due to natural increase rather than factors stated above. But, now urban population is growing for all aforesaid factors. Specially, after 1991 the number of municipalities have increased rapidly. (Appendix -01)

In 1991, the number of municipalities were 03 and 94 respectively in Bogra district and Bangladesh, which increase to 11 and 303

respectively in 2006. It has increased by 266.67% in Bogra district while 222.34% in Bangladesh during 1991 to 2006 period.

The urban population of Bangladesh was estimated at 38 million in 2005 and is expected to rise to 86.5 million by 2030.

While 25% of the population of Bangladesh was estimated to live in urban areas in 2005, current projections indicate that the urban population of Bangladesh will rise to 39.3% by 2030.

The number of urban population was 295607 (11%) and 389069 (13%) respectively in 1991 and 2001 in Bogra district. In Bogra Sadar Upazila the number of urban population was 164114 (28%) and 210038 (30%) respectively in 1991 and 2006. (Population census, 2001, community series, zilla : Bogra)

Urbanization usually brings with it regional prosperities as the provision of infrastructural facilities, stimulates the development of locally available resources, increasing regional income and employment levels. Thus, it provides new economic opportunities through providing employment in industries, including the provision of several other infrastructural facilities, e.g. electricity, provision of higher education, health services, transport and communication lines and better opportunity of employment in urban areas.

Besides, urban area also provides an arena for new political activities of urban, state and national levels, marketing to produce diversification of occupations, commercialization of agriculture and changes in consumption pattern. ✓ Ultimately, change of economic condition is linked to the process of urbanization. For example, forest to agriculture, agriculture to manufacturing-oriented production centre and centres of exchange of goods. (Mandal, 1982)

Thus, by dint of urbanization socio-economic and environmental change (favourable or unfavourable) occurs. Bangladesh is not out of this process.

The aim of this research is to search the socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh, which represents, all urban areas of Bangladesh.

1.2 Definition of Key Terms

The terms and concepts used in this dissertation are defined here in brief.

Society

The aggregate of people living together in a more or less ordered community. (Brown, 1993, volume -2)

Socio-economic

Deriving from both social and economic factors; combining such factors to provide an indication of a person's or group's effective social situation. (Brown, 1993, volume- 2)

Environment

Environment, the complex of physical, chemical and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival. (The New Encyclopaedia Britannica, 2002, volume-4)

Alternatively, *'the environment is the aggregate of all external factors or conditions that influence the activities and existence of living things including man'*. (Khuda, 2001)

Environmental

Concerned with the conservation of the environment. (Brown, 1993, volume-1)

Impact

The sudden, forceful coming together in direct contact of two bodies, such as , for example, two billiard balls, a golf club and a ball, a hammer and a nail head, two rail road cars when being coupled together, or a falling object and a floor. Apart from the properties of the materials of the two objects, two factors affect the result of impact: the force and the time during which the objects are in contact. (The New Encyclopaedia Britannica, 2002, volume-3)

Urbanization

The transformation of lightly populated open- country or rural areas into dense concentrations of people, characterized by the expansion of population from central cities and the migration of people from other areas. (The Encyclopedia Americana, 1984, volume-27)

Municipal Area

Municipal area is an urban based local government organization. To declare any rural area as an urban area in Bangladesh it needs the following characteristics:

Three-fourths of the adult male population of the area to which it refers are chiefly employed in pursuits other than agriculture; such area contains not less than 15,000 (fifteen thousand) population and an average number of not less than 2,000 (two thousand) inhabitants per square mile. (Sailure, 2004)

The government of Bangladesh may, in the prescribed manner-

Declare any urban area , other than a cantonment, to be a municipality (or municipal area); extend, curtail or other wise alter the limits of any municipality (or municipal area) and declare that any urban

area shall, from a date to be specified, cease to be municipality (or municipal area). (Sailure, 2004)

Thus, all municipalities (or municipal area) are urban area, but all urban areas are not municipality (or municipal area).

Sustainable Development

There have been various efforts undertaken by international organizations for development specially in the poverty stricken countries of the world. After the creation of United Nations, it formed a special body namely '*United Nations Development Program*' (UNDP) to devise plans and monitor development activities through the world. But the effect of those efforts proved temporary since most of them failed to uproot poverty, even in this advanced age of science and technology. As a result, a new concept of development that is sustainable development emerged over the years.

This idea of sustainable development grew from numerous environmental movements in earlier decades and also defined in 1987 by '*The World Commission on Environment and Development*' as "*development that meets the needs at present without compromising the ability of future generations to meet their own needs*".

Sustainable development is future oriented in that it seems to ensure that future generations are at least as well off, on a welfare basis, as current generations. It is therefore in economic terms a matter of international equity and not just efficiency. The distribution of rights and assets across generations determines whether the efficient allocation of resources sustains welfare across human generations. (Howarth and Norgaurd, 1993)

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The critical argument is that future generations have the right to expect an inheritance sufficient to allow them the capacity to generate for themselves a level of welfare not less than that enjoyed by the current generations. What is required, then, is some sort of intergenerational social contract. (Turner, 1993)

According to the dictionary of environmental science, *'sustainable development is the development of industrial and natural resources that meets the energy needs of the present without compromising the ability of future generation to meet their needs in a similar manner'*. (Mc. Graw- Hill, 2003)

At the end of the summit on sustainable development the *'Johannesburg Declaration'* proclaims: *"Poverty eradication, changing non-sustainable patterns of production and consumption and protecting and managing the natural resources based on economic and social aspects are overreaching objectives of and essential requirements for sustainable development"*. (World Summit on Sustainable Development, 4 September, 2002)

The above mentioned definitions clarify that long lasting development is closely related to environment. Sustainable development encompasses a number of interrelated areas and high lights sustainability as the idea of social, economic and environmental progress and equity, all within the limits of the world's natural resources. So there are three components of sustainable development. They are, social development, economic development and environmental protection.

1.3 Objectives of the Study

It is necessary for every researcher to fix up some objectives at the time of beginning of his research to complete properly the work in schedule time and plan. So, the researcher has also fixed up some objectives according to his research title *'socio-economic and environmental*

impacts of urbanization in Bogra municipal area of Bangladesh', for completing properly his work in schedule time and plan. The researcher wants to search the queries like, is there any change in Bogra municipal area for urbanization from 1991 to 2006 and if yes, then which kind of it is? In a word the researcher wants to see the trend and impacts of urbanization in Bogra municipal area during 1991 to 2006. The general objective of this research is to study the trend of urbanization in the selected municipal area.

The specific objectives of this study are:

- to study the social impact of urbanization;
- to study the economic impact of urbanization;
- to study the environmental impact of urbanization and
- to identify reasons, for harmful impact of urbanization and suggestions for their remedies.

1.4 Justification of the Study

The general consequences of urbanization every where are as plain as the conditions and its causes. Because of over urbanization, primate or great cities have a paralytic effect on the development of other places and tend to be parasitic in relation to the remainder of the national economy. Over urbanization have everywhere produced overwhelming difficulties including i) migration, ii) unemployment, iii) squatting, iv) absence of mass sanitary facilities, v) crowding, vi) lack of recreational facilities, vii) break down of social order, viii) high crime rate, ix) squalor, x) inadequate housing and so on. (Pacific Conference on Urban Growth, 1968) These all are related with socio-economic and environmental conditions.

The implications of the continuing of urbanization deserve careful consideration. Unfortunately most countries of the Economic Commission for Aisa and Far East (ECAFE) region lack a through understanding of the impact of urbanization on the structure and form of cities and regions. (Nagoya seminar report, 1966)

Bangladesh is not an exception to this fact. The implications of urbanization are not necessarily obvious and when they are made clear they give some idea of the importance of the various research tasks. The speed of urban change and the relative regency of truly mass urbanization have left national and local government without consistent policies for dealing with the resulting problems. (Davis, 1961)

It appears that there is a growing awareness of urban problems in highly industrial or agrarian regions, but a great uncertainty as to the best methods of dealing with them. The whole process of urbanization is so massive and so intimately bound up with the coveted goal of economic development that it is probably impossible to stop the growth of cities. This means that the innumerable problems growing out of massive urbanization must some how be solved without elimination the basic cause, which is urbanization or city growth itself. (Davis, 1961)

Research on the problems of urbanization has not so far been seriously undertaken in Bangladesh. It is a neglected area of research in Bangladesh.

Under the circumstances, study in regard to the socio-economic and environmental impacts of urbanization is urgently needed to ensure sustainable development in our country. Such study can not, of course, determine policy. It can however, bring into view a greater knowledge of the realities, which policies must be dealt with. For these reasons the

present study on the socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh has been undertaken.

1.5 Feasibility of the Study

It is true that research works have some specific limitations. Bearing it in mind, the researcher has selected his research topic. In another side, time and resources are important factors for any type of research work. So, the researcher has selected his study area in Bogra municipal area, where he lives and works and able to conduct the research smoothly within limited time and resources. Also Bogra is a fast growing urban area in the Northern Region of Bangladesh.

Relevant data, information, maps etc. are other important aspects of the research. As the researcher was previously well known to the relevant government and non-government organizations of Bogra municipal area that are involved in such type of works. So, it is quite easy for the researcher to collect relevant, necessary and reliable secondary information from the organizations, although, the researcher has confronted some difficulties as to having access to the government resources.

Primary data are the basic supporting materials for the study and interesting also. In this respect the researcher is in a convenient position because, the researcher lives in Bogra.

1.6 Utility of the Study

In this research, the researcher has tried to find out the socio-economic and environmental impacts of urbanization, which will help the government policy makers, urban planners, sociologists, economists, environmental scientists, geographers etc. to take appropriate decisions

about urbanization. It will also help the new researchers to continue their research work.

The findings and recommendations of the research can also help the students, who are involved in urban planning, social science, environmental science etc. to acquire knowledge.

The present study also suggests some points, which will help the municipal authority to take decision for proper management of the municipal area.

Finally, the review of literature, in chapter two, reveals that the present research work on the socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh is a new field of study. It shows relation between urbanization and socio-economic and environmental conditions. It also shows that by improving urban policy and management system, the awareness of urban inhabitants and urban condition must be improved.

1.7 Scope of the Study

Urbanization is a vast subject, not least, because seen in international perspective it is at present relevant primarily to developing countries. There are a number of problems of comprehension of the subject.

The scope of the present study is confined to the socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh.

So, the main concentration has gone to the residence of urban citizens and the respective government authorities that are responsible for controlling the urban socio-economic and environmental conditions. Special attention has been given to the activities of the Bogra Municipal

authority, Non Government Organizations (NGOs) working in Bogra municipal area related with socio-economic and environmental activities, social elites, Bangladesh Environmental Lawyers Association (BELA), Bangladesh Paribesh Andolon (BAPA), Centre for Urban Studies (CUS) etc.

1.8 Limitations of the Study

Admittedly, the objectives of the present study in relation to the multiple dimensions of the real world problems are modes and limited in scope. Nevertheless, the findings of the study will, hopefully add to the knowledge in the literature of the study of urbanization particularly in a developing country. However, the scope and objectives of the present study have been kept less ambitious (during course works, questionnaire presentation, questionnaire pre-testing, field data collection, data analysis etc.) for the following facts, which hinders the researcher for rapid progress of the research work.

The main limitations, which have been faced by the researcher for the study, are as follows:

During course work, the researcher got minimum courses, which were not relevant with the present research work, because at that period the relevant course teachers were not recruited in the related institute and teachers were aboard. There are hardly any published or unpublished materials available to the study of the socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh. To get reliable information about the present socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh is really formidable and the whole work has to be based on actual field work on account of the above two facts.

The respondents (even government officials) some times hide the facts and it was due to their ignorance about research work. Due to illiteracy of some urban inhabitants and ignorance about research, they were unable to realize the importance of such study and most of them did not want to show their interest in this respect. Moreover, some respondents believed that this work carried out only for the personal benefit of the researcher and they will not get any benefit from it. So, they did not want to show any interest in co-operating with the researcher and investigators.

The researcher has confronted some difficulties as to having access to the government resources. The researcher could have included more respondents, but due to time and budget constraint it was difficult. Without this, lack of laboratory and scientific instruments facility, scientific research was difficult.

Besides these sources, resources and time constraints, the present study has been undertaken mainly as there is no such study on this particular municipal area.

However, the study would provide us with at least an opportunity to examine the problem in its real perspective leading to some degree of right kind of solution of the problems of urbanization.

1.9 Thesis Structure

The dissertation on socio-economic and environmental impacts of urbanization has comprised seven chapters including this chapter.

Chapter one is the introduction, which deals with statement of the problem, definition of key terms, objectives of the study, justification of the study, feasibility of the study, utility of the study, scope of the study, limitations of the study and thesis structure.

Chapter two is review of related literature, in which relevant literatures from articles in journals, internet sources, books, theses, dissertations, manuscripts etc. have been reviewed.

Chapter three is data, specification and methodology, which has discussed about the study area, rationale of selecting the study area, sampling technique, selection of respondents, sources of data collection, period of data collection, methods of data collection and brief history of field work, methods of data processing and analysis, limitations of collected data and reliability of the collected data.

Chapter four is social impact of urbanization, which has focused about impact on age structure, educational facilities and literacy rate, health care and maternity services, family planning activities, migration, population density, traffic jam, women empowerment, social consciousness, norms and values and social recreational facilities.

Chapter five is economic impact of urbanization, which has explored about impact on financial classification, occupational structure, consumption pattern, housing pattern, sources of drinking water, electricity facility, transport and communication, financial institutions, land value, land ownership and house ownership.

Chapter six is environmental impact of urbanization, which has identified about impact on flora, fauna, cultivation, sanitary facilities, sewerage systems, pollution, slums, drug addiction, prostitution and law and order situation.

Chapter seven is summary and conclusion, which is the last chapter of this dissertation, has shown summary of findings of this research, conclusion of the research work and recommendations for solving various problems and improving present conditions related with urbanization.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Urbanization is a burning issue in the world now a day. In this field, research materials and related issues are available. The researcher has reviewed various literatures from books, manuscripts, theses, dissertations, articles, internet sources, published and unpublished materials, government acts and documents. But, here he has explored only a few selected works related with relevant field to find out the existing research gap. This work may not be exhaustive, but the researcher has tried to include the relevant and recent works.

Hossain (1982), has discussed in a research about the patterns of urbanization of Rajshahi town. In this research he has presented a short historical account of the town emphasizing geographical settings and physical growth, the demographic characteristics i.e., age-sex composition, migration, literacy etc., the house hold pattern i.e., the family size, income level, occupational structure, family expenditure, poverty level etc., a survey of the economic activity of the town and the housing pattern, i.e., the ownership and rent area ratio.

But, in his research he has not discussed about the impacts of urbanization. He has also neglected the environmental components.

Rahaman (1982), has identified in a study about the background in deviants in slums of Rajshahi town. He has identified the juvenile deviants in slums, the nature of deviant behavior among the juveniles, the individual characteristics and family background of the deviants and the process of becoming a deviant.

He has identified here a partial view of urbanization, but not the whole picture.

Hataya (1996), has discussed in an article published in the journal of 'Institute of Developing Economics' entitled '*Expanding Urban Sprawl: Growth of Low Income Settlements in Bogota, Colombia*'.

He has shown the pattern of the urbanization process and the supply of housing, the low income settlements and their expansion process and the factors which determine the expansion of the low income settlements focusing particularly on urban regulation policy.

Here, he has neglected the bad impacts of informal settlers on the city environment.

Chaudhury (1998), has published an article entitled '*Agenda 21 and the Role of Local Authorities in Urban Environmental Management*' in '*Asian Pacific Journal on Environment and Development*'. He has focused on the role of urban authorities, role of other institutions and role of urban inhabitants.

He has focused and suggested only on the environmental management, but not on social and economic management.

Islam (1998), has mentioned in an edited book entitled '*Recent Urban Studies, Bangladesh*' about urban planning, urbanization, urban physical environment, urban land use, slum upgradation and industrial pollution control.

He has omitted to discuss social and economic factors vastly, related to urbanization.

Islam (1999), has discussed in an article entitled '*Urbanization, Migration and Development in Bangladesh: Recent Trends and Emerging Issues*' on 'Web Site' on migration and urbanization, causes of rural-urban migration, sources of origin of migrants, consequences of migration and

urbanization, policy initiatives for urbanization and recommendations for the aforesaid measures.

The author has discussed the issue of urbanization. Partially he has used some secondary data in favour of his arguments, but he has not checked the data by any field observation. If it was done so, it could be considered more acceptable.

Keqa(1999), has identified in a thesis about some environmental parameters of Rajshahi city . In the thesis she has identified some of the weather parameters and traced elements in some winter vegetables collected from Rajshahi city market.

Gaan (2000), has investigated the causes and problems of environmental degradation, environmental conflict, national security and social security.

Although, he has touched about economic security, but has not discussed about social and environmental security.

Hossain (2000), has pointed out in a book about Bogra's growth and development as a regional centre. In this book he has pointed out the growth and changing land use pattern by analyzing the process and trend in urbanization, the potentiality of future growth and development of the town, the position of Bogra district headquarter as well as Bogra district region in comparison with other four old district headquarters and district regions, the extent and degree of Bogra's influence on its surrounding regions, the validity of the study of Bogra as a regional centre in the Northern Region and the developmental policies for a more balanced and integrated spatial organization.

Here he has pointed out mainly the geographic aspects of urbanization.

Siddhartha and Mukherjee (2000), have focused in a publication entitled '*Cities, Urbanization and Urban system*' about the origin of cities, growth of cities and types of cities.

The authors did not consider the impacts of urbanization. They have focused only on the emerging side of urbanization, but not the destructive side of urbanization.

Murtaza (2000), has discussed in a dissertation about urban poverty and its spatial consequences. He has discussed elaborately about the spatial consequences of poverty on the demographic and socio-economic conditions of the poor people living in khulna city. He has emphasized on spatial impacts of urban poverty on the living conditions of the poor in terms of levels of access to basic services and facilities such as, water supply, sanitation, health, nutrition and shelter and policy measures to improve their living conditions in the context of spatial variations.

Ramachandran (2000), has found out in the book entitled '*Urbanization and Urban system in India*' the process of urbanization, problems created from urbanization and human settlements.

In the book the author has discussed only the harmful impact of urbanization, but not the helpful impact of urbanization. Thus it is a partial view of the problem.

Islam (2001), in a research has investigated the social aspects of aging in Bangladesh. In that study he has investigated specially the problems of Rajshahi city. In addition to the above the researcher has investigated the general socio-economic condition of the elderly of Rajshahi city, the mental health status of the elderly, the status and role of the elderly and the nature and magnitude of the problems faced by the elderly.

Economic and environmental aspects are not included in that research work.

Sultana (2002), in a study has pointed out the impacts of rural-urban migration in Bangladesh. She has also pointed out in this research about the social standard according to the social class of those people, who migrated after 1971, mainly, the regions of Bangladesh, from which the migrated people are coming. In this case, the small towns are playing as primary stairs or not, the migrated demographic characteristics; the causes and kinds of migration, the special characteristic of urban area, which affects the attraction factor or not; the kinds of migrated women, who come with the families from rural to urban. She also pointed out the kinds of occupation held by the people, who migrated to the urban area, the standard of living and physical facilities of the migrants and their adaptation process, the positive and negative impacts of the migrants existence related to the urban infrastructure and socio-economic conditions and the present relationship between the migrants and their villages and are they agree to go back again to the village.

In this study she has considered only on the social component.

Ghosh (2003), in a paper entitled '*Urban Environment Management: Local Government and Community Action Urban Studies*' threw an insight into the environmental problems plaguing the urban areas in a cross country perspective managing the urban problem in a rapidly urbanizing society. He also considered the participation of the people and innovative initiatives at the community level improvement of the environmental conditions of the cities and partnership between the local government and the community in urban environmental management for sustainable development.

The author has emphasized on urban environmental management. But he has neglected the urban social and economic management. Also he has avoided the reasons, for which urban environmental problems are created.

Khatun (2003), has discussed in a publication about the growing body of literature on migration and mobility in Bangladesh. She has discussed here elaborately about the mobility pattern of the Dhakaiyas or the (native) people of old Dhaka, the relationship between residential mobility and the causes of relocation of Dhakaiya people, 'who moves', 'why do they move', 'where do they move' and the impact of such moves on the city structure.

It is surprising however, that income (or economic status) of the people was not considered as a characteristic of the movers.

Mc Carney and Stren (2003), in '*Governance on the Ground: Innovations and Discontinuities in Cities of the Developing World*' have focused on city government as raised through relationships between state and the city on the one hand and city and NGOs on the other hand, the social organization of a single neighborhood, various aspects of institutional frame works and reforms, municipal policies in the areas of urban planning, participatory budgeting and social development; municipal resources focusing on the problems of resource generation and housing policies.

This is a result of a vast research, but discussions about the impacts of urbanization and recommendations are absent here.

Rasheed (2003), has discussed in an article entitled '*Urban Growth and Water Security Challenges*' published in '*World Habitat Day*' souvenir 2003 have the following observations:

Process of urban growth in Bangladesh, lack of fresh water in cities in Bangladesh and social problems in Bangladesh arises by lack of fresh water.

This article helps to understand only the social aspects, but not the other. The author has discussed only the problems but no recommendation about the solutions of the problems.

Ahmed (2004), has found out in an article entitled '*Weber's Perspective on the City and Culture, Contemporary Urbanization and Bangladesh*' on '*Web Site*' about conceptions and characteristics of the city, conditions for the existence of an urban community, relationship between city and culture, contemporary urban development, third world urbanization and state, class and urban development in Bangladesh.

Here the author has discussed about process and existence of urban development. He also has discussed about classes of urban development, but he has not pointed out about the harmful impacts of urban development.

Alam (2004), has analyzed in a dissertation about the role of family development program in slums in Bangladesh. His findings are on the living patterns and problems of urban slum dwellers, pooling policy implication towards the problems of slum dwellers, socio-economic background data of the study population, the micro credit management of Family Development Program (FDP) and the information on the impact of FDP activities.

Alam (2004), has focused out in a thesis about the effect of informal settlements on urban environment. The author has also focused on the causes of growth and origin of the informal settlements in the metropolitan city of Khulna, the causes of environmental hazard due to

the dwellers of informal settlements, the effects of environmental pollution, some policy measures and guide lines to control the environmental degradation and some short and long term model projects to control the growth of informal settlements.

The author has focused on the partial impact of urbanization i. e. only on the environmental issue.

Najia (2004), in '*Development in local stage : Role of Local Government in Urban and Rural Development*' published in the '*World Habitat Day*' souvenir 2004, has the observations on local development in urban stage, role of municipalities, local development in rural stage, role of union council and present obstacles for local development.

The author has over looked the role of other institutions related to rural and urban development, such as NGOs, which play a vital role in urban and rural development.

Propa and Mitra (2004), in an article entitled '*An Evaluation of the Performance of Decentralization Policy in Bangladesh to Induce Urban Development : Case Study of Selected Upazilas*' published in the '*World Habitat Day*' souvenir, 2004, found that the newly formed administrative setup could result in urban agglomeration, that is, increase of population living in urban areas, the employment opportunity of the common people increased after establishment of upazila head quarters and the upazilas institutional support to urban sector employment generation, that is, whether the formal sector employment increased in the urban areas at upazila centres.

The article is entitled as urban development but no discussion about its effects.

Rahman (2004), has published an article entitled '*Cities Engines of Rural Development*' in the '*World Habitat Day*' souvenir, 2004 about the relationship between urban and rural areas.

He has discussed elaborately the target of development, relationship between urbanization and Gross National Product (GNP), role of urban structure on rural economy, micro credit and agriculture based urbanization.

The author has discussed here vastly about the merits of rural-urban relationship, but demerits of rural-urban relationship is absent in the article.

Roy (2004), has evaluated in a study about the origin and development of a city of Bangladesh. In this study he tried to gain appropriate knowledge (by compact investigation) about the origin and development of the city.

He used some secondary data collected from various sources in favor of his arguments. As per data his arguments are not unrealistic, but he did not check the reliability of the data by any field observation.

Uddin (2004), has found out in a dissertation about air pollution control in urban areas of Bangladesh. In this research he has also found out the following things:

The existing air pollution management in urban area, the major source of air pollution and the causes, the existing and proposed urban environmental policies, programs, laws and regulations along with their enforcement in respect of air pollution, the constraints and potentials of existing programs or projects in respect of air pollution control, the awareness of the people about air pollution and its impact on health; the ways to curb the urban air pollution, which are compatible with the socio-

economic conditions of Bangladesh and a management programs to control air pollution in view of sustainable improvement of urban air quality.

The author has found out here only about air pollution, but not others (water, sound etc.).

Islam (2005), has identified in a book named '*Natural Hazards in Bangladesh : Studies in Perception, Impact and Coping Strategies*' how the people of Bangladesh cope and combat natural hazards constantly, floods and the future of urban settlements, the 1998 flood in Dhaka city from various perspectives and the perception of the affected people and their coping strategies.

The author has identified only one kind of natural hazard and its prevention in urban area.

Seraj and Sadeque (2005), has published an article entitled '*An Evaluation of Urban Governance of Dhaka City and Its Effects on the Growth of Private Real Estate Sector*' in the CUS journal on '*Urbanization and Development*'. In this article they have discussed about the accountability, responsiveness, management innovation, public private partnership, decentralized management and networking of urban governance and local government-citizen interaction.

They have confined themselves in the discussion on the role of urban governance and its effects on real estate sector. But they have not discussed the obstacles of urban governance's activities and the effects on other sectors of urban governance.

Shafi (2005), has focused his discussion on the location of the city, the attraction of the city and a few suggestions to make it more functional and attractive to its customers.

He has avoided the discussions on the socio-economic and environmental impacts (harmful or helpful) of the city in the article.

In a study *Shakur (2005)*, has discussed about the cultural identity, participation and community, design interface, contested space and new world order and from multiple to multicultural environment.

After the aforesaid discussions, we can come to a solution that though there have been available works on various aspects of urbanization in Bangladesh, they are not sufficient either to identify specifically the real problems existing in this sector or to suggest an effective policy to overcome the problems.

We can point out the following research gaps from the above reviewed literature, which requires more study. The main research gaps are:

Maximum studies have been carried out on various aspects separately and partially, which happens in an urban area. None has made any study on the socio-economic and environmental impacts of urbanization in urban area, which is the main problem. Although, some studies have been conducted on socio-economic and environmental aspects of urban area, these studies are mainly concentrated on partial aspects of urban area and mostly they have tried to identify its negative sides only. An in-depth study on these issues still to come.

So, the researcher has felt that through the present study, it is possible to evaluate the existing situation and the trends and impacts of urbanization in Bangladesh covering the period from 1991 to 2006.

The present study can be considered as a worth mentioning effort to fulfill the gaps. It may not be sufficient to fulfill all the aforesaid gaps, but it may be considered as a step forward to the problem.

CHAPTER THREE

DATA, SPECIFICATION AND METHODOLOGY

The study is based on both primary and secondary data.

3.1 The Study Area

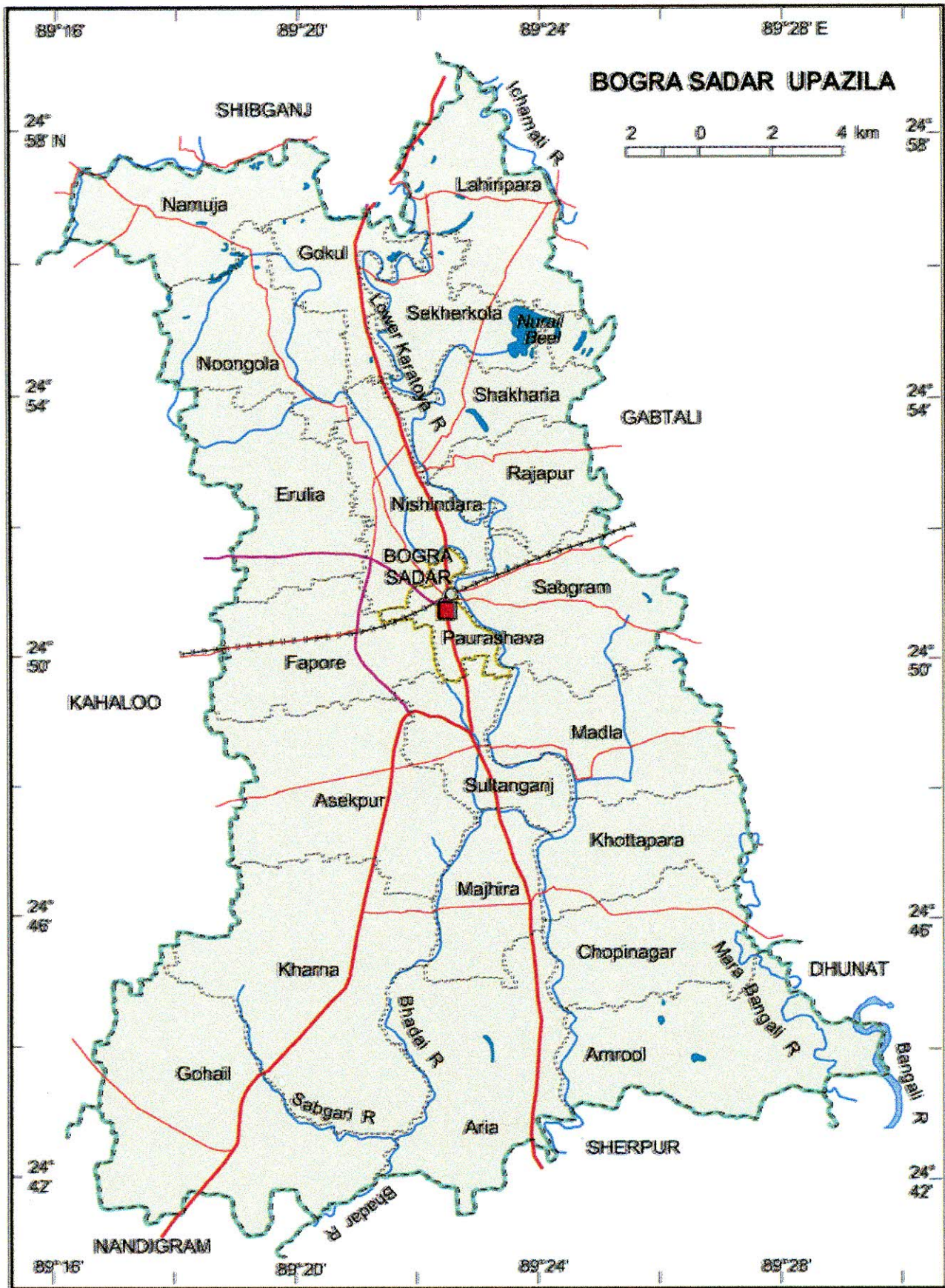
The area covered by this study, comprises Bogra sadar upazila of Bogra district. For any kind of research, it is necessary to select a study area for fulfillment of the objectives of the research. Acceptability of the data are the another reasons behind the selection to the study area. Bearing this in mind an old and advance urban area (Appendix -01) of Bangladesh, Bogra municipal area has been selected as the study area.

Bogra district is situated between $24^{\circ}32'$ and $25^{\circ}08'$ north latitude and between $88^{\circ}97'$ and $89^{\circ}47'$ east longitude. The district is situated at the eastern part of Rajshahi division. (Bogra district statistics, 1983)

It is surrounded in the north by Joypurhat and Gaibnadhha district, in the south by Sirajganj and Natore district, in the east by Jamuna river and in the west by Naogaon district.

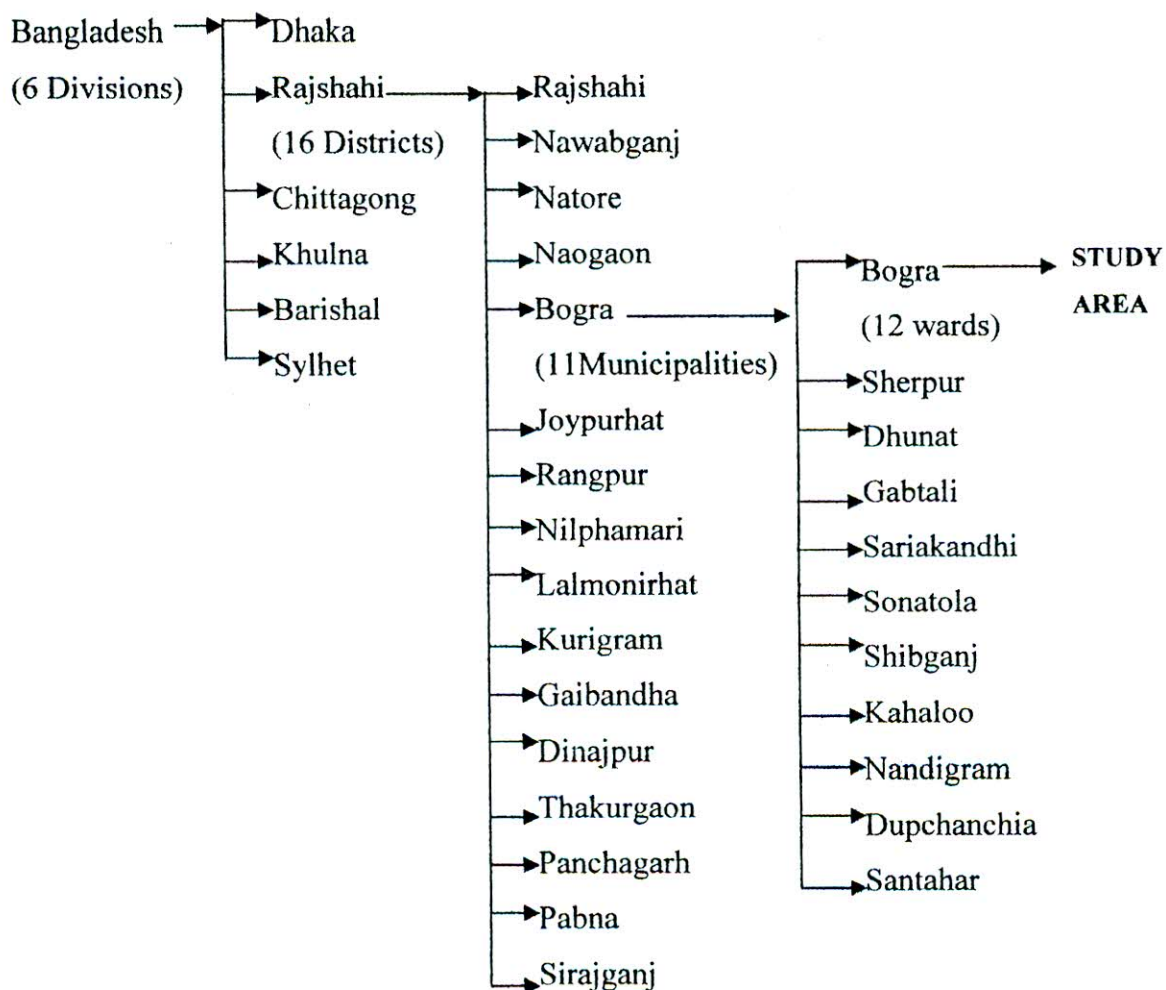
Bogra municipal area is the only urban area of the sadar upzila of Bogra district. Bogra sadar upzila lies between $24^{\circ}41'$ and $24^{\circ}59'$ north latitude and between $89^{\circ}16'$ and $89^{\circ}30'$ east longitude. (Bangladesh Population Census, 1981) It is bounded in the north by Shibganj upazila, in the south by Sherpur and Nandigram upazilas, in the east by Gabtali and Dhunat upazilas and in the west by Kahaloo upazila.

According to the Bengla act 'V' Bogra municipal area was established in July 1, 1876. (Tarafder, 1970) Its area was then 1.25 square mile (3.24 square km.) and population was 7094. It was then



'Second' class ('B' grade) municipality. Now it is a mentionable industrial area of the Northern Region of Bangladesh. Its area is now 14.76 square km. and population is about 3,25,000. It was declared as 'First' class ('A' grade) municipality in August 1, 1981. (Bogra municipal office)

The following diagram has shown the selected area at a glance:



3.2 Rationale of Selecting the Study Area

Bogra is an old district town belonging to Rajshahi division, also known as Northern Region. Most of the urban centres of Bangladesh emerged during the British period as administrative centres. Like wise,

Bogra was founded as an administrative district headquarters in 1821. (Tarafder, 1970)

Bogra district is situated in the middle point of North Bengal. It serves as an 'entrance' to the districts, which are to the north in the Northern Region. The linkages are to such extent that all the urban centres are interlinked directly or indirectly with Bogra. Bogra played a vital role during the severe flood of 1988 in Bangladesh, in which the Northern Region was disconnected from central region. Bogra acted as the collecting and distributing centre to most of the areas of the region for essential goods. It is also financially developed than any other districts of North Bengal.

During the last three years its municipal area has increased rapidly. At present, there are 11 municipalities in the district, which numbered 5 in 2001. (Appendix -01) There is another urban area of Bogra district named 'Talora' is on the way of declaration as a municipal area.

As the main objectives of this research, are to find out the social, economic and environmental impacts of urbanization, Bogra municipal area is seemed as the ideal area to find out the aforementioned objectives.

As the cost, of collection of primary data is expensive and the researcher has found no financial assistance from any source. Moreover, the researcher has faced time constraint as a government employee. Thus the researcher has selected Bogra, where he resides to minimize cost and time constraint.

However, Bogra search as a representative urban area of Bangladesh, because of its location and conditions.

3.3 Sampling Technique

Sampling technique plays a vital role in research work. Sampling provides sufficient information about population. It plays role to select a portion of the population that displays all of the characteristics of the population. When we come to a decision about a population from sampling results, then we want those results to be as representative of the population as possible. If a sample is not similar to the population, there can be no reliability in estimates based on sample results. Though, it is difficult to have a sample that is completely represent of the population.

To get accurate result, it is necessary to select samples, which are not exception from another. So, having the accuracy and representative ness of data it has been taken sample from different areas after consultation with Bogra municipal authority by random sampling method.

3.4 Selection of Respondents

Before selecting of respondents it is necessary to select the sample size. It may fail to fulfill the objectives of the study, when it is too small. On the other hand, it may wastes resources and time, when it is too large. When we select sample, unfortunately we miss some helpful information about the population. To get a high degree of precision, it is necessary to have a sample enough of the population to provide the required information. When sample size is '30' or above it is considered as large sample size. Statistical tools generate more precision about population when sample size is more than '30'. (Levin and Rubin, 2000)

The area of this research is vast. There are 80,000 households living in the study area.

So, though the number of population of this study seems large, to have the greatest quality of sample's representativeness, that is, the degree of similarity and required for valid generalization, it has been taken '133' samples.

The samples of this study have been selected from the aforesaid study area and they have been categorized as follows:

a)	Urban inhabitants (Male-45, Female-45)	: 90
b)	Present municipal chairman and commissioners	: 17
c)	Upazila nirbahy officer	: 01
d)	Upazila fishery officer	: 01
e)	Upazila livestock officer	: 01
f)	Upazila agriculture officer	: 01
g)	Upazila forest officer	: 01
h)	Upazila police officer(OC)	: 01
i)	Sanitary officer of Bogra municipality	: 01
j)	Medical officer of Bogra municipality	: 01
k)	Chief engineer of Bogra municipality	: 01
l)	Tax officer of Bogra municipality	: 01
m)	License officer of Bogra municipality	: 01
n)	Social Elite (Teachers-03, NGO workers-03, Ex. Chairman and Commissioners-03, Businessmen-03, others-03)	: 15

Total= 133

The main respondents (urban inhabitants) of this research are '90' in number, who are the family head. They have represented 0.1125% households. The main respondents are mostly permanent inhabitant, middle class and educate. All information have collected from the aforesaid samples by field survey.

3.5 Sources of Data

The feasibility of a research mainly depends on the sources of data. The data must be reliable and representative. The primary and secondary sources of data are the basis of the research. The primary data of this research have collected from field level and the secondary data of this research have collected not only from various government, semi government and non government organizations but also from web site.

3.5.1 Primary Sources

The primary data has collected from grass root level by the trained investigators through field survey. Before finalizing the questionnaire, a pretest of the questionnaire was conducted. '14' sets of questionnaire including '147' 'closed' and 'open' ended questions (Appendix -02) were used for this study. These were as follows:

Respondent	Number of questionnaire set	Number of question
Urban inhabitants (Male-45, Female-45)	1 set	50
Present municipal chairman and commissioners	1 set	15
Upazila nirbahy officer	1 set	09
Upazila fishery officer	1 set	09
Upazila livestock officer	1 set	06
Upazila agriculture officer	1 set	06
Upazila forest officer	1 set	06
Upazila police officer(OC)	1 set	06
Sanitary officer of Bogra municipality	1 set	06
Medical officer of Bogra municipality	1 set	06
Chief engineer of Bogra municipality	1 set	06
Tax officer of Bogra municipality	1 set	06
License officer of Bogra municipality	1 set	06
Social Elite (Teachers-03, NGO workers-03, Ex. Chairman and Commissioners-03, Businessmen-03, others-03)	1 set	10
Grand total	14 Sets	147 Questions

3.5.2 Secondary Sources

The secondary data was collected from related all published and reported materials including books, journals, research reports, official documents, theses and dissertations. Documents available in Bogra municipal office, Bogra sadar upazila statistics office, Bangladesh bureau of statistics, other government offices, various NGOs were also considered as major sources of secondary data. Besides these, various research works done on urban areas in other countries were also considered as secondary sources.

Web sites were also explored but the researcher was not able to receive necessary information, because maximum of the information were not usable for their irrelevance in respect of Bangladesh.

3.5.3 Information Collected

From the primary sources data on age structure, educational facilities and literacy rate, health care and maternity services, family planning activities, migration, population density, traffic jam, women empowerment, social consciousness, norms and values, social recreational facilities, financial classification, occupational structure, consumption pattern, housing pattern, sources of drinking water, electricity facility, transport and communication, financial institutions, land value, land ownership, house ownership, flora, fauna, cultivation, sanitary facilities, sewerage systems, pollution, slums, drug addiction, prostitution and law and order situation were collected.

3.6 Period of Data Collection

The data (mainly primary), which are necessary for this research was collected throughout the research period till July 2004 to June 2006.

Some relevant data have also been collected before and after the research period.

Secondary data were also collected throughout the aforementioned period.

Field observation, collection of necessary data from various government, semi-government and non government sources with internet search were also completed in the mentioned period.

3.7 Methods of Data Collection and Brief History of Field Work

The term 'Method' comes from the Greek words 'Meta' (with after) and 'Hodos' (way). It means an apt of doing some thing with brevity, thoroughness and security. A method is some times confused with a technique but they are different. The method of a study applies to the whole process or procedures that are to be followed in the study, while technique consists in the means used or mode, in which the whole method or stage of it is to be followed. (Khan, 1969)

Various methods, such as historical method, comparative method, case study method, statistical method, observation method, interview method, questionnaire method, schedule method, survey method etc. have used in socio-economic and environmental investigations. However, so far as the methods are concerned, there is no single method for the study of socio-economic and environmental phenomenon.

In this research mainly interview, observation, survey and questionnaire methods are used. Several sets of questionnaire were prepared according to the categories of the samples and for necessary purposes. '10' (ten) trained field investigators were appointed in this regard. Three months long field work program, divided into three trips were made for collection of primary data. The trips were as follows:

Trip one: From August 1, 2005 to August 31, 2005

Trip two: From October 1, 2005 to October 31, 2005 and

Trip three: From December 1, 2005 to December 31, 2005.

The appointed investigators were graduate, smart and skill. The data collected from first trip of field work were scrutinized and brought it to the knowledge of the supervisor of this study for necessary instruction.

To overcome the weakness of the collected data, second trip of field work was made as per instruction of the supervisor.

After second trip the revised data was brought to the knowledge of the supervisor again, for more instruction.

Finally the third trip was completed and the final data was brought to the knowledge of supervisor for his kind consent for processing and analysis.

3.8 Methods of Data Processing and Analysis

Collected primary data was processed after necessary checking and editing. The secondary data, used in this research was included after checking its acceptability carefully. The secondary data was also cross checked with primary data to determine its reliability.

The conclusion of the thesis has both qualitative and quantitative aspects. Therefore, attempts have made to give social, economic and environmental interpretation of various trends and phenomenon obtained from the analysis of the data.

There are two kinds of impact. One is gross impact and the other is net impact. Though, in this research it has touched about net socio-economic and environmental impacts of urbanization, but has given priority to determine the gross socio-economic and environment impacts of urbanization in Bogra municipal area during 1991 to 2006.

3.9 Limitations of the Collected Data

For research, collection of data directly from the field is difficult. The respondents (even government officials) some times hide facts. Access to some government offices is difficult. Ignorance and illiteracy of the respondents is also liable to get correct data.

The collection of accurate data also depends on the honesty, interest, personality, temperament, intelligence and education of the data collector.

Selecting the sample size from the total sample is also important, because it may give rise to bias in the data.

Keeping it in mind the role of these factors, all the precautionary measures were taken to collect fair data from the sources.

3.10 Reliability of the Collected Data

In any research work, quality depends upon the quality of the data used. The degrees of reliability of data, which have collected from field survey, are related with three main factors. They are the subject of enquiry, the class of respondents and the structure of the questions in the questionnaire.

In this study all possible precautionary measures were taken to get reliable data and to remedy all possible conclusiveness. Some of the measures are as follows:

Firstly, data was verified wherever possible by finding second source of information.

Secondly, the questionnaire was prepared objectively and straight forward and

Thirdly, where ever possible, efforts were made to explain facts as participant observer.

Besides, during the house hold survey, interviews were taken at the respondents houses through schedules. Since, the heads of the house holds were selected for interview, it was anticipated that there was a fair chance of getting reliable information.

The logic behind this anticipation is that the heads of the households are decision maker and are responsible for the maintenance of the households.

On the other hand the data was collected form secondary sources was not only received carefully after checking their acceptability , but also was cross checked with primary data and information form other sources to determine its reliability.

Hence, it can be said that the data collected from both primary and secondary sources for the present study are quite reliable and authentic.

In the following chapters the main results, i.e. social, economic and environmental impacts of urbanization are presented subsequently.

CHAPTER FOUR

SOCIAL IMPACT OF URBANIZATION

Social impact means all kinds of impact or change happens by some particular reasons on social characteristics. So, social impact of urbanization indicates all kinds of impact or change happens for urbanization process on social characteristics.

Bogra is an old district of North Bengal. It is a developed area. The people of this area are active and mainly engage in agricultural sector. Its land is fertile. Agricultural products grow abundant here. It is free from natural calamities. Social relation is very well among the people of this district. Its people are being educated. Modern facilities of medical care are present. There is a medical college in this district. Social facilities like education, health care service, recreational facilities etc. are available here. For its attractive social facilities people are being migrated here rapidly and for this it is facing various social problems.

In this chapter, social impact of urbanization in Bogra municipal area during 1991 to 2006 will be presented. Among the factors, age structure, educational facilities and literacy rate, health care and maternity services, family planning activities, migration, population density, traffic jam, women empowerment, social consciousness, norms and values and social recreational facilities will be discussed based on the collected information.

4.1 Impact of Urbanization on Age Structure

Age structure is an important factor for a country specially for urban area. It plays a vital role in urban development.

*Dependency ratio derives from age structure, which indicates the percentage of dependent people compared with independent people. To determine the dependency ratio, population in age groups of 0-14 and 60+ are counted as dependent or inactive, while population in age group 15-59 is counted as independent or active. Thus, it can be said that the social development will be faster or slower depending on the increase or decrease of the proportion of population in the independent group. The reverse will be result with increasing or decreasing proportion of the dependent people.

The impact of urbanization on age structure in Bogra municipal area during 1991 to 2006 has shown in Table -4.1.

Table -4.1
Age Structure

Age Group \ Year	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
0-14	58283 (48.50)	65171 (47.92)	74895 (46.74)	147615 (45.42)	171 (41.81)	+153.27
15-59	56288 (46.84)	63784 (46.90)	75792 (47.30)	155805 (47.94)	211 (51.59)	+176.80
60+	5599 (4.66)	7045 (5.18)	9550 (5.96)	21580 (6.64)	27 (6.60)	+285.43
Total population	120170 (100)	136000 (100)	160237 (100)	325000 (100)	409 (100)	+170.45
Dependency ratio	113.49	113.22	111.42	108.59	93.84	-4.90

**Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

Note: *Dependency Ratio Formula:

$$\left[\frac{\text{Population in 0-14 years} + \text{Population in 60 and above years}}{\text{Population in 15-59 years}} \times 100 \right]$$

From the above table it can be observed that population of age group 0-14 have increased by 153.27%, age group 15-59 have increased by 176.80%, age group 60+ have increased by 285.43% and total population have increased by 170.45% during the period of 1991 to 2006.

The table has also focused that dependency ratio has decreased by 4.90% during the same period, which is encouraging for development. Decreasing dependency ratio indicates decreasing dependent or inactive people and increasing independent or active people.

Population in age group 0-14 have increased lower than the total population. It may be due to decreased household sizes, which is noticeable in Table-4.4.

From the table it can also be seen that population in age group 60+ have increased higher than the total population. This indicates that longevity of people is increasing. This may be by dint of modern science, which is supported by Table-4.3.

The field survey report of 2006 has shown that the dependency ratio is 93.84% and this result is similar to the result obtained from secondary sources.

Based on the above discussions it can be said that the impact of urbanization on age structure in Bogra municipal area during 1991 to 2006 is infavour of urban development.

4.2 Impact of Urbanization on Educational Facilities and Literacy Rate

'Education is the backbone of a nation' is an old wise saying. Educational institutions play a vital role to make people literate. Literacy is essential for social advancement, economic development and democratic practice in a country. Literacy also influences fertility,

mortality and social consciousness. Thus, analysis of educational facilities and literacy rate of an area is the basis to the comprehensive study of its social structure.

The impact of urbanization on educational facilities and literacy rate of Bogra municipal area during 1991 to 2006 is shown in Table -4.2.

Table - 4.2
Educational Facilities and Literacy Rate

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Kinder garten school	16	22	28	28		+75
Primary school	26	28	31	31		+19.23
High school	14	18	21	22		+57.14
College	4	5	6	12		+200
Madrasha	5	6	6	11		+120
Total	65	79	92	104		+60
Literate population *(7+ years)	61020 (63)	70356 (64)	85984 (66)	186168 (70)	376 (97.66)	+205.09
Total population (7+ years)	96857 (100)	109932 (100)	130279 (100)	265954 (100)	385 (100)	+174.58

* '7+ years' means seven and above years old.

** Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

The aforesaid table has shown that the number of kindergarten schools have increased by 75%, primary schools by 19.23%, high schools by 57.14%, colleges by 200% and madrashas by 120% respectively during 1991 to 2006.

On the other hand the number of literate population (7+ years) have increased by 205.09% and total population (7+ years) have increased by 174.58% in the same period.

Though, the number of kindergarten schools, primary schools, high schools and madrashas have increased lower than total population (7+ years), the number of colleges have increased more than that.

On the other hand the number of madrashas have increased more rate than the number of kindergarten schools, primary schools and high schools. Probably, it has happened for ruling parties' movement during 2001 to 2006. In case of colleges (+200%) it may happened also for same reason.

The number of kindergarten schools have increased more than primary schools. That is, people are being attracted by non government sectors. Though it is costly, but it is reasonable to the people now-a-days.

Moreover, the number of literate population (7+ years) have increased more than the number of total population (7+ years), which means people are being conscious and it is supported by section 4.9.

The field survey report in 2006 has shown that the number of literate population (7+ years) are 97.66%, which supports strongly the result obtained from the secondary sources.

The aforesaid discussions help us to conclude that the impact of urbanization on educational facilities and literacy rate in Bogra municipal area during 1991 to 2006 is positive.

4.3 Impact of Urbanization on Health Care and Maternity Services

Health care and maternity services is an important element of measuring social status of an area. It confirms the consciousness, educational quality and financial condition of an area. It is usual to have a developed health care and maternity services in a developed area. Bogra municipal area is undoubtedly a developed area by dint of urbanization. So, its health care and maternity services may be developed by dint of

urbanization. To justify this, it is necessary to find out the impact of urbanization on health care and maternity services in Bogra municipal area. The fact is shown in Table - 4.3.

Table - 4.3
Condition of Health Care and Maternity Services

Kind \ Year	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Hospital	7	7	7	8	+14.29
Private clinic	8	17	22	49	+512.5
Pathological centre	4	16	23	38	+850
Vaccination centre	5	7	7	8	+60
Blood bank	8	11	9	5	-37.5
Doctor	92	110	145	164	+78.26
Nurse	195	250	310	475	+143.59
Homeopathic medical centre	32	26	24	18	-43.75
Ayurvedic medical centre	9	8	8	6	-33.33
Total population	120170	136000	160237	325000	+170.45

Source: Civil surgeon office, Bogra; Homeopathic doctors association, Bogra and Ayurvedic association, Bogra.

It can be seen from the above table that the number of hospitals have increased by 14.29%, private clinics have increased by 512.5%, pathological centres have increased by 850%, vaccination centres have increased by 60%, blood banks have decreased by 37.5%, doctors have increased by 78.26%, nurses have increased by 143.59%, homeopathic medical centres have decreased by 43.75% and ayurvedic medical centres have decreased by 33.33% between 1991 and 2006.

While total population have increased by 170.45%, the number of private clinics and pathological centres have increased more than that. The number of hospitals, vaccination centres, doctors and nurses have increased lower than total population.

On the other hand the number of blood banks, homeopathic medical centres and ayurvedic medical centres have decreased.

Thus the result indicates that the impact of urbanization on health care and maternity services in Bogra municipal area during 1991 to 2006 is in favour of urban inhabitants.

It is worthwhile to mention it have that the number of private clinics and pathological centres have increased very rapidly. This reminds us the successful story of privatization.

The number of blood banks have decreased probably for a voluntary organization '*Sandhani blood bank*', which is directed by the students of '*Bogra medical college*'.

It is also mentioned that the number of homeopathic medical centres and ayurvedic medical centres have decreased, which indicates that people are inclining towards modern medical facilities.

The field survey report has shown that 8, 5 and 77 respondents among 90 have used respectively homeopathic (i. e., 8.89%), ayurvedic (i. e., 5.56%) and allopathic (i. e., 85.56%) mode of treatment. The report has also shown that 82 respondents among 90 (i. e., 91.11%) have opined health care and maternity services have increased. These are similar to the results of secondary sources.

4.4 Impact of Urbanization on Family Planning Activities

Population problem is considered the major problem not only for Bangladesh but also for the world. Bogra municipal area is not out of this problem. Its population has increased by 170.45% during the years 1991 to 2006. So family planning activities was necessary here. Here family planning means *'Preplanned family to control its member'*. Now, our government is suggesting to every couple *'Take one off-spring and not more than two'*.

Family planning activities may be directed by different processes. Our government is trying to control its population throughout the country by *'Ministry of Health and Family Welfare'*.

The impact of urbanization on family planning activities in Bogra municipal area during 1991 to 2006 is shown in Table - 4.4 .

Table - 4.4
Family Planning Activities in Bogra municipal area

Year	User of family planning materials	Average size of household	Total family
1991	19712 (83)	5.06	23749 (100)
1996	24469 (86)	4.78	28452 (100)
2001	32342 (88)	4.36	36752 (100)
2006	70400 (88)	4.06	80000 (100)
Field survey (2006)	69 (77.53)	4.54	89(100) (one family head is unmarried)
Gross change(%) from 1991 to 2006	+257.14	-19.76	+236.86

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

The above table indicates that the number of family planning materials users have increased by 257.14%, the average size of households have decreased by 19.76% and the number of total family have increased by 236.86% during 1991 – 2006 period.

Though the increasing of total family is high, the increasing of family planning materials users is higher than that. This may due to increased consciousness of the people.

On the other hand due to higher increasing rate of family planning instrument users, average size of households have decreased considerably.

According to the field survey report, 77.53% respondents have opined that they use family planning instruments and average size of households is 4.54, which supports the facts derived from the secondary data.

After summarizing the aforementioned discussions, it is clear that the impact of urbanization of family planning activities in Bogra municipal area during 1991 to 2006 is hopeful and helpful for urban citizens and society.

4.5 Impact of Urbanization on Migration

Migration means shifting from one place to another. People shift from one place to another for their own necessity. Two main factors influence migration. They are, pull factor and push factor. Generally people migrate from undeveloped to developed area, such as, rural to urban area or less industrial area to more industrial area in case of internal migration. Bogra municipal area is not only an urban area but also an industrial area. So, it is facing problems created from migration specially

after liberation in 1971. Table 4.5 has illustrated the impact of urbanization on migration in Bogra municipal area during 1991 to 2006.

Table - 4.5
Trend of Migration

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Inmigrant	55074 (45.83)	66763 (49.09)	85278 (53.22)	238023 (73.24)	276 (67.48)	+332.19
Outmigrant	12500 (10.40)	19816 (14.57)	27850 (17.38)	38773 (11.93)	58 (14.18)	+210.18
Total population	120170 (100)	136000 (100)	160237 (100)	325000 (100)	409 (100)	+170.45

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

From the above table it can be seen that the number of inmigrants have increased by 332.19% as compared to 210.18% increase of out migrants. The total population have increased by 170.45% during the same period.

Inmigration is much higher than the outmigration. Thus there is a substansial increase in the net migration (Inmigration – Outmigration = Net migration), which is an important factor for the increased of the total population.

Thus, it can be said that in spite of increasing family planning instruments users (Table-4.4), the positive net migration contributes to the total population of Bogra municipality which have increased very high 170.45% during 1991 to 2006. Annual increase is about 12%.

According to the field survey (in 2006) report the in and out migrants are respectively 67.48% and 14.18%.

The number of inmigrants have increased rapidly during 2001 to 2006 period and it becomes from 85278 to 238023 in number. Probably it

has happened for tremendous development of municipal area in the same time.

After the above discussions we can understand that the impact of urbanization on immigrants is very much inconvenient and on out migrants is convenient. Immigrants are 2 times than outmigrants in number. That is the impact of urbanization on migration in Bogra municipal area during 1991 to 2006 is inconvenient, which creates various problems for urban inhabitants.

4.6 Impact of Urbanization on Population Density

Population density means the number of people living per unit of area. It may be the root of all social, economic and environmental disorder in our country. Higher density creates more problems. Dense population is one of the mentionable out come of urbanization. Bogra municipal area is also facing this problem. The impact of urbanization on population density in Bogra municipal area during 1991 to 2006 is shown in Table 4.6 below.

Table - 4.6
Population Density of Bogra Municipal Area

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Total population	120170	136000	160237	325000	+170.45
Total area (Km ²)	14.76	14.76	14.76	14.76	Nil
Density (Per Km ²)	8141.6	9214.09	10856.17	22018.97	+170.45

Source: Bogra municipal office and Bogra sadar upazila statistics office.

From the above table it can be seen that total area of the municipality during 1991 to 2006 remain unchanged and it is 14.76 Km². and the density per Km² have increased by 170.45% during 1991 to 2006.

Though the number of total population have increased rapidly by 170.45% during 1991 to 2006, the total area of the municipality is fixed during the internal period. As a result the density of population per Km² has also increased as the same of total population in Bogra municipal area during 1991 to 2006.

So, from the above discussions we have understood that the impact of urbanization on population density is adverse in Bogra municipal area during 1991 to 2006, which is liable for creating various social, economic and environmental problems on urban dwellers in the aforesaid area.

4.7 Impact of Urbanization on Traffic Jam

Traffic jam indicates excess vehicles on road according to the space of the road. It is an important problem of urban areas not only in Bangladesh, but also in the world. It hinders the motion of life and kills working hour. It also hinders social, economic and environmental development. Bogra municipal area is not out of this problem. The impact of urbanization on traffic jam in Bogra municipal area during 1991 to 2006 has shown in Table 4.7.

Table - 4.7
Traffic Jam

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Rickshaw	10000	13500	16000	18000	+80
Rickshaw van	2000	2800	3500	4500	+125
Car/ Jeep/ Micro bus/ Auto rickshaw	2000	2500	2800	3200	+60
Bus/ Mini bus	600	750	900	250	-58.33
Truck/ Mini truck	1100	1350	1500	1800	+63.64
Total vehicle	15700	20900	24700	27750	76.75
Number of traffic police	38	38	38	52	+36.84

Source: Bogra municipal office; Bangladesh road transport authority (BRTA) office, Bogra; Traffic police station, Bogra; Micro bus/ Auto rickshaw/ Bus/ Mini bus/ Truck/ Mini truck owners association, Bogra.

If we look in to Table 4.7, it can be observed that the number of rickshaws have increased by 80%, rickshaw vans have increased by 125%, car / jeep / micro bus/ auto rickshaws have increased by 60%, bus / mini buses have decreased by 58.33%, truck / mini trucks have increased by 63.64%, total vehicles have increased by 76.75% and traffic polices have increased only by 36.84% from 1991 to 2006.

The number of rickshaw vans have increased rapidly, because from 8 pm. to 8 am. the access of truck / mini trucks is prohibited in Bogra municipal area. The rickshaw van serves as a substitute for trucks and pick ups.

The number of bus / mini buses has decreased, because bus / mini bus terminal has transferred out side of Bogra municipality after 2001.

52 traffic polices have maintained 27750 vehicles from only 8 points, which is insufficient to the needs.

According to the field survey report in 2006, 72 respondents among 90 (i. e., 80%) have opined that traffic jam has increased, which is similar to the result of secondary sources.

Thus the impact of urbanization on traffic jam in Bogra municipal area during 1991 to 2006 is also adverse for the citizens of the aforesaid area.

4.8 Impact of Urbanization on Women Empowerment

Women empowerment means women in power. It begins from family. Women constitute not only half of the total population, but also play a vital role to develop a nation or society. Women empowerment is necessary for social balance. So, they should be empowered. In modern societies women are being empowered not only in family, but also in national and international level. It is a symbol of measuring the standard of a society. A society is advanced if women are empowered there. Urbanization helps a society to be advanced. It also helps the women to be empowered. Women empowerment depends on various aspects, such as- literacy, employment, social status, awareness, health, character, figure, colour, beauty, personality, assets, skillness etc. of women.

The impact of urbanization of women empowerment in Bogra municipal area during 1991 to 2006 is shown in Table 4.8.

Table - 4.8
Women Empowerment

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Literate women *(7+years)	15021 (38.7)	17793 (39.31)	33635 (61.26)	72157 (64.97)	154 (94.48)	+380.37
Total women (7+years)	38813 (100)	45263 (100)	54905 (100)	111062 (100)	163 (100)	+186.15
Women employee **(10+years)	4438 (12.5)	6210 (15)	10044 (20)	27409 (26.98)	32 (20.38)	+517.60
Total women (10+years)	35502 (100)	41402 (100)	50222 (100)	101590 (100)	157 (100)	+186.15

* '7+ years' means seven and above years old.

** '10+ years' means ten and above years old.

***Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

In Table 4.8 it can be seen that the number of literate women (7+ year) have increased by 380.37% and total women (7+ years) have increased by 186.15% during 1991 to 2006.

On the other hand the number of women employees (10+ years) have increased by 517.60% and total women (10+ years) have increased by 186.15% from 1991 to 2006.

Although the number of total women (7+ years) have increased more, the number of literate women (7+ years) have increased even more than that. It may be due to parent's eagerness and government motivation.

On the other hand the number of total women (10+ years) have also increased more, but the number of women employees (10+ years) have increased even more, than that. Women education, quotas in various jobs, social recognition and eagerness of the families are helping to increase the number of women employees.

According to the field survey (in 2006) report 94.48% women (7+ years) are literate and 20.38% women (10+ years) are employed. On the

other hand participation of women in taking family decision is 93.33% (84 among 90).

From the above discussions it is obvious that the impact of urbanization on both women literacy (7+ years) and women employment (10+ years) is helpful.

4.9 Impact of Urbanization on Social Consciousness

Social consciousness is an important element in measuring the social standard. The degree of social consciousness is higher in upper class of the society. On the other hand, it is lower in lower class of society. Since urban area contains upper class society, so the degree of social consciousness is higher. The impact of urbanization on social consciousness in Bogra municipal area during 1991 to 2006 is shown in Table 4.9.

Table - 4.9
Social Consciousness

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Number of Daily newspaper	18	22	24	28	+55.56
Total circulation	15500 (65.266)	20000 (70.294)	23000 (62.582)	29000 (36.25)	+87.10
Number of Weekly/ Fortnightly/Monthly magazine	22	25	30	36	+63.64
Total circulation	3800 (16.001)	4600 (16.168)	5400 (14.693)	8000 (10)	+110.53
Number of Radio	9000 (37.896)	12500 (43.934)	15000 (40.814)	22000 (27.5)	+144.44
Number of Television	4500 (18.948)	8000 (28.118)	15500 (42.175)	32000 (40)	+611.11
Total family	23749 (100)	28452 (100)	36752 (100)	80000 (100)	+236.86

*Figures in the parentheses indicate percentages.

Source: Hawker labour union, Bogra; Bogra head post office; Janata bank, Bogra main branch and Shop owners association, Bogra.

From the above table one can see that the number of daily newspapers have increased by 55.56%, total circulation of daily newspapers have increased by 87.10%, weekly / fortnightly / monthly magazines have increased by 63.64%, total circulation of weekly / fortnightly / monthly magazines have increased by 110.53%, radios have increased by 144.44%, televisions have increased by 611.11% and total family have increased by 236.86% from 1991 to 2006.

Though the number of total family have increased, the number of televisions have increased more than that, which is also supported by Table 5.3. Probably it has happened for financial upliftment (Table-5.1) of urban dwellers.

In case of the number of daily newspapers, their total circulation, total circulation of weekly / fortnightly / monthly magazines, and radios have increased at a lower rate than total family.

The field survey report (in 2006) has focused out that 66 respondents among 90 (i. e., 73.33%) read daily newspapers regularly, 58 respondents among 90 (i. e., 64.44%) listen radio programs with news regularly and 80 respondents among 90 (i. e., 88.89%) watch television programs with news regularly, which have strongly supported the results have gained from secondary sources.

4.10 Impact of Urbanization on Norms and Values

Norms and values play a vital role in maintaining the social order. It helps to develop people's character. The degree of norms and values of a person focuses his truthfulness, honesty, ethicality etc. Family, religious practice, society and social environment help a person to increase his norms and values.

Here in the Table 4.10 the impact of urbanization on norms and values in Bogra municipal area during 1991 to 2006 is shown.

Table - 4.10
Impact of Urbanization on Norms and Values

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Number of Mosque	125	125	130	140	+12
Number of Mandir	5	7	7	8	+60
Number of Church	1	1	1	1	Nil
Number of Pagoda	Nil	Nil	Nil	Nil	Nil

Source: Bogra municipal office; Bogra Imam association and Hindu-Bauddho-Christian allied association, Bogra.

From the table it can be observed that while the number of mosques have increased by 12%, mandirs have increased by 60%. The church remains unchanged in numbers during the 1991 to 2006 period.

According to the field survey report held in 2006, 72 respondents among 90 (i. e., 80%) have opined that they pray regular according to their own religion.

The results have obtained from the field survey report and secondary sources support each other.

Since religious practice gets priority to increase ones norms and values so, it can be assumed that the impact of urbanization on norms and values in Bogra municipal area during 1999 to 2006 is positive.

4.11 Impact of Urbanization on Social Recreational Facilities

Recreation means free from all kinds of pressure. Recreation is necessary for human. Man can not live without recreation. The necessity of recreation has felt more to the people of this competitive era. The people of urban area lead more competitive life than the people of rural area. So, they need more recreational facility. The people of Bogra

municipal area are not out of this. Here social recreational facilities means places for recreation, such as- park, cinema hall, play ground and theatre. Now the impact of urbanization on social recreational facilities in Bogra municipal area during 1991 to 2006 has shown in the following Table 4.11.

Table - 4.11
Social Recreational Facilities

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Number of Park	2	2	2	5	+150
Number of Cinema hall	6	7	7	5	-16.67
Number of Play ground	7	7	7	7	Nil
Number of Theatre	5	5	6	7	+40

Source: Bogra municipal office and Bogra sadar upazila statistics office.

The above table has focused that the number of parks have increased by 150%, cinema halls have decreased by 16.67%, play grounds have unchanged and theatres have decreased by 40% during 1991 to 2006.

The number of parks have increased rapidly because of private sector participation in this field. This sector has become profitable and many private investors have come forward in establishing small size parks.

On the contrary, the reason of decreasing cinema halls is that, people are being capable to watch cinema by television with the help of satellite channel, Video Cassette Player (VCP), Video Cassette Recorder (VCR), Video Compact Disk (VCD), Digital Versatile Disk (DVD) etc. in their own residence. Thus the cinema industry is at stake.

According to the field survey report (in 2006) 76 respondents among 90 (i. e., 84.44) have opined that recreational facility increases, which is not contradictory with the results have collected from secondary sources.

Thus it would not be erroneous to conclude that the impact of urbanization on social recreational facilities is favourable.

In this chapter we have discussed about the impact of urbanization on 11 main factors related with society for measuring the impact of urbanization on society in Bogra municipal area during 1991 to 2006.

In brief we can summarize the outcome that there are favourable impact of urbanization on age structure, educational facilities and literacy rate, health care and maternity services, family planning activities, women empowerment, social consciousness, norms and values and social recreational facilities.

Contrary to this, there are negative impact of urbanization on migration, population density and traffic jam.

In the following chapter we would focus our attention on the economic impact of urbanization.

CHAPTER FIVE

ECONOMIC IMPACT OF URBANIZATION

Since Bogra is an advanced industrial and commercial area of North Bengal, hence, the people of this district are financially developed. The Tajma ceramic industry of Bogra is the first ceramic industry of the country. Its product was exported to England. Now the industries of Bogra are fulfilling not only the demand of North Bengal, but also the demand of other areas in Bangladesh. Its curd is famous in the country. It is also highly popular in foreign countries. It is the centre for all commercial activities of North Bengal. For being a financially developed area, living cost is relatively higher here. Its transportation and communication system is developed. For suitable transportation and communication system and its attractiveness, it is facing various problems by rapid increasing immigrants.

By economic impact it includes all kinds of impact or change happens by some particular reasons on economic characteristics. So, economic impact of urbanization means all kinds of impact or change happens for urbanization process on economic characteristics.

In our analysis impact of urbanization in Bogra municipal area on economic aspects indicate impact or change on main economic characteristics like financial classification, occupational structure, consumption pattern, housing pattern, sources of drinking water, electricity facility, transport and communication, financial institutions, land value, land ownership and house ownership.

5.1 Impact of Urbanization of Financial Classification

Financial classification means financial division, which has focused the economic status of individuals in society. If differences between economic classes in society increases, then economic clash increases, which affects on the one hand economic order and on the other hand social order. Financial classification is an important indication to measure the economic impact of urbanization in a particular area.

The impact of urbanization on financial classification in Bogra municipal area during 1991 to 2006 is shown in the following Table 5.1 .

Table - 5.1

Classification According to Income Group

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Upper class *(Per day 10\$<)	385 (0.32)	762 (0.56)	1250 (0.78)	3000 (0.92)	Nil	+679.22
Upper middle class (Per day 5\$<10\$)	5180 (4.31)	6377 (4.69)	8028 (5.01)	18005 (5.54)	24 (5.87)	+247.59
Lower middle class (Per day 2\$<5\$)	44104 (36.70)	49122 (36.12)	65600 (40.94)	195670 (60.21)	236 (57.70)	+343.66
Poor (Per day 1\$<2\$)	19994 (16.64)	22195 (16.32)	28865 (18.01)	40075 (12.33)	98 (23.96)	+100.44
Extreme poor (Per day<1\$)	50507 (42.03)	57544 (42.31)	56494 (35.26)	68250 (21)	51 (12.47)	+35.13
Total population	120170 (100)	136000 (100)	160237 (100)	325000 (100)	409 (100)	+170.45

* '\$' means Dollar (United States of America).

** Figures in the parentheses indicate percentages.

Source: Bogra sadar upazila statistics office; Income tax office, Bogra circle and Field survey.

The above table indicates that the number of people have increased by some 679% in the upper class, 248% in the upper middle class, 344%

in the lower middle class, 100% in the poor class and 35% in the extreme poor class respectively.

The increase of the upper, upper middle and lower middle class is higher than the increase of total people. This is an indication of improvement in the standard of living. One reason behind this increasing the upper class may be the special development works done by the government during the last five years (about 20 billion taka) in Bogra municipality and adjacent areas.

Field survey report does not confirm fully this fact. This is due to the hiding of facts by the upper class in exposing their income to the researcher. Also may be due to some statistical biasness of the sample.

According to the above discussions in the Table 5.1, it can declare doubtlessly that the impact of urbanization on financial classification in Bogra municipal area during 1991 to 2006 is helpful, which is a sign of financial development in the aforesaid area.

Note: The financial unit has determined in dollar (USA) as secondary unit for avoiding inflation and deflation of taka. The Dollar-Taka exchange rates have shown in the Appendix -01.

Financial limits of poor and extreme poor group have determined according to the definition of UNDP (the people, who earns from one dollar to less than two dollar per day are poor and who earns less than one dollar per day are extreme poor).

On the other hand financial limits of upper class, upper middle class and lower middle class have determined after discussion with Bogra sadar upazila statistics office according to the living cost in the study area.

5.2 Impact of Urbanization on Occupational Structure

Occupational structure is another important indicator for measuring economic impact of urbanization. It discusses about various kinds of occupation, in which people are engaged. One's occupation determines not only his economic status, but also his social status. The impact of urbanization on occupational structure in Bogra municipal area is shown in Table 5.2.

Table - 5.2
Occupational Structure

Kind \ Year	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Total unemployed *(10+years)	22791 (30.99)	30028 (35.81)	43225 (43.09)	75857 (36.66)	156 (42.62)	+232.84
Total employed (10+years)	50753 (69.01)	53835 (64.19)	57096 (56.91)	131051 (63.34)	210 (57.38)	+158.21
Total population (10+years)	73544 (100)	83863 (100)	100321 (100)	206908 (100)	366 (100)	+181.34

* '10+years' means ten and above years old.

** Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upzala statistics office and Field survey.

The above table has depicted that the number of total unemployed people (10+ years) have increased by 232.84%, total employed people (10+ years) have increased by 158.21% and total population (10+ years) have increased by 181.34% during 1991 to 2006.

Though the number of total population (10+ years) have increased, the number of total unemployed people (10+ years) have increased more than that and the number of total employed people (10+ years) have increased slower than that.

The number of total unemployed people (10+ years) have increased rapidly for rapid increasing of immigrants, which is supported by Table-4.5.

People, working in the construction work have increased faster (Appendix-01) during 2001 to 2006 for increasing volume of public

Note: To know details about occupational structure of Bogra municipal area during 1991 to 2006, see Appendix - 01.

works. People working in the service sector have also been increased faster.

The field survey report shows that the number of total unemployed people (10+ years) are 42.62% and the number of total employed people (10+ years) are 57.38%, which are similar to the information obtained from secondary sources.

From the above table it has observed that the impact of urbanization on employment is favourable but this is much lower than the adverse affect on unemployment. Thus the net impact of urbanization on employment in the study area is negative. This may be a cause of towards creating problems for municipal area.

5.3 Impact of Urbanization on Consumption Pattern

Consumption means to enjoy and get utility from some thing. On the other hand consumption pattern means the list of items, which are consumed by particular consumer. From ones consumption pattern we can determine not only his economic status but also his living status in the society. Consumption of luxurious items increases ones social honour. The impact of urbanization on consumption pattern is shown in Table 5.3.

Table - 5.3
Consumption Pattern

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Radio/ Tape recorder	38 (42.22)	56 (62.22)	69 (76.67)	82 (91.11)	+115.79
Television (black and white)	32 (35.56)	32 (35.56)	29 (32.22)	17 (18.89)	-46.88
Television (colour)	14 (15.56)	26 (28.89)	44 (48.89)	68 (75.56)	+385.71
Refrigerator	12 (13.33)	24 (26.67)	38 (42.22)	62 (68.89)	+416.67
Air conditioner	2 (2.22)	3 (3.33)	6 (6.67)	8 (8.89)	+300
Electric fan	78 (86.67)	86 (95.56)	90 (100)	90 (100)	+15.38
Washing machine	Nil (0)	Nil (0)	11 (12.22)	26 (28.89)	+ α
Oven	Nil (0)	Nil (0)	3 (3.33)	8 (8.89)	+ α
Car/Jeep	Nil (0)	Nil (0)	Nil (0)	2 (2.22)	+ α
Box khat	Nil (0)	3 (3.33)	19 (21.11)	34 (37.78)	+ α
Sofa set	17 (18.89)	29 (32.22)	42 (46.67)	79 (87.78)	+364.71
Show case	46 (51.11)	63 (70)	72 (80)	84 (93.33)	+82.61
Wardrobe	3 (3.33)	11 (12.22)	36 (40)	48 (53.33)	+1500
Bicycle	28 (31.11)	35 (38.89)	48 (53.33)	66 (73.33)	+135.71
Motor cycle	7 (7.78)	12 (13.33)	23 (25.56)	48 (53.33)	+585.71
Dressing table	58 (64.44)	74 (82.22)	82 (91.11)	88 (97.78)	+51.72
Dyning table	46 (51.11)	53 (58.89)	68 (75.56)	83 (92.22)	+80.43
Almirah (steel)	23 (25.56)	34 (37.78)	44 (48.89)	41 (45.56)	+78.62
Total family	90 (100)	90 (100)	90 (100)	90 (100)	Nil

*Figures in the parentheses indicate percentages.

Source: Field survey (2006).

The above table indicates that the users of radio / tape recorder have increased by 116%, television (colour) by 386%, refrigerator by 417%, air conditioner by 300%, electric fan by 15%, sofa set by 365%, show case by 83%, wardrobe by 1500%, bicycle by 136%, motor cycle

by 586%, dressing table by 52%, dining table by 80%, and almirah (steel) by 79% respectively during 1991 to 2006.

Among other consumable items the users of washing machine have increased by 136% and oven by 167% respectively from 2001 to 2006.

The users of car / jeep are 2 in 2006 and box khat users have increased by 1033% from 1996 to 2006.

Television (black and white) users have decreased by 47% during 1991 to 2006 period.

The number of total family in the study area were 90, which were under consideration for survey.

Though the number of television (black and white) users have decreased, the number of television (colour) users have increased very high rate. That is, financial condition of the families has upgraded.

On the other hand the number of radio / tape recorder, refrigerator, air conditioner, electric fan, washing machine, oven, car / jeep, box khat, sofa set, show case, wardrobe, bicycle, motor cycle, dressing table, dining table and almirah (steel) users have increased high rate. These all proves that the financial condition of the people has developed in the study area, which is also supported by Table-5.1.

So, after above all discussions, it can say that the impact of urbanization on consumption pattern in Bogra municipality during 1991 to 2006 is propitious for urban citizens, which has proved the increasing financial capability of the people of aforementioned area.

5.4 Impact of Urbanization on Housing Pattern

House means where people lives and housing pattern means quality of houses. Housing pattern is the sign of social status of the house owner. Generally, housing pattern sheds light on its dwellers income, choice,

education, consciousness etc. Social change influences its housing pattern. Social upgradation upgrades its housing pattern and social degradation degrades its housing pattern. Urbanization changes society, which also influences its housing pattern. The following Table 5.4 sheds light on the impact of urbanization on housing pattern in Bogra municipal area during 1991 to 2006.

Table - 5.4
Housing Pattern

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Tinshed house	2265 (15.69)	2042 (13.37)	1786 (11.43)	1262 (7.77)	7 (7.78)	-44.28
Tinshed building	8627 (59.78)	9124 (59.73)	9490 (60.75)	9958 (61.29)	62 (68.89)	+15.43
Building	3416 (23.67)	4014 (26.28)	4282 (27.41)	4976 (30.63)	21 (23.33)	+45.67
Others	124 (0.86)	96 (0.63)	63 (0.40)	52 (0.32)	Nil	-58.06
Total house	14432 (100)	15276 (100)	15621 (100)	16248 (100)	90 (100)	+12.58

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

The above table has exhibited that the number of tinshed houses have decreased by 44.28%, tinshed buildings have increased by 15.43%, buildings have increased by 45.67%, houses in others group have decreased by 58.06% and total house have increased by 12.58% from 1991 to 2006.

Though the number of total house have increased, the number of tinshed buildings and buildings have increased rapidly than that.

On the other hand the number of tinshed houses and houses in others (made by sack, straw, polythene, leaf of palm trees etc.) group have decreased, which are helpful for urban area and have proved that the

financial capability of the dwellers of Bogra municipal area have increased during 1991 to 2006. This is also supported by Section 5.1.

The field survey report held in 2006 has shown that 7.78% houses are tinshed house, 68.89% houses are tinshed building, 23.33% houses are building and there is no house in others group here. The field survey result has supported strictly the results have collected from secondary sources.

5.5 Impact of Urbanization on Sources of Drinking Water

Sources of drinking water means, from which the water for drinking comes. The main question is that, is the water using for drinking suitable for health? Sources of drinking water are an important parameter to determine the dweller's economic status.

The following Table 5.5 has illustrated the impact of urbanization on sources of drinking water in Bogra municipal area during 1991 to 2006.

Table - 5.5
Sources of Drinking Water

Year Source	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Tube-well	19678 (82.86)	23320 (81.96)	29743 (80.93)	66032 (82.54)	71 (78.89)	+235.56
Municipal supply by pipe line	2712 (11.42)	3366 (11.83)	4861 (13.23)	9518 (11.90)	11 (12.22)	+250.96
Own pump	328 (1.38)	594 (2.09)	820 (2.23)	1892 (2.37)	8 (8.89)	+476.83
Well	1031 (4.34)	1172 (4.12)	1328 (3.61)	2558 (3.20)	Nil	+148.11
Total family	23749 (100)	28452 (100)	36752 (100)	80000 (100)	90 (100)	+236.86

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

The above table has illustrated that the number of water users have increased by 236% from tube-well, 251% from municipal supply by pipe line, 477% from own pump's water and 148% from well respectively. In comparison to this the total family have increased by 237%.

Though the number of total family have increased, the number of, municipal supply by pipe line and own pump water users have increased more than that. On the other hand, the number of families using tube-well and well water have increased less than the increase of total family. All of these prove the increasing financial capability and consciousness of the dwellers of the study area.

The field survey report is presented at the sixth column of Table 5.5, which shows similar trends of water users.

The above discussions have proved that the impact of urbanization on sources of drinking water is positive for urban inhabitants.

5.6 Impact of Urbanization on Electricity Facility

Electricity is the heart of urban area. It is prerequisite to declare an area as urban area, because according to the definition of urban area, agriculture plays the minimum role whereas the industry, business, office etc., which are totally dependent on electricity play the main role in urban area. Without electricity urban life is unimaginable. This is an important component to measure the economic impact of urbanization. The impact of urbanization on electricity facilities in Bogra municipal area during 1991 to 2006 is shown in Table 5.6 below.

Table - 5.6
Electricity Facility

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Number of electric connection (Residential)	12216 (84.65)	12927 (84.62)	13867 (88.77)	14784 (90.99)	90 (100)	+21.02
Total holding (Residential)	14432 (100)	15276 (100)	15621 (100)	16248 (100)	90 (100)	+12.58
Number of road light	2875 (47.92)	3607 (58.18)	4275 (65.77)	5283 (81.28)		+83.76
Total electric pole	6000 (100)	6200 (100)	6500 (100)	6500 (100)		+8.33

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Power development board (PDB) office, Bogra and Field survey.

According to the above table the number of electric connections (residential) have increased by 21.02% and total residential holding have increased by 12.58% during 1991 to 2006. During the same period the number of road lights have increased by 83.76% and total electric pole have increased by 8.33%.

Though the number of total residential holdings have increased, the number of residential electric connections have increased more than that. On the other hand, the number of road lights have increased more than total electric poles. It may be due to the placement of sufficient government funds to the municipality during 2004 to 2006 period.

The above result indicates the positive impact of urbanization on electricity facilities.

5.7 Impact of Urbanization on Transport and Communication

Communication means relation between one with another. Socio-economic and environmental development depends much on

communication. Economic development can not take place at the required rate without proper communication system. The improvement of the communication system in an urban area leads to the development on the area at a faster rate. Thus without a developed transport and communication system, the development of urban areas is unimaginable.

Transport and communication are divided into main three components and these are:

1. telecommunication;
2. transport and
3. postal and courier services.

In the subsequent sections we will present the status of these three components and will be linked to urbanization.

5.7.1 Impact of Urbanization on Telecommunication

The present era is an era of globalization. In other words, it can be said that the present era is the era of information technology. Information technology plays a vital role in urban development, which is blind without telecommunication.

Telecommunication facilities can be divided into two categories. These are:

1. land phone service and
2. cellular phone service.

5.7.1.1 Impact of Urbanization on Land Phone Service

Land phone is a main component of telecommunication system. It plays an important role not only in modern information technology but

also in every sector of our society. The Impact of urbanization on land phone service in Bogra municipal area during 1991 to 2006 is shown in the following table.

Table - 5.7
Land Phone Service

Kind \ Year	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Land phone (T&T, Onetel, Ranktel, Jubok phone)	1860 (7.83)	1896 (6.66)	5790 (15.75)	8665 (10.83)	8 (8.89)	+365.86
Total family	23749 (100)	28452 (100)	36752 (100)	80000 (100)	90 (100)	+236.86

* Figures in the parentheses indicate percentages.

Source: T&T office, Bogra; Onetel office, Bogra; Ranktel office, Bogra; Jubok phone office, Bogra and Field survey.

According to the above table one can notice that the number of land phone connections have increased by 366% as against 237% increase of total family during 1991 to 2006 period. This indicates that land phone connection have increased almost 1.5 times of the increase of total family. This figure is also supported by the field survey which is presented in the table.

One reason behind this increase of telephone connection can be attributed to urbanization. The demand for urban people on telephone makes it happen.

5.7.1.2 Impact of Urbanization on Cellular Phone Service

As compare to the land phone cellular phone is a recent addition to our life style. Although recent, its growth rate is very high. We can not imagine our life without cellular phone in urban area. It is playing more role now than land phone in every sector like- service, business, transport, education, administration etc. The impact of urbanization on cellular

phone service in Bogra municipal area during 1991 to 2006 has focused in the following Table 5.8.

Table - 5.8
Cellular Phone Service

Year Kind	1991	1996	2001	2006	Field survey (2006)	Gross change (%) from 1991 to 2006
Cellular phone (Grammen phone, City cell, Aktel, Banglalink, Teletalk)	Nil (0)	Nil (0)	1260 (0.79)	42750 (13.15)	68 (16.63)	+ α
Total Population	120170 (100)	136000 (100)	160237 (100)	325000 (100)	409 (100)	+170.45

*Figures in the parentheses indicate percentages.

Source: Grammen phone service center, Bogra; City cell service center, Bogra; Aktel service center, Bogra; Banglalink service center, Bogra; Teletalk customer care center, Bogra and Field survey.

The Table 5.8 shows that the number of cellular phones have increased by 3292.86% as against 103% increase of population during the 2001 to 2006 period.

The total population have increased by 170.45% during 1991 to 2006 period.

Thus, the number of cellular phone users increase by some 32 times of the population increase. Although this increase is due to mainly the technological break through on the communication sector, but part of increase of the users surely due to the development of financial solvency of urban people, which are due to rapid urbanization of the area.

5.7.2 Impact of Urbanization on Transport System

Developed transport facilities are the part and parcel of modern life. It detects the status of an urban area. The impact of urbanization of transport system in Bogra municipal area during 1991 to 2006 is focused in the following table.

Table - 5.9
Transport System

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Kuchha road (km)	47 (48.96)	39 (38.24)	27.50 (22.63)	13.50 (7.11)	-71.28
Semi Pucca road (km)	15 (15.63)	26 (25.49)	35.10 (28.89)	35.20 (18.53)	+134.67
Pucca road (km)	34 (35.42)	37 (36.27)	58.90 (48.48)	141.30 (74.37)	+315.59
Total road (km)	96 (100)	102 (100)	121.50 (100)	190 (100)	+97.92

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office.

The Table 5.9 shows that the length of kuchha road has decreased by 71.28%, semi pucca road has increased by 134.67%, pucca road has increased by 315.59% and total road has increased by 97.92% from 1991 to 2006.

Though the length of total road has increased, the length of semipucca and pucca road have increased more than that. On the other hand the length of kuchha road has decreased, which is due to conversion of part of kuchha road to pucca road.

There is tremendous change (improvement) of pucca road between 2001 and 2006, because after mid 2004 the present government has allotted for Bogra municipal area about 52 crore taka for '*Bogra Urban Infrastructural Development Project*', which is the biggest government allotment in the history of Bogra municipality.

According to the field survey report held in 2006, 62 respondents

Note: Santahar-Bogra-Bonarpara-Gaibandha meter gauge railway line was established in 1901. (Bogra railway station) After then it has not increased a single inch.

There is no water way in Bogra municipal area except the Karatoa river. But, for siltation, it is now navigable only during rainy season.

On the other hand there is no airport in Bogra municipal area.

among 90 (i. e., 68.89%) have opined that transport system has developed in Bogra municipal area, which supports strongly the result has obtained from secondary source.

Thus, the impact of urbanization towards roads network is favourable. If we look into Table 4.7 of the previous chapter regarding traffic jam, we can see that roads network has been developed to keep pace with the increase of the number of vehicles on the road.

The total length of roads has increased by 98% and the number of vehicles have increased by 77% during the 1991-2006 time interval. But, all the roads are not suitable for act of being in motion for vehicles. So, as a result, traffic jam has increased.

5.7.3 Impact of Urbanization on Postal and Courier Services

The postal services, which is a government organization, plays worth mentioning role in sending and receiving necessary confidential information, money, goods etc.

On the other hand, courier services, which are non government enterprises have become developed and extended after 1980 as a rival to the postal department. In course of time, it has proved to be a trustworthy and efficient system. Various companies are opening their branches in various places and operating their business successfully.

These two services play an important role in the Bogra urban area in establishing a link with the rest of Bangladesh as well as world wide.

The impact of urbanization on postal and courier services in Bogra municipal area during 1991 to 2006 can be observed from the table below.

Table - 5.10
Postal and Courier Services

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Number of post office	9 (0.0075)	9 (0.0066)	10 (0.0062)	11 (0.0034)	+22.22
Number of courier service office	24 (0.0235)	57 (0.0419)	98 (0.0612)	204 (0.0628)	+750
Total population	120170 (100)	136000 (100)	160237 (100)	325000 (100)	+170.45

*Figures in the parentheses indicate percentages.

Source: Bogra head post office; Continental courier service office, Bogra; Sunderban courier service office, Bogra; Karatoa courier service office, Bogra; S.A.paribahan office, Bogra; PSL office, Bogra and Central courier service office, Bogra.

If we analyse the table, we notice that while number of post offices have increased from 9 in 1991 to 11 in 2006, the number of courier services (including branch offices) have increased from 24 to 204 during same period.

The number of courier services have increased almost 34 times of postal services. This may be due to the old fashioned service of the postal services, as compared to the modern service of the courier services. Also may due to the efficient and demand oriented services provided by these private enterprises, people are inclined to receive their services gladly. The increase of the number of courier services out numbers the increase of population in the study period.

If we summarize the link between urbanization and communication system as a whole, we can conclude that a developed communication system is the requirement of an urban area. Thus in a way it is the outcome of the urbanization. Thus, urbanization pushes the communication system to move forward to keep pace with the expansion of urbanization.

The impact may cause both positive and negative effects, but the net result is obviously favourable for the community.

5.8 Impact of Urbanization on Financial Institutions

Financial institutions mean the institutions, which are related to financial activities. It plays an important role in urban areas. A developed urban area contains more financial institutions. Financial institutions increase the degree of the standard of life of the people of the area. They are the important elements to measure the economic impact of urbanization in an urban area. The impact of urbanization on financial institutions in Bogra municipal area during 1991 to 2006 is presented in Table 5.11.

Table - 5.11
Financial Institutions

Year Kind	1991	1996	2001	2006	Gross change (%) from 1991 to 2006
Bank	37	41	43	49	+32.43
Insurance company	8	12	15	21	+162.5
NGO	6	16	22	26	+333.33
Co-operative	112	129	146	158	+41.07
Industry	124	152	170	260	+109.68
Market	21	28	38	46	+119.05
Shop	4725	6150	7309	10000	+111.64

Source: Bogra municipal office; Central shop owners association, Bogra and Bangladesh Bank, Bogra branch.

The above table shows that the number of banks have increased by 32.43% from 1991 to 2006. While during the same period the number of

insurance companies have increased by 162.5%, NGOs by 333.33% and co-operatives by 41.07%. Industries, markets and shops have increased by 109.68%, 119.05% and 111.64% respectively. The break down of these increases can be observed for years 1991, 1996, 2001 and 2006 respectively.

If we analyze the figure we can observe that the number of NGOs have increased very rapidly, i.e. from only 6 the figure became 16 in 1996, 22 in 2001 and 26 in 2006. However majority of the NGOs are established on the political ground.

According to the field survey report (in 2006) 82 respondents among 90 (i. e., 91.11%) have opined that financial institutions have increased, which supports the results have obtained from secondary sources.

The above discussions have shown that the impact of urbanization on financial institutions in Bogra municipal area during 1991 to 2006 is absolutely helpful for urban inhabitants, which also focused that the financial condition of the people have developed and it is supported by Section-4.1.

5.9 Impact of Urbanization on Land Value

Land value means transfer price of land. It indicates economic impact of urbanization. The more developed is the area, the land value would be expected to be more. Thus a positive relationship is expected between these two variables. Thus naturally land value of urban area will be higher. Because of a developed urban area in the Bogra municipality its land value is already very high and is increasing day by day. Since development is the outcome of urbanization, land value in turn, is the outcome of urbanization. This incidence is shown in Table 5.12 .

Table - 5.12
Land Value

Year	Average value per decimal *(\$)	Municipal area (Decimal)	Total family
1991	700.87	364726.08	23749
1996	1463.41	364726.08	28452
2001	1914.89	364726.08	36752
2006	1838.24	364726.08	80000
Gross change (%) from 1991 to 2006	+162.28	Nil	+236.86

**'\$' means US Dollar

Source: Bogra sadar sub register office.

The aforesaid table shows that average land value per decimal in dollar has increased by 162% and the municipal area has unchanged during 1991 to 2006 and that is 364726 decimal.

The number of total family have increased by 237% between 1991 and 2006.

Since total municipal area is unchanged and total family have increased rapidly, this may have increased land value rapidly. Inflation and increasing level income are the other reasons for increasing land value.

The field survey report held in 2006 has shown that 90 respondents among 90 (i. e., 100%) have opined land value increases.

Thus in short, we can say that the impact of urbanization on land value in Bogra municipal area produces an expected result similar to other developed area of the country.

Note: Land value has determined in dollar (USA) as secondary unit for avoiding inflation and deflation of taka. The Dollar-Taka exchange rates have shown in the Appendix- 01.

Land unit has determined in decimal here, which is only unit, has used in Bogra municipal area.

5.10 Impact of Urbanization on Land Ownership

Land ownership can be considered as a criterion for measuring economic impact of urbanization. Since it causes redistribution of land ownership, it proves financial capability and increased social acceptability of a person. Land owners have special honour in society.

Thus with the upliftment of the economic condition of people as a result of urbanization, transfer of land ownership take place very frequently. Because of the unchanged area of land, the excess pressure on it causes price to rise very high and fragmentation also the result. This result is depicted in Table 5.13.

Table - 5.13
Land Ownership

Year	Land ownership	Total family
1991	15700 (66.18)	23749 (100)
1996	19250 (67.66)	28452 (100)
2001	21868 (59.50)	36752 (100)
2006	23000 (28.75)	80000 (100)
Field survey (2006)	24 (26.67)	90 (100)
Gross change (%) from 1991 to 2006	+46.50	+236.86

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office and Field survey.

One can see in the table, that the number of land owners have increased to 19250 in 1996 as compared to the number our base period, which were 15700. This number has increased to 21868 in 2001 and 23000 in 2006 respectively. During the 1991-2006 period, the total change became almost 50%.

5.11 Impact of Urbanization on House Ownership

House ownership is also assumed to be a measure of economic impact of urbanization. It increases financial capability and social honour like land ownership. House owner's gains honour not only in the family but also in the society. It helps him to get family leadership. The impact of urbanization on house ownership in Bogra municipal area during 1991 to 2006 is presented in the following table.

Table - 5.14
House Ownership

Year	House ownership	Total family
1991	14432 (60.77)	23749 (100)
1996	15276 (53.69)	28452 (100)
2001	15621 (42.50)	36752 (100)
2006	16248 (20.31)	80000 (100)
Field survey (2006)	18 (20)	90 (100)
Gross change (%) from 1991 to 2006	+12.58	+236.86

*Figures in the parentheses indicate percentages.
Source: Bogra municipal office and Field survey.

The above table shows that the number of house owners have increased by 12.58% and total family have increased by 236.86% during 1991 to 2006. If we look in the total number of houses, we see from 14432 in 1991, it became 15276 in 1996, which grew to 15621 in 2001 and at the end reached to 16248 in 2006.

The total number of families have increased more than that of the increase of house ownership. The increased number of families, which is an out come of urbanization may have contributed to the increase in the number of house ownership.

Since urbanization affects favourably the income and social status of the people, it indirectly contributes towards a positive outcome of house ownership.

In this chapter while examining the economic impact of urbanization, we have specifically considered the impact of urbanization on various economic aspects. These are financial classification, occupational structure, consumption pattern, housing pattern, sources of drinking water, electricity facility, transport and communication, financial institutions, land value, land ownership and house ownership.

The results, which we obtained, indicate both favourable and unfavourable.

It has taken attempt in the next chapter to shed light on environmental impact of urbanization.

CHAPTER SIX

ENVIRONMENTAL IMPACT OF URBANIZATION

Bogra is the name of an environment friendly area. Its atmosphere attracts everybody. It is free from extreme atmosphere. Its social forest, rivers, canals, ponds make it a dream to all. But high population pressure and industrialization have become a constant threat to the environment. Over population is one of the main reasons for all kinds of environmental threat. It is suffering from air, water, sound and land pollution. Over population is also responsible for growing unemployment. This in turn, increased frustration, which results addiction, crime and many other social and environmental problems as well.

Environmental impact means all kinds of impact or change happens by some particular reasons of environment characteristics. So, environmental impact of urbanization indicates all kinds of impact or change happens by the urbanization process on environmental characteristics.

Urbanization process is organized by man. So, to grasp the full significance of environmental impact of urbanization we need first to understand what this environment is, where man belongs and how the two are related.

The earth, we live in is not composed of different isolated components but is the totality of various units working together and influencing each other. The earth is a complex system consisting of different components, the lithosphere, the hydrosphere, the atmosphere and the biota inhabiting it. The physical environment encompasses the first three of these components and the last of these is the biotic

community of the earth including all forms of flora and fauna. Each of these components have their own characteristic features and their specific functions but these have strong links with each other so that any change in one may bring about changes in the other. Earth's living organisms interacting with their physical environment form a giant ecological system known as the ecosphere or the biosphere. Man is part of this huge ecosystem.

The earth consists of molten core called the centrospheres. The lithosphere comprises of the solid crust. The oceans, seas and other water bodies compose the hydrosphere. The gaseous mantle enveloping the earth is its atmosphere. All of these are fundamental components of the earth system and each play a vital role in its existence.

The biosphere itself consists of different types of ecosystems. The biotic (living) community of a specific area and its abiotic (non-living) environment are interrelated and interact with each other. A unit which consists of all living organisms functioning together in a given area and interacting with the physical environment in a manner, whereby, a flow of energy leads to clearly defined biotic structures and cycling of materials between living and non-living parts is known as an ecosystem. *Tansley*, first proposed the term ecosystem in 1935, although the idea itself may be traced even further back. An ecosystem has two basic components, the biotic component and the abiotic component.

The biotic component consists of different plants and animals each having its specific functional position with regards to other biological units with which they interact.

The abiotic component consists of the non-living environment.

Two types of flows, energy flow and material flow characterize the ecosystem. The energy of the sun is the life force of the whole ecosystem and its flow follows a unidirectional path whilst the material flow is manifest in a cyclical movement.

Natural events or human activities may cause disruption in the natural working of the ecosystem and may bring about substantial change in its structure and its function leading to its degradation. (Khuda, 2001)

In this chapter environmental impact of urbanization in Bogra municipal area during 1991 to 2006 indicates impact or change on main environmental characteristics like flora, fauna, cultivation, sanitary facilities, sewerage systems, pollution, slums, drug addiction, prostitution and law and order situation.

6.1 Impact of Urbanization on Flora

Flora means all kinds of trees, plants, shrubs, vegetables etc., which grows or shoots up from beneath the surface of the earth. It helps to keep equilibrium in our environment. But for rapid urbanization process flora is being destroyed rapidly. It is necessary to have 25% forest of total land area, but in our country it is only 13.36%. Urbanization has increased deforestation. Bogra municipal area is not out of this process. Though there is no listed natural forest (upazila forest office, Bogra) in Bogra, there are some social forests. The impact of urbanization on flora in Bogra municipal area during 1991 to 2006 is presented in the following table.

Table -6.1**Flora**

Year	Area of social forest (acre)	Total municipal area (acre)
1991	210 (5.76)	3647.26 (100)
1996	170 (4.66)	3647.26 (100)
2001	145 (3.98)	3647.26 (100)
2006	115 (3.15)	3647.26 (100)
Gross change(%) from 1991 to 2006	-45.24	Nil

*Figures in the parentheses indicate percentages.

Source: Bogra sadar upzila statistics office and Bogra sadar upazila forest office.

The above table shows that the area of social forest has decreased by 45.24% and the area of total municipality has fixed and that is 3647.26 acre during 1991 to 2006. The gradual deforestation figures are shown in column two of Table 6.1. It can be noticed there, that while in 1991 the total forest area was 210 acres, which reduces in course of time, i.e. in 1996 it become 170 acres, in 2001 reduces to 145 acres at the end of our study period it becomes only 115 acres.

Several reasons may cause the deforestation, but the increased population pressure, which is an outcome of urbanization, may be the main reason for this.

Thus, we can conclude without any hesitation that urbanization affects the social forest negatively. This may have long-term hazardous impact on the environment.

6.2 Impact of Urbanization on Fauna

Fauna means all kinds of living or sentient being. It also helps to keep balance in our environment like flora. For increasing population and

urbanization, forests and places for strolling of wild and domestic animals are decreasing. Urbanization is destroying not only flora, but also fauna.

In Bogra, with the passing of time much of the forest have disappeared as a result of expansion of agriculture (for increasing population). This has adversely affected the animal community as well.(Bari, 1979)

The impact of urbanization on fauna in Bogra municipal area during 1991 to 2006 is depicted in the next Table 6.2.

Table -6.2

Fauna

Kind \ Year	1991	1996	2001	2006	Gross change(%) from 1991 to 2006
Dairy firm (2<)	22	39	57	74	+236.36
Goat's firm (19<)	Nil	Nil	Nil	7	+ α
Poultry firm (199 <)	7	12	15	20	+185.71
Pond	28	25	21	16	-42.86
River and canal	3	3	3	3	Nil

Source: Bogra sadar upazila live stock office; Bogra sadar upazila fishery office and Bogra sadar upazila statistics office.

The table has focused that the number of dairy firms have increased by 236.36%, poultry firms by 185.71% respectively and ponds have decreased by 42.86% from 1991 to 2006.

The number of river and canals are fixed in number 3 during 1991 to 2006.

The number of dairy and poultry firms have increased high rate because, government's legal and financial assistance in these sectors have

also promoted their increasing. It is mentionable that domestic animals have decreased in the study area.

On the other hand, the number of ponds have decreased for increasing the demand of land for housing for increasing population. Increasing land value is another reason for this.

The field survey report held in 2006 has shown that 79 respondents among 90 (i.e., 87.78%) have opined that domestic animals and reservoir of water have decreased, which are unanimous with the results have obtained from secondary sources.

The above discussions have focused that the impact of urbanization on fauna in Bogra municipal area during 1991 to 2006 is positive for urban inhabitants.

6.3 Impact of Urbanization on Cultivation

Urbanization plays an important role on cultivation. For increasing urbanization, cultivated land is decreasing. Though, this is supported by the characteristics of urban area, which is coated as '*three-fourth of the adult male population of the area to which it refers are chiefly employed in pursuits other than agriculture*'. With changing the area of cultivated land, the kinds of cultivation also changes. Here the researcher has used cultivated land as a main indicator to measure the impact of urbanization on cultivation.

The impact of urbanization on cultivation in Bogra municipal area during 1991 to 2006 is illustrated in Table 6.3.

Table -6.3
Cultivated Land

Year	Cultivated land (acre)	Total municipal area (acre)
1991	450 (12.34)	3647.26 (100)
1996	350 (9.6)	3647.26 (100)
2001	260 (7.13)	3647.26 (100)
2006	150 (4.11)	3647.26 (100)
Gross change(%) from 1991 to 2006	-66.67	Nil

*Figures in the parentheses indicate percentages.

Source: Bogra sadar upazila agriculture office and Bogra sadar upazila statistics office.

The above table indicates that the area of cultivated land has decreased by 66.67% and total municipal area is 3647.26 acre during 1991 to 2006.

Though the total municipal area is fixed, but for rapid increasing of population (170.45%) and urbanization, land value has increased by 162.28% (Section-5.12) and for this, the area of cultivated land has decreased. In another side, probably as its result, kinds of cultivation and occupation pattern has changed (Appendix-01) from agriculture to other sectors.

The field survey report (In 2006) has illustrated that cent percent respondents (90 among 90) have opined that cultivated land has decreased, which supports strongly the result has obtained from secondary sources.

The above discussions have focused out that the impact of urbanization on cultivation is inconvenient for urban dwellers in Bogra municipal area during 1991 to 2006.

6.4 Impact of Urbanization on Sanitary Facilities

Sanitary facility may be considered as a strong element for measuring environmental impact of urbanization. It detects ones literacy and consciousness. Sufficient and qualified sanitary facility saves us from various diseases and keeps our environment free from pollution. Generally, sanitary facility is developed in a developed urban area. Here the researcher has divided the impact of urbanization on sanitary facility into two parts. They are-

1. Impact of urbanization on latrine facilities and
2. Impact of urbanization on sanitary facilities from municipality.

6.4.1 Impact of Urbanization on Latrine Facilities

Latrine facility is a mentionable part of sanitary facility. By using hygienic latrine we and our environment keep safe from various kinds of diseases.

The impact of urbanization on sanitary facilities is shown in the Table 6.4 below.

Table -6.4
Latrine Facilities

Kind \ Year	1991	1996	2001	2006	Field survey (2006)	Gross change(%) from 1991 to 2006
Kuchha latrine	8571 (36.09)	9879 (34.72)	5965 (16.23)	5928 (7.41)	Nil	-30.84
Semi pucca latrine (Pit)	11392 (47.97)	13376 (47.01)	23249 (63.26)	56469 (70.59)	32 (35.56)	+395.69
Pucca latrine	3786 (15.94)	5197 (18.27)	7538 (20.51)	17603 (22)	48 (53.33)	+364.95
Total family	23749 (100)	28452 (100)	36752 (100)	80000 (100)	90 (100)	+236.86

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office; Bogra sadar upazila statistics office and Field survey.

The above table has depicted that the number of kuchha latrines have decreased by 30.84%. On the other side, semi pucca latrines (Pit) have increased by 395.69%, pucca latrines by 364.95% and total family by 236.86% respectively during 1991 to 2006 period.

Though the number of total family have increased rapidly, the number of semi pucca latrines (Pit) and pucca latrines have increased higher than that. On the other hand the number of kuchha latrines have decreased. These have possible probably for increasing financial condition (Section-5.1) and awareness (Section-4.9) of urban dwellers of the study area.

The field survey report (In 2006) has shown that there is no user of kuchha latrine, 35.56% users have used semi pucca latrines (pit) and 53.33% users have used pucca latrines, which all have supported the results have obtained from secondary sources.

The above discussions have focused that the impact of urbanization on latrine facility in Bogra municipal area during 1991 to 2006 is advantageous for municipal dwellers.

6.4.2 Impact of Urbanization on Sanitary Facilities from Municipality

Municipal authority plays a vital role on sanitary facilities in municipal area. It is responsible for sanitary activities in its area. It takes various attempts for continuing its sanitary activities.

The impact of urbanization on sanitary facilities from municipality in Bogra municipal area during 1991 to 2006 is shown in the Table 6.5 .

Table -6.5
Sanitary Facilities from Municipality

Year Kind	1991	1996	2001	2006	Gross change(%) from 1991 to 2006
Dustbin	261	261	261	70	-73.18
Dust cart (Van)	24	24	24	24	Nil
Dust cart (Truck)	4	4	4	4	Nil
Employee (Sanitary)	302	341	376	442	+46.36

Source: Bogra municipal office.

The above table has shown that the number of dustbins have decreased by 73.18% and employees (sanitary) have increased by 46.36% from 1991 to 2006.

The number of dust carts (van) and dust carts (truck) have fixed during 1991 to 2006. They are respectively in number 24 and 4 in the aforesaid period.

The number of dustbins have decreased high rate. On the other hand the number of employees related with sanitation have increased very slightly. Lack of fund of municipal authority, specially low collecting of municipal tax may be liable for this. Mismanagement and lack of awareness of urban authority can also be considered as responsible for this.

According to the field survey report held in 2006 has shown that 78 respondents among 90 (i.e., 86.67%) have opined, sanitary facility from municipality is insufficient and has decreased. These have supported the results have obtained from secondary source.

From the above discussions it is very logical to say that the impact of urbanization on sanitary facilities from municipality is troublesome for Bogra municipal area during 1991 to 2006.

From the discussions in Subsections 6.4.1 and 6.4.2 we can conclude that the impact of urbanization on sanitary facilities from urban dwellers is opportune and from municipality is incommodious in Bogra municipal area during 1991 to 2006.

6.5 Impact of Urbanization on Sewerage Systems

Sewerage system is an important part of urban area. Developed sewerage system is considered as a symbol of developed urban area. Lack of sufficient sewerage system urban life becomes a curse. If urban inhabitants and urban authority become conscious and take steps combined for developing sewerage systems, then formulation of developed sewerage systems is possible.

The following Table 6.6 has depicted the impact of urbanization on sewerage system in Bogra municipal area during 1991 to 2006 period.

Table -6.6
Sewerage Systems

Kind \ Year	1991	1996	2001	2006	Gross change(%) from 1991 to 2006
Kuchha drain (km)	80.43 (80.59)	73.69 (73.84)	65 (65.13)	52.7 (52.81)	-34.78
Pucca drain (km)	19.37 (19.41)	26.11 (26.16)	34.80 (34.87)	47.10 (47.19)	+143.16
Total drain (km)	99.80 (100)	99.80 (100)	99.80 (100)	99.80 (100)	Nil

*Figures in the parentheses indicate percentages.

Source: Bogra municipal office.

The above table is exhibited that the length of kuchha drain has decreased by 34.48%, pucca drain has increased by 143.16% and total

drain has fixed in Bogra municipal area and that is 99.80 km. during 1991 to 2006.

Though the length of total drain has unchanged, the length of kuchha drain has decreased and the length of pucca drain has increased, which is due to conversion of part of kuccha drain to pucca drain. It has happened for increasing government allotment after 2004.

The field survey report (In 2006) has shown that 74 respondents among 90 (i.e., 82.22%) have opined that the quantity of sewerage facilities have not increased, which is unanimous with the result has obtained from secondary source.

According to the above discussions it is clear that the impact of urbanization on sewerage system's quality is positive, but on quantity is nil, i.e. on sanitary facility is convenient.

6.6 Impact of Urbanization on Pollution

Pollution means creating harmful effects for living and non living organizations. It hinders our development. Here it has divided into three kinds, they are -

1. air pollution,
2. water pollution and
3. sound pollution.

6.6.1 Impact of Urbanization on Air Pollution

Air pollution can be considered as an important element of measuring impact of urbanization on environment. Polluted air is harmful for not only livings but also non livings. With increasing urbanization process air pollution also increases. Various kinds of vehicles, industries, construction work and uses of chemicals have increased with urbanization, which are liable for air pollution. Bangladesh is not out of

this process. The impact of urbanization on air pollution in Bogra municipal area during 1991 to 2006 is focused in the Table 6.7 below .

Table -6.7

Air Pollution

[Suspended Particulate Matters (SPM) in Microgram/M³]

Area \ Year	1991	1996	2001	2006	Gross change(%) from 1991 to 2006
Sensitive	820	822	822	692	-15.61
Residential	262	280	298	337	+28.63
Commercial and mixed	457	474	476	625	+36.76
Industrial and mixed	576	623	688	804	+39.58

Source: Department of environment, Bogra office.

The table has exhibited that the amount of SPM per cusec metre have decreased in sensitive area by 15.61%, have increased in residential area by 28.63%, in commercial and mixed area by 36.76% and in industrial and mixed area by 39.58% respectively during 1991 to 2006 period.

According to the '*Standards for Air*' determined by the '*Department of Environment*' (Appendix -01) the amount of SPM/ m³ in air are 100, 200, 400 and 500 respectively in sensitive, residential, commercial and mixed and industrial and mixed areas.

Though the amount of SPM/ m³ in sensitive area have decreased and the amount of SPM/ m³ in residential, commercial and mixed as well as industrial and mixed areas have increased, they all are more than the standards for air determined by the '*Department of Environment*', in Bogra municipal area during 1991 to 2006.

The amount of SPM/ m³ in sensitive area have decreased after 2001 because '*Dhaka coach*' terminal has transferred from there after 2001.

On the other hand the amount of SPM / m³ in residential, commercial and mixed as well as industrial and mixed areas have increased because the number of vehicles (Table-4.7), industries (Table-5.11) and construction works (Appendix-01) have increased in the study area.

The field survey report held in 2006 has shown that 90 respondents among 90 (i.e., 100%) have opined air pollution has increased, which has supported strongly the result has obtained from secondary source.

After the above discussions the result is clear that the impact of urbanization on air pollution in Bogra municipal area during 1991 to 2006 is disadvantageous for urban inhabitants.

6.6.2 Impact of Urbanization on Water Pollution

Water pollution may be another important detector for measuring the impact of urbanization on environment. Polluted water is deadly harmful for living organizations. It causes various diseases for human like- typhoid, dysentery etc. Industries, using chemicals etc. are increasing water pollution. Moreover, lack of awareness of urban people are also liable for water pollution. The impact of urbanization on water pollution in Bogra municipal area during 1991 to 2006 is focused in the following Table 6.8.

Table - 6.8
Water Pollution

[Drinking water: Coli form (total) in n/100 ml]

Place \ Year	Year				Gross change(%) from 1991 to 2006
	1991	1996	2001	2006	
Hotel	27	30	39	45	+66.67
Hospital	22	23	26	30	+36.36
School	6	6	7	10	+66.67

Source: Department of environment, Bogra office.

The table has explained that the number of coli forms (total) per hundred millilitre in the water has used for drinking in hotels have increased by 66.67%, hospitals by 36.36% and schools by 66.67% respectively during 1991 to 2006.

According to the '*Standards for Drinking Water*' determined by the '*Department of Environment*' (Appendix -01) the amount of coli form (total) in drinking water is 0/100ml.

The amount of coli forms (total) in water per hundred millilitre in the water has used for drinking in hotels, hospitals and schools have increased. They all are more than the '*Standards for Drinking Water*' determined by the '*Department of Environment*' in Bogra municipal area during 1991 to 2006. Lack of sincerity of the authorities are liable for this.

According to the '*Department of Environment, Bogra office*' the Karatoa river is free from pollution and the number of coli form/ 100 ml in under ground water of Bogra municipality is 'zero'.

On the other hand 11.28% tubewell water of Bogra municipal area have contaminated by '*arsenic poisoning*' (examined by the Bogra municipal authority in 2006). Though it is dangerous, but it is not a threat in Bogra municipal area.

At last, after above discussions we can say doubtlessly that the impact of urbanization on water pollution in Bogra municipal area during 1991 to 2006 is negative.

Note: '*Department of Environment, Bogra office*' has examined municipal supply (by pipe line) water before reservation in tank, but not after reservation in tank for neglecting municipalities discredit.

6.6.3 Impact of Urbanization on Sound Pollution

Sound pollution can be used as a detector for measuring the impact of urbanization on environment. It is harmful for livings. Mainly it causes harms for infants and olds. Increasing industries, vehicles and construction works are the positive symbol of urbanization. But, they are the main causes for sound pollution.

The impact of urbanization on sound pollution in Bogra municipal area during 1991 to 2006 is depicted in the next Table 6.9.

Table -6.9

Sound Pollution

[Standards determined at decibel (dBa) unit]

Year Area	1991		1996		2001		2006		Gross change(%) from 1991 to 2006	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Silent	85	72	83	75	83	74	72	58	-15.29	-19.44
Residential	52	41	52	42	53	42	60	49	+15.38	+19.51
Mixed	65	53	65	51	68	55	75	61	+15.38	+15.09
Commercial	78	66	78	67	80	71	84	73	+7.69	+10.61
Industrial	83	72	81	71	85	73	91	78	+9.64	+8.33

Source: Department of environment, Bogra office.

The Table 6.9 shows that the amount of sound (In dBa) in silent area have decreased in day by 15.29% and in night by 19.44%, in residential area have increased in day by 15.38% and in night by 19.51%, in mixed area have increased in day by 15.38%, and in night by 15.09%, in commercial area have increased in day by 7.69%, and in night by 10.61%, in industrial area have increased in day by 9.64% and in night by 8.33% from 1991 to 2006 period.

According to the '*Standards for Sound*' determined by the '*Department of Environment*' (Appendix -01) the amount of sound (In dBa) are 45, 50, 60, 70 and 75 in day respectively in silent, residential, mixed, commercial and industrial areas. Moreover the amount of sound (In dBa) are 34, 40, 50 60 and 70 in night accordingly in silent, residential, mixed, commercial and industrial areas according to the aforesaid standards determined by the same authority.

Though the amount of sound (In dBa) both in day and night have decreased in silent area, it has increased both in day and night in residential, mixed, commercial and industrial areas.

The amount of sound (In dBa) in silent, residential, mixed, commercial and industrial areas are more both in day and night than the '*Standards for Sound*' determined by the '*Department of Environment*' in Bogra municipal area during 1991 to 2006.

The amount of sound (In dBa) in silent area have decreased because '*Dhaka coach*' terminal has transferred from that area after 2001.

On the other hand the amount of sound (In dBa) in residential, mixed, commercial and industrial areas have increased because the number of vehicles (Table-4.7), industries (Table-5.11) and construction works (Appendix-01) have increased in the study area.

Cent percent respondents (90 among 90) of field survey in 2006 have opined that sound pollution has increased, which is as same as the result has counted from the secondary source.

The above result indicates the incommodious impact of urbanization on sound pollution in Bogra municipal area during 1991 to 2006.

So we can conclude from Subsections 6.6.1, 6.6.2 and 6.6.3 that urbanization is proportionately related with pollution. That is, increasing urbanization increases pollution.

The impact of urbanization on pollution may be advantageous or disadvantageous, but achieved result is doubtlessly incommodious in the study area during 1991 to 2006 period.

6.7 Impact of Urbanization on Slums

Slum means where floating people lives. It is a creation of urbanization. This is an important criterion for measuring the impact of urbanization on environment. With the increasing of urbanization the number of slums and its dwellers are increasing in Bangladesh. Generally slum people are illiterate, unconscious and financially insolvent. They are the liability of the society. This is a serious problem for the urban people of Bangladesh. The impact of urbanization on slums in Bogra municipal area during 1991 to 2006 is depicted in the following Table 6.10.

Table -6.10
Growth of Slums

Year	Number of Slum	Number of Slum people	Total population
1991	5	6000 (4.9929)	120170 (100)
1996	5	7500 (5.5147)	136000 (100)
2001	8	17000 (10.6093)	160237 (100)
2006	11	24000 (7.3846)	325000 (100)
Gross change(%) from 1991 to 2006	+120	+300	+170.45

*Figures in the parentheses indicate percentages.
Source: Bogra municipal office.

The above table shows that the number of slums have increased by 120%, slum people by 300% and total population by 170.45% respectively between 1991 and 2006.

Though the number of total population have increased rapidly, the number of slums have increased lower than that and the number of slum people have increased higher than that. Rapid increasing of immigrants (Table-4.5) may be liable for rapid increasing of slum people.

Cent percent (90 among 90) respondents of field survey in 2006 have opined that slum and slum people have increased. The results are unanimous with the results have gained from secondary source.

The above discussions have pointed out that the impact of urbanization on slums in Bogra municipal area during 1991 to 2006 is inconvenient, which is creating various problems for urban inhabitants.

6.8 Impact of Urbanization on Drug Addiction

Drug addiction is a curse for environment. It may come from frustration, poverty, unemployment, unsuccessful love etc. For developed transport and communication system, addiction is more in developed area. That is, addiction is proportional to development. Bogra municipal area is a developed urban area. It is not out of the problem. This incidence is shown in Table 6.11.

Table -6.11
Drug Addiction

Kind \ Year	1991	1996	2001	2006	Gross change(%) from 1991 to 2006
Addicts	886 (0.737)	994 (0.731)	1178 (0.735)	1329 (0.409)	+50
Death for addiction	52 (0.043)	65 (0.048)	73 (0.046)	81 (0.025)	+55.77
Drug seller	362 (0.301)	403 (0.296)	480 (0.3)	516 (0.159)	+42.54
Total population	120170 (100)	136000 (100)	160237 (100)	325000 (100)	+170.45

*Figures in the parentheses indicate percentages.

Source: NGOs named Programme for Eco-social Development (PESD), Bogra and Light house, Bogra.

The aforementioned table shows that the number of drug addicts have increased by 50%, deaths for addiction by 55.77%, drug sellers by 42.54% and total population by 170.45% from 1991 to 2006.

Though the number of total population have increased rapidly, the number of drug addicts, deaths for addiction and drug sellers have increased lower than that.

Cent percent (90 among 90) respondents of field survey in 2006 have opined that the number of drug addicts have increased, which is as same as the result has obtained from secondary sources.

Thus, in short we can summarize that the impact of urbanization on drug addiction in Bogra municipal area during 1991 to 2006 is unfavourable for the inhabitants.

6.9 Impact of Urbanization on Prostitution

Prostitution is a fruit of urbanization. It is a kind of illegal occupation related with sexual work. People generally women, who earn money by illegal sexual relation they called as sex workers and their

occupation is prostitution. It is forbidden in Islam. Though, prostitution is forbidden in Bangladesh, there are some licenced brothels here. In Bogra municipality, there is no licensed or without licensed brothel. But the area is not out of this problem. For this occupation people are being affected by various kinds of crucial diseases. Acquired Immune Deficiency Syndrome (AIDS) is mentionable of them. Prostitution can be an important indicator to measure the impact of urbanization on environment. The impact of urbanization on prostitution in Bogra municipal area during 1991 to 2006 is reflected in the following Table 6.12.

Table -6.12
Prostitution

Year	Number of sex worker	Total women	Number of customer	Total male
1991	156 (0.2734)	57064 (100)	438 (0.6941)	63106 (100)
1996	178 (0.2675)	66547 (100)	486 (0.6998)	69453 (100)
2001	222 (0.2750)	80723 (100)	572 (0.7194)	79514 (100)
2006	257 (0.1574)	163288 (100)	696 (0.4304)	161712 (100)
Gross change(%) from 1991 to 2006	+64.74	+186.15	+58.90	+156.25

*Figures in the parentheses indicate percentages.

Source: NGO named Light house, Bogra.

One can observe from the Table 6.12 has reflected that the number of sex workers have increased by 64.74% and total women have increased by 186.15% from 1991 to 2006.

On the other hand, the number of customers have increased by 58.90% and total male have increased by 156.25% during the same period.

Though the number of total women have increased rapidly, the number of sex workers have increased lower than that.

In another side, the number of total male have increased rapidly but the number of customers have not keep pace with that.

The field survey (In 2006) report has pointed out, 69 respondents among 90 (i.e., 76.67%) have opined that prostitution increases. This is not contradictory with the results have collected from secondary source.

So, it can be concluded that the impact of urbanization on prostitution in Bogra municipal area during 1991 to 2006 is troublesome for environment of the aforesaid area.

6.10 Impact of Urbanization on Law and Order Situation

Law and order situation can be considered as an important indicator for measuring the impact of urbanization on environment. Law and order situation may be measured by number of cases, police stations, polices etc. The impact of urbanization on law and order situation in Bogra municipal area during 1991 to 2006 is presented in the Table 6.13 below.

Table -6.13
Law and Order Situation

Year	Number of case	Number of police station	Number of police	Total population
1991	58 (0.0483)	5 (0.0042)	93 (0.0774)	120170 (100)
1996	66 (0.0485)	6 (0.0044)	107 (0.0787)	136000 (100)
2001	69 (0.0431)	6 (0.0037)	107 (0.0668)	160237 (100)
2006	84 (0.0258)	8 (0.0025)	135 (0.0415)	325000 (100)
Gross change(%) from 1991 to 2006	+44.83	+60	+45.16	+170.45

*Figures in the parentheses indicate percentages.

Source: Bogra sadar thana.

The above table shows that the number of cases have increased by 44.83%, police stations by 60%, polices by 45.16% and total population by 170.45% respectively between 1991 and 2006.

Though the number of total population have increased rapidly, the number of cases, police stations and polices have increased lower than that.

The number of cases have increased. It may happen for increasing unemployment problem (Table-5.2), which increases frustration and for this people have motivated to offense.

According to the field survey report held in 2006, 48 respondents among 90 (i.e., 53.33%) have opined that law and order situation has degraded in Bogra municipal area during 1991 to 2006. This also supports the results have obtained from secondary source.

So, it is summarized that the impact of urbanization on law and order situation in Bogra municipal area during 1991 to 2006 is incommodious for urban dwellers.

In this chapter we have discussed about the impact of urbanization on main 10 factors related with environment conditions, for measuring the impact of urbanization on environmental conditions in Bogra municipal area during 1991 to 2006.

We can conclude the observations that there are convenient impact of urbanization on fauna, sanitary facilities from urban dwellers and sewerage systems as well as there are disadvantageous impact of urbanization on flora, cultivation, sanitary facilities from municipality, pollution, slums, drug addiction, prostitution and law and order situation in the aforesaid area.

CHAPTER SEVEN

SUMMARY AND CONCLUSION

As the title of this dissertation is '*socio-economic and environmental impacts of urbanization in Bogra municipal area of Bangladesh*' to achieve its objectives, the researcher has conducted a research work to examine the main socio-economic and environmental characteristics related to urbanization in Bogra municipal area during 1991 to 2006. The research work enables us to know elaborately the socio-economic and environmental conditions of the study area between 1991 and 2006 along with the impacts of urbanization on the socio-economic and environmental aspects.

7.1 Summary of Findings

The social characteristics like-age structure, educational facilities and literacy rate, health care and maternity services, family planning activities, migration, population density, traffic jam, women empowerment, social consciousness, norms and values and social recreational facilities of Bogra municipal area during 1991 to 2006 are examined for finding the social impact of urbanization. The observed findings are:

The impact of urbanization on age structure is favourable. This can be observed from the decreased dependency ratio. This is the out come of a continuous increase of the number of independent people and a continuous decrease of the number of dependent people respectively. Moreover, the longevity of people has increased and birth rate has decreased.

The impact of urbanization on educational facilities and literacy rate is positive, which indicates the educational institutions and literacy rate both have increased.

The impact of urbanization on health care and maternity services is in favour of urban inhabitants. That is, facilities related with health care and maternity services have increased.

The impact of urbanization on the family planning activities is also helpful. It means the number of family planning materials users have increased and as a result of this the average size of household has decreased by 1.25% per annum.

The impact of urbanization on migration is inconvenient. For Bogra municipality the immigrants have increased very rapidly. For which, in spite of decreasing birth rate and family size, the number of total population and total family have increased rapidly. On the other hand, the number of outmigrants have increased lower than in migrants.

The impact of urbanization on population density is adverse. Though the total area of the municipality has unchanged, by dint of increasing immigrants, the number of total population have increased and as a result, population density per square km. has increased.

The impact of urbanization on traffic jam is also adverse, because of increased number of various kinds of vehicles. Although according to the municipal authority the total length of roads have increased, but not all of these increased roads have access for vehicles.

The impact of urbanization on women empowerment is helpful. Here, the women literacy of seven and above years old and women employee of ten and above years old have increased rapidly, which help women to be empowered.

The impact of urbanization on social consciousness is favourable too. In this study, the number of newspaper readers, radio listeners and television viewers have increased.

The impact of urbanization on norms and values is positive. That is, the number of religious places, where religious practice occurs have increased.

The impact of urbanization on social recreational facilities is favourable, which means the number of social recreational places have increased.

The economic characteristics like-financial classification, occupational structure, consumption pattern, housing pattern, sources of drinking water, electricity facility, transport and communication, financial institutions, land value, land ownership and house ownership of Bogra municipal area during 1991 to 2006 are examined for observing the economic impact of urbanization. The worth mentioning findings are as follows:

The impact of urbanization on financial classification is helpful. The number of people in poor and extreme poor classes have increased lower than the people in upper class, upper middle class and lower middle class.

The impact of urbanization on employment is negative, which indicates the number of unemployed people of ten and above years old have increased more than the number of employed people of ten and above years old.

The impact of urbanization on consumption pattern is propitious. In the area the consumption capacity of the people has increased.

The impact of urbanization on housing pattern is convenient. It means the number of finished buildings and buildings have increased, on the other hand, the number of finished houses and houses in others group have decreased.

The impact of urbanization on sources of drinking water is positive, that is, the number of tube well, municipal supply by pipe line and own pump water users have increased more.

In another side, the number of well water users have increased at a lower percentage.

The impact of urbanization on electricity facility is advantageous. The number of residential electric connections and road lights have increased sufficiently.

The impact of urbanization on transport and communication is favourable, which means telecommunication, transport system and postal and courier services have increased.

The impact of urbanization on financial institutions is helpful, that is financial condition of the people have developed.

The impact of urbanization on land value is inconvenient. It indicates that land value has increased by 11% per annum.

The impact of urbanization on land ownership is favourable. In our study area the number of total land owners have increased from 15700 to 23000 during 1991 to 2006 period.

The impact of urbanization on house ownership is positive. Here it indicates that the number of house owners have increased by about one percent per annum.

In chapter six, the environmental characteristics like-flora, fauna, cultivation, sanitary facilities, sewerage systems, pollution, slums, drug

addiction, prostitution and law and order situation of Bogra municipal area during 1991 to 2006 are observed for detecting the environmental impact of urbanization. The major findings are as follows:

The impact of urbanization on flora is negative, which focuses that the area of social forest has decreased from 210 acres to 115 acres between 1991 and 2006.

The impact of urbanization on fauna is positive. It means that the condition of fauna has developed in the study area.

The impact of urbanization on cultivation is inconvenient, which detects the area of cultivated land has decreased by 4.5% per annum.

The impact of urbanization on sanitary facilities from urban dwellers is advantageous, that is, the urban dwellers are being conscious and financially capable and for this, they have developed their sanitary infrastructure. On the other hand, the impact of urbanization on sanitary facilities from municipality is troublesome. It means that, the facilities have served by the municipal authority have decreased.

The impact of urbanization on sewerage systems is convenient, which means the sewerage facility has increased.

The impact of urbanization on pollution is harmful. It detects that the degree of air, water and sound pollution have increased and more than the standards.

The impact of urbanization on slums is inconvenient, that is, the number of slums and slum people have increased.

The impact of urbanization on drug addiction is unfavourable. It means that, the number of addicts, deaths for addiction and drug sellers have increased.

The impact of urbanization on prostitution is troublesome, which indicates the numbers of sex workers and customers have increased.

The impact of urbanization on law and order situation is incommensurable. It detects that the number of cases have increased.

Several other findings from field observation are as follows:

Urban people are not aware about socio-economic and environmental development. Specially about environmental development.

Urban authority is not trained properly for playing role in socio-economic and environmental development.

There is no master plan about Bogra municipal area after 1988 for the negligence of urban authority.

There is no environmental wing in municipal office.

Though the number of rickshaws and rickshaw vans in Bogra municipal area are 22500, only 8091 of them are licensed. On the other hand, only 1310 rickshaw and rickshaw van pullers are licensed, others are illegal. There is no training institute or training system in the study area for rickshaw and rickshaw van pullers. More over, who are licensed, they are also ignorant about driving rules, which is responsible for traffic jam. It is not necessary to know about driving rules before being a license holder as rickshaw or rickshaw van puller in the selected municipal area.

Lack of fund of urban authority is worth mentioning.

Not only urban people but also government, non government and semi government institutions are not eager to pay municipal tax regularly.

Urban authority is helpless to realize municipal rules and regulations for political pressure and non cooperation from municipal dwellers.

Local civil administration, local police administration and other related departments don't cooperate properly with municipal authority.

The municipal authority has not sufficient manpower to serve municipal dwellers properly.

Corruption and lack of accountability of municipal authority are liable for serving poor urban facilities related with socio-economic and environmental conditions to municipal dwellers.

7.2 Conclusion

In present century, civilization without urbanization is out of expectation. Living in urban area is a dream to the people for its attraction power. There is a saying in the study area that '*Jodio Pore Cohor, Tobuo Chariona Shohor*' (though it seems that the whole city is full of natural calamity, one should not live it). Urban area is a combination of weals and woes. It is our duty to ensure weals and remove woes from urban area.

If we want to ensure sustainable development, we should be aware about socio-economic and environmental development. Urbanization is a part of development, but it is maximum proportionate with economic development, next with social development and at last, with environmental development. By dint of urbanization industrialization increases, which creates harm for environment. For our happiness and long existence on earth, we should take care of our environment.

Allah, the creator of this macrocosm has declared in the '*Holy Quran*' that '*Verify, All Things Have We Created In Proportion And Measure*'.(Sura Qamar:49, Al-Quran) But we, the people on earth, are always changing the proportion and measure according to our own

necessity. For this, we are facing various kinds of socio-economic and environmental problems.

According to the article number-15 of the constitution of Bangladesh, *'It Shall Be A Fundamental Responsibility Of The State To Attain, Through Forces And A Steady Improvement In The Material And Cultural Standard Of Living Of The People'*, with a view to securing its citizens-

The provision of the basic necessities of life, including food, clothing, shelter, education and medical care; the right to work, that is the right to guaranteed employment at a reasonable wage having regard to the quantity and quality of work; the right to reasonable rest, recreation and leisure and the right to social security, that is to say, to public assistance in causes of undeserved want arising from unemployment, illness or disablement, or suffered by widows or orphans or in old age, or in other such cases. (The Constitution of The People's Republic of Bangladesh, 1996)

To achieve the goal of prosperity of the people through planned development, the individual and the society come to interact with the environment and have to take care of it, lest not to speak of global warming, excessive use of natural resources like land, water and forest turn this land into *'dust bowl'* with *'individuals scratching a living like a scrawny hen'*. (Fifth five year plan of Bangladesh)

So, after the above discussions it can say that it is the proper time to take steps for sustainable development and if the government take steps for sustainable development in our urban areas according to the recommendations and general people, social elite, politicians, bureaucrats, NGOs etc. help the government to realize the steps, then our urban areas will be a sign of sustainable development and we will forget

the bad impacts of urbanization related with socio-economic and environmental phenomena, which is our expectation.

7.3 Recommendations

Bogra municipal area is facing some socio-economic and environmental problems. Since, Bogra municipal area represents all urban areas of Bangladesh hence, these are not only the problems of Bogra municipal area, but also the problems of all urban areas of Bangladesh. Thus, according to the study, there is a need for guiding the progress of the country through a '*National Urbanization and Urban Development Policy*', which would consider the followings:

Stress on decentralized urbanization by establish satellite towns within commuting distances; encouraging growth of secondary towns and planned growth of compact townships.

Remove the declaration of urban areas as '*based on political assignments*'. Ensure urban development in a planned way. For this, establish planning department or cells in each urban area and ensure urban planning; ensure higher efficiency of urban centres by introducing better management and participatory governance and strengthen urban local governments, politically, economically and efficiency wise as well as the honorarium of the elected representatives of the municipal authority should be assessed regularly, keeping pace with time.

The elected representatives of the municipal authority should be motivated for urban development with cordiality and not to be hesitated in realizing municipal laws as well as they should not be influenced by the expectation of supporting of the offenders in the next election; ensure the absolute power of urban authority to collect tax from urban areas regularly and permit urban authority for self income generating activities

(Chittagong city corporation is the burning successful example in this case).

Empower the civil society to ensure better participation, transparency and accountability of public sector institutions and local government; our civil society must be encouraged to come forward with motivation programs related with urbanization, for this general people will come forward with a movement; public motivation and awareness programs about urban management and development to protect urban area from all kinds of degradation, should be promoted. Our print and electric media should come out with attractive programs related with urbanization and socio-economic and environmental education related with urbanization in formal education system must be introduced.

Ensure proper applications of existing laws related with urbanization and if necessary then government should form new laws to upgrade the socio-economic and environmental conditions of urban areas; specially need proper implement of environment conservation act's and legislations and ensure training for urban authority about socio-economic and environmental development.

Adoption and implementation of a comprehensive urbanization policy and improvement of urban management within a local government system are essential for the sustainable future of the country.

In spite of various limitations, the researcher has done the work successfully. It may not be sufficient, to fulfill all the demand in this area, which is usual.

The present study is a qualitative work, that is, a descriptive one. One may conduct the quantitative or econometric work to enrich the knowledge in this field.

LIST OF APPENDICES

Appendix - 01

Demographic Characteristics of the World, Asia and Bangladesh (1950-2030)

[Population (thousands); 2005-2030: Projections]

Year Region	1950	1975	2000	2003	2005	2030
Total population(world)	2520000	4070000	6070000	6300000	-	8130000
Urban population(world)	730000	1520000	2860000	3040000	-	4940000
Percentage of urban population(world)	29.0	37.3	47.1	48.3	-	60.8
Rural population(world)	1790000	2550000	3210000	3260000	-	3190000
Total population(Asia)	1398000	2398000	3680000	3823000	-	4887000
Urban population(Asia)	232000	575000	1367000	1483000	-	2664000
Percentage of urban population(Asia)	16.6	24.0	37.1	38.8	-	54.5
Rural population(Asia)	1166000	1823000	2313000	2341000	-	2222000
Total population(Bangladesh)	41783	75172	137951	-	152592	22032
Urban population(Bangladesh)	1774	7410	31996	-	38128	86500
Percentage of urban population(Bangladesh)	4.2	9.9	23.2	-	25.0	39.3
Rural population(Bangladesh)	40009	67762	105955	-	114464	133821

Source: World Urbanization Prospects: The 2003 Revision.

Total Number of Municipalities in Bangladesh and Bogra District

Year	Number of municipality in Bangladesh	Number of municipality in Bogra district
1991	94	03
1996	113	03
2001	219	05
2006	303	11
Gross change(%) from 1991 to 2006	+222.34	+266.67

Source: Statistical Year Book of Bangladesh, 1991, 1996, 2001; The Daily Ittafaque on June 28, 2006 and Deputy commissioners office, Bogra.

List of the Municipalities Established in East Bengal in the 19th Century

Category	Name	Year of establishment
A (class I)	Dacca	1864
	Chittagong	1864
	Narayan gunge	1875
B (class II)	Jessore	1864
	Comilla	1864
	Brahmonbaria	1868
	Barisal	1869
	Mymensingh	1869
	Jamalpur	1869
	Faridpur	1869
	Madaripur	1875
	Rajshahi	1876
	Bogra	1876
	Khulna	1885
Chandpur	1896	
C (class III)	Kushtia	1869
	Kissoreganj	1869
	Sherpur	1869
	Moheshpur	1869
	Kot chandpur	1883
	Bajit pur	1887

Source: Khan, 1967.

List of the Exchange Rate of Dollar-Taka

Fiscal year	Taka against per Dollar (USA)
1990-91	35.6752
1995-96	40.8365
2000-01	53.9592
2005-06	70.3200

Source: Statistical Year Book of Bangladesh, 2002 and The Daily Jugantor on July 05, 2006.

Occupational Structure in Bogra Municipal Area (1991-2006)

Year Kind	1991	1996	2001	2006	Field Survey (2006)	Gross change (%) from 1991 to 2006
Not working (With student)	21688 (29.49)	28217 (33.65)	40354 (40.22)	70705 (34.17)	138 (37.70)	+226.01
Looking for work	1103 (1.5)	1811 (2.16)	2871 (2.86)	5152 (2.49)	18 (4.92)	+367.09
Total unemployed *(10+years)	22791 (30.99)	30028 (35.81)	43225 (43.09)	75857 (36.66)	156 (42.62)	+232.84
House hold work	20533 (27.92)	22510 (26.84)	25278 (25.20)	49203 (23.78)	96 (26.23)	+139.63
Agriculture	750 (1.02)	798 (0.95)	841 (0.84)	848 (0.41)	14 (3.83)	+13.07
Industry	721 (0.98)	730 (0.87)	799 (0.80)	2360 (1.14)	Nil	+227.32
Water, electric and gas	184 (0.25)	202 (0.24)	214 (0.21)	1428 (0.69)	Nil	+676.09
Construction	581 (0.79)	680 (0.81)	818 (0.82)	9249 (4.47)	Nil	+1491.91
Transport	2103 (2.86)	2112 (2.52)	2373 (2.37)	6456 (3.12)	Nil	+206.99
Hotel and restaurant	596 (0.81)	622 (0.74)	630 (0.63)	1820 (0.88)	Nil	+205.37
Business	9436 (12.83)	9602 (11.45)	9746 (9.71)	30757 (14.87)	26 (7.10)	+225.95
Service	1176 (1.60)	1434 (1.71)	1940 (1.93)	9807 (4.74)	52 (14.21)	+733.93
Others	14673 (19.95)	15145 (18.06)	14457 (14.41)	19123 (9.24)	22 (6.01)	+30.33
Total employed (10+years)	50753 (69.01)	53835 (64.19)	57096 (56.91)	131051 (63.34)	210 (57.38)	+158.21
Total population (10+years)	73544 (100)	83863 (100)	100321 (100)	206908 (100)	366 (100)	+181.34

* '10+years' means ten and above years old.

* Figures in the parentheses indicate percentages.

Source: Bogra municipal office and Bagra sadar upzala statistics office.

Standards for Air

(Density in microgram per cusec meter)

Sl. No.	Category of area's	Suspended particulate matters (SPM)
a.	Sensitive	100
b.	Residential and rural	200
c.	Commercial and mixed	400
d.	Industrial and mixed	500

Notes:

1. At national level, sensitive area includes monuments, health center, hospital, archeological site, educational institution, and government designated areas (if any).
2. Industrial units located in areas not designated as industrial areas shall not discharge pollutants, which may contribute to exceeding the standard for air surrounding the areas specified at Sl. nos. a and b above.
3. Suspended Particulate Matter means airborne particles of a diameter of 10 micron or less.

Source: A Compilation of Environmental Laws, 2002.

Standards for Drinking Water

Parameter	Unit	Standard
Coliform (total)	n/100ml	0

Source: A Compilation of Environmental Laws, 2002.

Standards for Sound

Sl. No.	Category of area's	Standards determined at dBa unit	
		Day	Night
a.	Silent zone	45	35
b.	Residential area	50	40
c.	Mixed area (mainly residential area and also simultaneously used for commercial and industrial purposes)	60	50
d.	Commercial area	70	60
e.	Industrial area	75	70

Notes:

1. The time from 6 a.m. to 9 p.m. is counted as day time.
2. The time from 9 p.m. to 6 a.m. is counted as night time.
3. Area up to a radius of 100 metres around hospitals or educational institutions or special institutions/establishments identified/ to be identified by the Government is designated as Silent Zones where use of horns of vehicles or other audio signals and loudspeakers are prohibited.

Source: A Compilation of Environmental Laws, 2002.

Appendix – 02

List of questionnaires
Questionnaire for the urban inhabitants
Institute of Environmental Science
Rajshahi University
Rajshahi- 6205

Research Title: *'Socio-economic and Environmental Impacts of Urbanization in Bogra Municipal Area of Bangladesh.'*

[Your correct answer will help this research work to achieve its goal.]

1. (a) Name: (b) Ward number:
(c) Village: (d) Phone number (if any):
2. Educational qualification (last degree):
3. How long have you lived in this municipal area?
4. (a) Your occupation: (b) Description of your occupation:
(c) Monthly income:
5. (a) Describe about other present members of your family:

Serial number	Name	Age (in year)	Educational qualification (last degree)	Occupation	Monthly income	Relation with you	Existing period in municipal area

5. (b) Mention the number of member / members, who was / were included with your family in municipal area, but now he / she / they is / are living in out side of the municipal area.
6. Monthly income of your family:
7. Have you used family planning materials (if married)?
[Put tick (√) mark on the correct answer of the following]
8. Have you felt that population density have increased in your locality? Yes / No
9. Have there electric connection in your residence? Yes / No

10. Put tick (\checkmark) mark on the right side of the following items have used in your residence according to respective years:

Kind \ year	1991	1996	2001	2006
Radio / Tape recorder				
Television (black and white)				
Television (colour)				
Refrigerator				
Air conditioner				
Electric fan				
Washing machine				
Oven				
Car / Jeep				
Box khat				
Sofa set				
Show case				
War drobe				
Bi-cycle				
Motor cycle				
Dressing table				
Dyning table				
Almirah (steel)				

[Put tick (\checkmark) mark on the correct answer of the following.]

11. Mention the pattern of residence, in which you have lived.
Tinshed house / Tinshed building / Building / Others
12. Have you any land in this municipal area? Yes / No
13. Have you any house in this municipal area? Yes / No
14. Do you feel that the price of land have increased in this municipal area?
Yes / No
15. Mention the pattern of latrine, which have used in your residence.
Kuchha / Semi pucca / Pucca
16. Do you feel that the sanitary facilities from municipality have increased?
Yes / No
17. Do you feel that the sewerage facilities have increased in this municipal area? Yes / No
18. Mention the source of drinking water in your residence.
Tubewell / Municipal supply by pipeline / Own pump / Well
19. Have transport facility increased in your town? Yes / No
20. Have postal and courier services increased in your town? Yes / No
21. Have traffic jam increased in your town? Yes / No
22. Have the number of drug addicts increased in your town? Yes / No

23. Have prostitution increased in this municipal area? Yes / No
24. Which kind of change has occurred about the law and order situation in your town? Have upgraded / Have degraded
25. Which kind of treatment have you used in your or your family members diseases? Allopathic / Homeopathic / Ayurbedic
26. Have health care and maternity services increased in this municipal area? Yes / No
27. Have you read daily newspaper regularly? Yes / No
28. Have you listened radio programs with news regularly? Yes / No
29. Have you viewed television programs with news regularly? Yes / No
30. Have social recreational facilities increased in Bogra municipal area? Yes / No
31. Have the number of financial institutions increased in your municipal area? Yes / No
32. Who play / plays main role in taking important decision of your family? You own / Your wife or husband / You both / Others
33. Have you follow your religious provisions regularly? Yes / No
34. Have air pollution increased in this town? Yes / No
35. Have water pollution increased in this town? Yes / No
36. Have sound pollution increased in this town? Yes / No
37. Have the number of slums increased in this urban area? Yes / No
38. Have the number of slum people increased in this urban area? Yes / No
39. Have the area of social forest increased in your town? Yes / No
40. Have the number of domestic animals increased in this municipal area? Yes / No
41. Have the number of reservoir of water increased in Bogra municipal area? Yes / No
42. Have the area of cultivated land increased in this urban area? Yes / No
43. Describe in brief about the social problems have created here for urbanization.
a)..... b)..... c)..... d)..... e).....
44. Describe in brief about the economic problems have created here for urbanization. a)..... b)..... c)..... d)..... e).....
45. Describe in brief about the environmental problems have created here for urbanization. a)..... b)..... c)..... d)..... e).....
46. According to your opinion who are liable for the aforesaid (question number 43 to 45) problems? Please describe in brief. a)..... b)..... c)..... d)..... e).....
47. Please describe in brief about remedies of the aforesaid (question number 43 to 45) problems? a)..... b)..... c)..... d)..... e).....
48. Describe in brief about the social facilities have created here for urbanization.
a)..... b)..... c)..... d)..... e).....
49. Describe in brief about the economic facilities have created here for urbanization. a)..... b)..... c)..... d)..... e).....
50. Describe in brief about the environmental facilities have created here for urbanization. a)..... b)..... c)..... d)..... e).....

9. Describe in brief about the environmental facilities have created here for urbanization. a)..... b)..... c)..... d)..... e).....

Questionnaire for the Upazila Nirbahi Officer

1. Name:
2. Describe in brief about the social problems have created here for urbanization. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the economic problems have created here for urbanization. a)..... b)..... c)..... d)..... e).....
4. Describe in brief about the environmental problems have created here for urbanization. a)..... b)..... c)..... d)..... e).....
5. According to your opinion who are liable for the aforesaid (question number 2 to 4) problems? Please describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Please describe in brief about remedies of the aforesaid (question number 2 to 4) problems? a)..... b)..... c)..... d)..... e).....
7. Describe in brief about the social facilities have created here for urbanization. a)..... b)..... c)..... d)..... e).....
8. Describe in brief about the economic facilities have created here for urbanization. a)..... b)..... c)..... d)..... e).....
9. Describe in brief about the environmental facilities have created here for urbanization. a)..... b)..... c)..... d)..... e).....

Questionnaire for the Upazila Fishery Officer

1. Name:
2. Describe in brief about the helpful impact of urbanization on fish resources. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on fish resources. a)..... b)..... c)..... d)..... e).....
4. Have the government taken any attempt by you for removing harmful impact of urbanization on fish resources? Describe in brief.
a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on fish resources? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on fish resources? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Upazila Livestock Officer

1. Name:
2. Describe in brief about the helpful impact of urbanization on livestock resources. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on livestock resources. a)..... b)..... c)..... d)..... e).....
4. Have the government taken any attempt by you for removing harmful impact of urbanization on livestock resources? Describe in brief.
a)..... b)..... c)..... d)..... e).....

5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on livestock resources? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on livestock resources? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Upazila Agriculture Officer

1. Name:
2. Describe in brief about the helpful impact of urbanization on cultivation.
a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on cultivation.
a)..... b)..... c)..... d)..... e).....
4. Have the government taken any attempt by you for removing harmful impact of urbanization on cultivation? Describe in brief.
a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on cultivation? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on cultivation? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Upazila Forest Officer

1. Name:
2. Describe in brief about the helpful impact of urbanization on forest resources. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on forest resources. a)..... b)..... c)..... d)..... e).....
4. Have the government taken any attempt by you for removing harmful impact of urbanization on forest resources? Describe in brief.
a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on forest resources? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on forest resources? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Upazila Police Officer (O. C.)

1. Name:
2. Describe in brief about the helpful impact of urbanization on law and order situation. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on law and order situation. a)..... b)..... c)..... d)..... e).....
4. Have the government taken any attempt by you for removing harmful impact of urbanization on law and order situation? Describe in brief.
a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on law and order situation? Describe in brief.
a)..... b)..... c)..... d)..... e).....

6. Describe in brief about removing the aforesaid harmful impact of urbanization on law and order situation? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Sanitary Officer of Bogra Municipality

1. Name:
2. Describe in brief about the helpful impact of urbanization on sanitary facilities. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on sanitary facilities. a)..... b)..... c)..... d)..... e).....
4. Describe in brief about the sanitary activities directed by municipal authority. a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on sanitary facilities? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on sanitary facilities? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Health Officer of Bogra Municipality

1. Name:
2. Describe in brief about the helpful impact of urbanization on health care and maternity services. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on health care and maternity services. a)..... b)..... c)..... d)..... e).....
4. Describe in brief about the health care and maternity services directed by municipal authority. a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on health care and maternity services? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on health care and maternity services?
a)..... b)..... c)..... d)..... e).....

Questionnaire for the Chief Engineer of Bogra Municipality

1. Name:
2. Describe in brief about the helpful impact of urbanization on construction work. a)..... b)..... c)..... d)..... e).....
3. Describe in brief about the harmful impact of urbanization on construction work. a)..... b)..... c)..... d)..... e).....
4. Describe in brief about the construction work directed by municipal authority. a)..... b)..... c)..... d)..... e).....
5. According to your opinion, who are liable for the aforesaid harmful impact of urbanization on construction work? Describe in brief.
a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid harmful impact of urbanization on construction work? a)..... b)..... c)..... d)..... e).....

Questionnaire for the Tax Officer of Bogra Municipality

1. Name:
2. Mention the existing tax rate of Bogra municipality.
3. Describe in brief about tax assessment and collection process of Bogra municipality.
4. Mention the amount of taxes have assessed and collected according to the following fiscal years:

Fiscal year	Assessed tax (in taka)	Collected tax (in taka)
1990-91		
1995-96		
2000-01		
2005-06		

5. Describe in brief about the problems related with tax assessment and tax collection in Bogra municipal area. a)..... b)..... c)..... d)..... e).....
6. Describe in brief about removing the aforesaid problems.
a)..... b)..... c)..... d)..... e).....

Questionnaire for the License Officer of Bogra Municipality

1. Name:
2. Mention the number of licensed rickshaws in Bogra municipal area.
3. Mention the number of illegal rickshaws in Bogra municipal area.
4. Mention the number of licensed rickshaw vans in Bogra municipal area.
5. Mention the number of illegal rickshaw vans in Bogra municipal area.
6. Describe in brief about the licensing process of rickshaw and rickshaw van owners in your municipality. a)..... b)..... c)..... d)..... e).....
7. Describe in brief about the licensing process of rickshaw and rickshaw van pullers in your municipality. a)..... b)..... c)..... d)..... e).....
8. Describe in brief about the evicting activities of illegal rickshaw and rickshaw vans in your municipality. a)..... b)..... c)..... d)..... e).....
9. Mention the problems have created in municipal area for urbanization.
a)..... b)..... c)..... d)..... e).....
10. Describe in brief about removing the aforesaid problems.
a)..... b)..... c)..... d)..... e).....

(Signature and date
of the interviewee)

(Signature and date
of the interviewer)

Appendix - 03

Acronyms

- A.D.- Anno Domini (in the year of our lord).
- AIDS- Acquired Immune Deficiency Syndrome.
- BAPA- Bangladesh Paribesh Andolon.
- BELA- Bangladesh Environmental Lawyers Association.
- BIP- Bangladesh Institute of Planners.
- CUS- Centre for Urban Studies.
- DVD- Digital Versatile Disk.
- ECAFE-Economic Commission for Asia and Far East.
- e. g.-exempli gratia (for example).
- etc.- et cetera (all the others).
- FDP- Family Development Program.
- GDP- Gross Domestic Product.
- GNP- Gross National Product.
- i.e.- idi est (which is to say).
- Inc.- Incorporated
- Km.- Kilometre.
- N. B.- Nota Bene (take special note of).
- NGOs- Non Government Organizations.
- NIPA- National Institute of Public Administration.
- O. C.- Officer in Charge.
- UNDP- United Nations Development Program.
- USA- United States of America.
- VCD- Video Compact Disk.
- VCP-Video Cassette Player.
- VCR- Video Cassette Recorder.

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