2011

Urbanization and Sustainable Development in Bangladesh

Shaik, Md. Rafiqul Islam

University of Rajshahi

URBANIZATION AND SUSTAINABLE DEVELOPMENT IN 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

Doctor of Philosophy

In

Economics

Institute of Environmental Science (IES)

Rajshahi University

Rajshahi

Bangladesh

July 2011

Dedicated to

My Younger Brother- Late Saiful Islam Shaik, Wife- Mst. Tahira Begum and Only Son- Sheikh Tazim Bin Rafique (Sifat).

DECLARATION

I do hereby declare that the dissertation entitled *'Urbanization and Sustainable Development in Bangladesh'* submitted to the Institute of Environmental Science (IES), Rajshahi University for the degree of *'Doctor of Philosophy in Economics'* is exclusively of my own and original work. Where materials of other authors have been used as, due reference and acknowledgement has been stated properly. 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.

Rajshahi

July 31, 2011

(Md. Rafiqul Islam Shaik)

Ph.D. Research Fellow

Session: 2007-2008

Institute of Environmental Science (IES)

Rajshahi University

Rajshahi

Bangladesh

CERTIFICATE

It gives me immense pleasure to certify that the dissertation entitled *'Urbanization and Sustainable Development in Bangladesh'* is the original work of *Md. Rafiqul Islam Shaik*, Ph.D. Research Fellow, Session: 2007-2008, Institute of Environmental Science (IES), Rajshahi University, Rajshahi, Bangladesh. As far as I know, this is the candidate's own achievement and is an original 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 *'Doctor of Philosophy in Economics'*.

Rajshahi

July 31, 2011

(Professor Dr. Md. Mohsin Ali)

Chairman and Supervisor

Department of Economics

Rajshahi University

Rajshahi

Bangladesh

ACKNOWLEDGEMENT

I wish to express my profound gratitude at first to the *'Almighty Allah'* for His unlimited mercy to give me the ability to complete this fatigued work.

Many individuals helped me to the successful completion of this dissertation in time by their cooperation, assistance and encouragement. I like to put them here on record with deep gratitude and great pleasure.

I express my gratitude to my mother *Late Jahura Khatun* who always inspired me for higher education and prayed for me to Allah *'May you live long and be higher educated'*.

I am indebted unlimitedly to *Professor Dr. Md. Mohsin Ali,* Chairman, Department of Economics, Rajshahi University, Rajshahi, Bangladesh for his sincere supervision and guidance. Words can hardly express my deepest sense of gratitude and indebtness to him. His advise, valuable guidance and constant encouragement have been instrumental to complete this research work in time. I have no hesitation to say that it would have been impossible for me to complete this research work successfully in time without his invaluable guidance and constant help.

I express my gratitude to the former director *Professor Dr. M. Sarwar Jahan,* present director *Professor Dr. Raquib Ahmed* , teachers, secretary (acting) *Md. Sultan Ali* and employees of Institute of Environmental Science (IES) for their cordial encouragement and valuable suggestions.

I express my thanks and gratitude to 'The Directorate of Education', Bangladesh, Dhaka, 'The Ministry of Education', Government of the People's Republic of Bangladesh, Dhaka and 'The Ministry of Establishment', Government of the People's Republic of

Bangladesh, Dhaka for granting me deputation to complete properly and timely this research work.

I must thank the 'University Grants Commission of Bangladesh' for granting me a fellowship, which helps me to complete my research work smoothly.

I express my sincere thanks to *Md. Rafiqul Alam,* Vice Principal, *Md. Abdul Wahed khandakar,* Assistant Professor, Department of Islamic History & Culture, *Md. Mahbubul Alam,* Lecturer, Department of Economics, *Tazuddin Ahmed,* Lecturer, Department of Physics and *Md. Nasiruzzaman Khan,* Lecturer, Department of Political Science, Government Nazir Akhter College, Sonatala, Bogra for their kind help and inspiration to me.

I remember the heartiest cooperation of the mayors, the councillors and the employees of Gazipur, Kushtia and Sherpur municipalities.

Cooperation of my only brother in law *Md. Mahfuzul Alam (Lemon),* Officer, Pubali Bank Limited, Bogra and only sister in law *Mst. Taslima Begum (Urmi),* Officer, United Commercial Bank Limited, Bogra is unforgettable.

I must thank the employees of all Government and Non Government offices, institutions, associations etc., from which I have collected data for my research. Their kind cooperation will touch my heart forever.

I also express my gratitude to the employees of central library, Institute of Bangladesh Studies Library and Institute of Environmental Science Library Rajshahi University; Seminar libraries of Economics, Sociology, Social Work, Mass Communication, Public Administration,

Geography, Psychology, Zoology and Botany departments of Rajshahi University; Udbarn Public Library, Bogra; Mass Development Library, Bogra; District Council Library, Bogra; Shishu Academic Library, Bogra; Bangladesh Bureau of Staitistics Library, Dhaka and Centre for Urban Studies Library, Dhaka for their intimacy.

I must recognize the extent of difficulties, loneliness and all sorts of problems have faced by my father *Hadji Shaik Mohammod Ali* and wife *Mst. Tahira Begum* during my study period. Frankly speaking, I did little for my family during this long four years period and they are my father and wife, who successfully shouldered all responsibilities of the family. My only son *Sheikh Tazim bin Rafique (Sifat)* was also deprived of my affection and love and never raised any problem of his own that might disturb my work. I am really grateful to him.

At last, I express my gratitude to all other fellows of the Institute of Environmental Science (IES) and all the respondents for their friendly co-operation.

Rajshahi

July 31, 2011   *(Md. Rafiqul Islam Shaik)*

ABSTRACT

In recent years sustainable development has gained quite a lot of popularity, specially in international circles. Sustainable development and urbanization are related inseparably. A mentionable number of researches have been done on urbanization but a few have done on the relation between urbanization and sustainable development in Bangladesh and abroad. In this research, we have tried qualitatively to answer the question- is urbanization in Bangladesh heading towards sustainable development or not from 1991 to 2011. To meet the desire to know, a model has been developed and applied in three urban areas of Bangladesh chosen as representative. The main thrust of the study is to seek an answer to the following question- are the social, economic and environmental impacts of rapid urbanization in Bangladesh during the period 1991 to 2010 convenient? This dissertation is done by statistical and demographic analysis from collected primary and secondary data. Primary data have been collected from field survey by questionnaire including 'closed' and 'open ended' questions from respondent (households) of the selected study areas. The secondary data have been collected from related published and reported materials including books, articles, research reports, official documents, theses and dissertations. Opinions have also been taken from the civil society to analyze the causes and effects of the impact of urbanization.

In this dissertation, the impact of urbanization on social characteristics like- dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning activities, migration, population density, traffic jam, social consciousness, religious affair, social recreational facilities, drug addiction, prostitution

and 'law and order situation' have been examined. Here it has also been analyzed the impact of urbanization on economic characteristics like-financial classification, employment, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility, communication and transport, financial institutions, 'land value, land ownership (without dwelling unit) and house ownership' and 'livestock, poultry and fishery resources' as well as the impact of urbanization on environmental characteristics like- flora and land use, sanitary facilities, sewerage systems, pollution and slums. Both statistical and demographic analysis of the collected data have confirmed that urbanization moves mainly parallel to economic development, with a lower scale to social development and adversely related to environmental development in the study areas. To avoid unfavourable impacts of urbanization on social, economic and environmental components it has suggested not declaring any municipal area as on political assignment and taking steps for increasing awareness among people about sustainable development.

CONTENTS

SECTION- B

RELATIONSHIP BETWEEN URBANIZATION AND SUSTAINABLE DEVELOPMENT

LIST of TABLES

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Initially cities appear to have been established during the period from 5000 to 3000 Before Christ (B.C.). Until very recently, however, only a small proportion of the world's people were city dwellers. In 1800 only six metropolitan areas Tokyo, London, Paris, Naples, Constantinople-Instanbol and Beijing had half a million residents (Gottmann and Harper, 1990).

Urban population of the world continues to grow faster than the total population of the world. As a consequence, about 3.5 billion people or 50% of humankind is now (2010) 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. Urban population of the world is estimated at 3.5 billion in 2010 and is expected to rise to 9 billion by 2050. The rural population is anticipated to decline slightly from 3.47 billion in 2025 to 2.86 billion in 2050. 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. About 50 % of the world's population is living in urban areas in 2010. Thus, for the first time in history the world has more urban dwellers than rural ones. The proportion of the population that is urban is expected to rise to 69% by 2050.

During 2010-2050, 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 be 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 2010-2050. Migration from rural to urban areas and the transformation of 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 2010 and 2050 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. Asia and the Pacific region occupy 23 percent of the Earth's land area and is home to more than 58 percent of its people. The region includes several of the world's largest emerging economies, such as China and those of Southeast Asia. Over the past 30 years, the region has gradually moved from a subsistence lifestyle towards a consumer society, with rapid rates of urbanization and westernization as well as population increase. This transition has not been without adverse social and economic, as well as environmental impacts. This fact has been experienced in the case of Dhaka, the capital of Bangladesh (Quadir, 1973, Volume- 2).

Urban population in Asia has increased 6 times from 1950 to 2010. While world urban population has increased 4 times in the same period.

That is, the problem in Asia is more crucial. On the other hand, in Bangladesh it has increased 25 times, which is a dreadful problem for the country. Total population of the World, Asia and Bangladesh has increased by 3, 2.5 and 4 times respectively in the same period. 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 2009 Revision).

1.2   Urbanization in Bangladesh

Urbanization is thought to be started in Bangladesh over two thousand years back then they were concerned with setting up administration, trade, commerce, and certain religious celebrations. Urban centres were set up with the hope to defend the country but most of them ended up coming under British command so growth at that time was very slow and limited. Most urban centres were where there was easy access to transport meaning they were usually on a river bank for trading with other urban areas. When India and Pakistan gain there independence in 1947, major investments in the city of Dhaka and Chittagong occurred. These were old British headquarters and were all industrial areas. So this caused West Pakistan to dominate the government and Bangladesh was left with problems as the country experienced a huge increase in urban population just before its independence in 1971. This happened due to Muslims that migrated and decided to settle in urban areas. During this

time there was also a rise in rural population witch helped in the process of urban growth.

At the time of independent Bangladesh was an over populated and developing country. It was one of the least urbanized areas. But at present, the country is undergoing rapid urbanization. This is essentially the product of colonial dependence which left deep imprints on the organization of economic space. From 1950 to 2010 urban population of Bangladesh has increased about 25 times, which is a dreadful problem for the country. Side by side total population of Bangladesh has increased 4 times in the same period. Urban population of Bangladesh is estimated at 46 million in 2010 and is expected to rise to 125 million by 2050. That is, 28% of the population of Bangladesh is estimated to live in urban areas in 2010 and current projections indicate that the urban population of Bangladesh will rise to 56% by 2050. Demographic characteristics of the world, Asia and Bangladesh (1950-2050) are shown in the Appendix- 01.

The main urbanized cities of Bangladesh are Dhaka, Chittagong, Rajshahi and Khulna. They have urbanized rapidly from 1950 to 2010. In the same period the urban population of Dhaka, Chittagong, Rajshahi and Khulna has increased by 6,130%, 2,413%, 3,305% and 6,024% respectively (Appendix- 02). The main reasons for people moving to Dhaka city is, if they are unemployed, landless and just basically poverty stricken people may be able to improve there lifestyle in the city. The other main reason would be by environmental causes like a river eroding and it started to flood the villages, this would cause people to move to Dhaka city (Islam, 2005). 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 bear the character 'parasitic' urban centres rather than 'generative' (Elahi, 1972). Probably the two major political changes i.e., the partition (1947) and the liberation (1971) might have accelerated the process of urbanization in Bangladesh. Specially, after 1991 the number of municipalities has increased rapidly (Appendix- 03). For example in 1991, the numbers of municipalities were 02, 03, 03 and 94 respectively in Gazipur, Kushtia & Bogra districts and Bangladesh, which increased to 04, 05, 11 and 312 respectively in 2011. That is, those have increased by 100%, 66.67%, 266.67% and 228.72% respectively in same period.

1.3   Statement of the Problem

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 very 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).

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, changes of socio-economic and environmental conditions are 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 urbanization brings socio-economic and environmental changes (helpful or harmful) undoubtedly. On the other side, sustainable development means social development, economic development and environmental protection. So, socio-economic and environmental changes happen for urbanization, affects sustainable development. As Bangladesh is a country of rapid and unplanned urbanization, it also may not be free from the horrible snatch of urbanization and its sustainable development is must affecting by urbanization. From the above statement the following questions require serious attention:

(i) Does indeed urbanization affect society?

(ii) How much does urbanization change economic trend?

(iii) Is urbanization liable for changing world environment? If yes, then how and in which degree?

(iv) Sustainable development contains three components (social development, economic development and environmental protection). Is sustainable development affected by the combined impact of urbanization? If yes, is it inversely or proportionately?

The aim of this research is to enquire is urbanization in Bangladesh heading towards sustainable development or not from 1991 to 2011. To meet the desire to know, three urban areas of Bangladesh are chosen as the representative and mentionable urban areas of Bangladesh. The main thrust of the study is to seek an answer to the question- Are the social, economic and environmental impacts of rapid urbanization in Bangladesh during the period 1991 to 2010 convenient?

Any study on urbanization and sustainable development must highlight these pertinent questions. To our knowledge, no study has been done on these issues in the context of any urban area/areas of Bangladesh. Therefore, this study tries to shed light on the different aspects of relationship between urbanization and sustainable development with respect to the socio-economic and environmental impacts of urbanization in the selected municipal areas of Bangladesh.

1.4   Objectives of the Study

The main objective of this research is to find out relationship between urbanization and sustainable development in Bangladesh. To obtain the main objective specific objectives are:

a) To identify the social changes happened for urbanization in the selected urban areas of Bangladesh;

b) To investigate the economic changes happened for urbanization;

c) To identify the environmental changes happened for urbanization and

d) To find out reasons for inimical impact of urbanization (if any) on sustainable development.

1.5 Justification of the Study

The general consequences of urbanization everywhere 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 the 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). All these are related to socio-economic and environmental conditions. Bangladesh is not out of these problems. Merits of urban life can be expressed by 3C's. They are Captivating, Competitive and Costly. On the other hand, demerits of urban life can be expressed by 3D's. They are Difficult, Dangerous and Dirty (Kumar, 2009).

The numbers of municipalities and city corporations in Bangladesh are respectively 312 and 06. Among the municipalities 89 are in 'A' grade, 85 are in 'B' grade and 138 are in 'C' grade. In 1991, the numbers of municipalities and city corporations of Bangladesh were respectively 94 and 04. Its urban area is increasing in an unplanned way. With the increasing of urban area its socio-economic and environmental facilities are not increasing. The adequacy of crows in our urban areas is enough to

proof its nasty environment. On the other hand most of the declarations of our municipalities are not based on necessity but based on political assignments. For only political consideration 21 and 60 municipalities were declared respectively by Awami league government of 1996 and 4 party alliance government of 2001. Even in this position the honourable minister of 'Local Government, Rural Development and Co-operative (LGED) Ministry' of Bangladesh has declared in "JATIYA SANGSAD" recently that, the present government will declare 18 municipalities more in 14 Districts immediately. The proposals for constituting the municipalities are on consideration to the Government now. Government should prepare well enough before declaration of a rural area as a municipal area. But our governments are not doing so. As a result the people of our urban areas are facing problems related to socio-economic and environmental facilities.

The people living in urban areas are paying taxes for consuming socio-economic and environmental facilities from the urban authority. But there is an important question, is the collected tax, grant and aid are being used proper way for the sake of the urban people to serve them sufficient socio-economic and environmental facilities, which will ensure sustainable development. The implications of the continuing of urbanization deserve careful consideration. Unfortunately most countries of the Economic Commission for Asia and Far East (ECAFE) region lack a thorough 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. 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 (Chaudhury, 1980). Under the circumstances, study in regard to "Urbanization and Sustainable Development in Bangladesh" 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 "Urbanization and Sustainable Development in Bangladesh" has been undertaken.

1.6   Scope of the Study

Being a crucial issue in the world now a day all the people of the world fix the gaze on urbanization. So, working on the topic is very complicated. It 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 'urbanization and sustainable development in Bangladesh'. So, the main concentration has gone to the residence of urban citizens, urban facilities 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 Gazipur, Kushtia and Sherpur municipal authorities, Non Government Organizations (NGOs) working in Gazipur, Kushtia and Sherpur municipal areas related with socio-economic and environmental activities, social elites, Bangladesh Environmental Lawyers Association (BELA), Bangladesh Paribesh Andolon (BAPA), Centre for Urban Studies (CUS) etc.

1.7   Feasibility of the Study

Conducting of any research work is not easy task. It is true that research works have some specific limitations. Bearing it in mind, the researcher has selected his research topic. Moreover- time, communication and resources are important factors for any type of research work. So, the researcher has selected his study areas in Gazipur, Kushtia and Sherpur municipal areas, where he lives and works and able to conduct the research smoothly within limited time and resources. It is mentionable that the researcher permanently lives in Bogra district and there is a well communication among Bogra, Gazipur, Kushtia and Sherpur.

Relevant data, information, maps etc. are other important aspects of the research. The researcher was previously well known to the relevant government and non-government organizations of Gazipur, Kushtia and Sherpur municipal areas, which 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. In this respect the researcher is in a convenient position because, the researcher lives in Bogra and there is a well transportation system from Bogra to Gazipur, Kushtia and Sherpur municipal areas.

1.8   Importance of the Study

The researcher has tried to find out the relationship between urbanization and sustainable development in Bangladesh in this research. To find out the relationship between 'Urbanization and Sustainable Development in Bangladesh' he has searched social, 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 authorities to take decision for proper management of the municipal areas. Finally, the review of literature, in chapter two, reveals that the present research work on 'Urbanization and Sustainable Development in Bangladesh' is a new field of study. The research work shows relationship 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.

1.9 Limitations of the Study

Sustainable development is viewed from many perspectives in this research, which include social, economic and environmental perspectives. 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:

a) During course work, the researcher got maximum 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 most of another teachers were aboard;

b) there is hardly any published or unpublished materials available to the study of 'Urbanization and Sustainable Development in Bangladesh';

c) to get reliable information about the present socio-economic and environmental conditions in Gazipur, Kushtia and Sherpur municipal areas of Bangladesh is really formidable;

d) the whole work has to be based on actual field work on account of the above two (number b and c) facts;

e) the respondents (even government officials) some times hide facts and it was due to their ignorance about research work;

f) 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;

g) the researcher has confronted some difficulties as to having access to the government resources;

h) the researcher could have included more respondents, but due to time and budget constraint it was impossible;

i) the researcher is a student of social science background. Without this, lack of laboratory and scientific instruments facility scientific research was impossible and at last,

j) the 'Institute of Environmental Science' has established in 1999 and according to its rules and regulations it is open for research for the students of all groups of education (arts, commerce and science). But till now all the teachers of the institute are science back grounded, specially come from biological science and for this all the students except biological science are facing problem for lack of proper guidance from the teachers of the institute.

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

1.10 Definition of Key Terms

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

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). The great geographer Mr. Tompson (1965) called urbanization "the movement of people from communities concerned chiefly or solely with agriculture to other communities, generally larger, whose activities are primarily centred in government, trade manufacture or allied interests".

Urban Area

By definition, any area within the jurisdiction of an established municipality is considered urban. Some other areas have also been declared by the appropriate authority. In addition to these categories, the 1981 census of population classified mauzas in which a thana headquarter is located, as urban irrespective of whether or not they had all the necessary characteristics of an urban area. Also, mauzas treated next to but outside the municipal/metropolitan areas may possess characteristics of an urban area. All such mauzas were also treated as urban. In classifying a mauza as urban or rural it was decided that if a portion of a mauza was urban the entire mauza would be considered urban (Bangladesh Population Census, 1981).

Places having a municipality (Pourashava), a town (shahor) committee or a cantonment board. In general, urban areas are a concentration of at least 5,000 persons in a continuous collection of

houses where the community sense is well developed and the community maintains public utilities, such as roads, street lighting, water supply, sanitary arrangements etc. These places are generally centres of trade and commerce where the labour force is mostly non agricultural and literacy levels are high. An area that has urban characteristics but has fewer than 5,000 inhabitants may, in special cases, be considered urban (World Urbanization Prospects: The 2003 Revision].

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:

a)   Three-fourths of the adult male population of the area to which it refers are chiefly employed in pursuits other than agriculture;

b)   such area contains not less than 15,000 (Fifteen thousand) population and

c)   an average number of not less than 2,000 (two thousand) inhabitants per square mile.

The government of Bangladesh may, in the prescribed manner-

a)   declare any urban area , other than a cantonment, to be a municipality (or municipal area);

b)   extend, curtail or other wise alter the limits of any municipality (or municipal area) and

c)   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).

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 Encyclopedia Britannica, 2002, volume- 3).

Sustainable Development

There have been various efforts undertaken by international organizations for development especially 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

intergenerational 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, 1992). 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 no less than that enjoyed by the current generations. What is required, then, is some sort of inter-generational 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-

i)   Social development

ii)   Economic development and

iii)   Environmental protection.

Society

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

Economics

Economics is a social science that analyzes the utilization and allocation of available resources among competing uses. Economics involves choices. These choices determine, for example, what a household will consume, what a firm will produce and how people will spend their time on work, education and leisure. Thus economics deals with important aspects of everybody's life (The Encyclopedia Americana 1984, volume- 9).

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 Encyclopedia Britannica, 2002, volume- 4).

In another word, '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).

1.11 Organization of the thesis

The dissertation on 'Urbanization and Sustainable Development in Bangladesh' has comprised of eight chapters including this chapter.

Chapter one is the introduction, which deals with background of the study, urbanization in Bangladesh, statement of the problem, objectives of the study, justification of the study, scope of the study, feasibility of the study, importance of the study, limitations of the study, definition of key terms and organization of the thesis.

Chapter two is the review of related literature and data collection, in which relevant literatures from articles in journals, internet sources, books and manuscripts have been reviewed. In this chapter it has also been included research gaps and sources of data collection.

Chapter three shows theoretical and methodological framework of the study, where urbanization theories, causes of urban growth, urban living– attractions and effects, sustainable development policy, the notion of capital in sustainable development, linkage between urbanization and sustainable development, urbanization and sustainable development-coordination and balance, agenda 21- an overview, conceptual framework for sustainable urbanization and study methodology are presented.

In chapter four socio-economic and environmental conditions of the study areas are presented. Here, a discussion on the background, geographic area, location, socio-economic and environmental conditions of Gazipur, Kushtia and Bogra districts, along with the background,

geographic area, location, socio-economic and environmental conditions of Gazipur sadar, Kushtia sadar and Sherpur Upazilas are presented.

In chapter five social impact of urbanization in Gazipur, Kushtia and Sherpur municipal areas are presented. Explicitly in this chapter a decision on dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning activities, migration, population density, traffic jam, social consciousness, religious affair, social recreational facilities, drug addiction, prostitution and 'law and order situation' are done.

Chapter six is economic impact of urbanization in Gazipur, Kushtia and Sherpur municipal areas, which has explored about impact on financial classification, employment, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility, communication and transport, financial institutions, 'land value, land ownership (without dwelling unit) & house ownership' and at last 'livestock, poultry and fishery resources'.

Chapter seven is environmental impact of urbanization in Gazipur, Kushtia and Sherpur municipal areas, which has identified about impact on flora and land use, sanitary facilities, sewerage systems, pollution and at last slums.

Relationship between urbanization and sustainable development in the study areas has also depicted in the seventh chapter.

Chapter eight is the summary, conclusion and recommendations, which is the last chapter of this dissertation, has shown a summary of the 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 AND DATA COLLECTION

To fulfill a researcher's target review of literature is necessary. It helps him to gain knowledge about the research and find out research gap. It also helps him for further research.

2.1   Urbanization Related

Urbanization is one of the burning issues 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.

Han (1994), has expressed his thinking in Ph.D. research entitled 'Controlled Urbanization in China, 1949-1989'. He has focused here about the role, which has controlled urbanization, played in shaping the various urban policies and influencing the growth and development in Chinese cities. He also discussed here about portray the influences, which these policies have on controlled urbanization and to assess the various impacts which they had in regulating and restraining the urban and regional growth pattern of Chinese cities.

The author has discussed here about policies in China and its impact on urbanization and some economic changes. But he has not

touched about major impacts of urbanization, which are its social and environmental side.

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.

Gaan (2000), has investigated the causes and problems of environmental degradation, environmental conflict, national security and social security. Although he has touched about social and environmental security, but has not discussed about economic security.

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.

Mehdi (2002), has pointed out in his research entitled 'Appraisals of Noise Pollution, Traffic, and Land Use Patterns in Metropolitan Karachi through GIS and Remote Sensing Techniques' about land use pattern, traffic and noise pollution in Karachi City. He has focused here about population distribution pattern, current level of noise pollution potential noise induced diseases, pattern of emerging diseases and their risks, risk assessment of noise pollution through geo-statistical

interpolation techniques, formulation of risk criteria etc. Here he has discussed only about traffic, its impact on human body and land use pattern. He has avoided economic impact of noise pollution and other social and environmental effects.

Mc Carney and Strem (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 neighbourhood , 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.

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

Tang, Engel, Lim, Pijamowski and Harbor (2005), have discussed in an article entitled 'Minimizing the Impact of Urbanization on Long Term Runoff' about harmful impacts of urbanization in United States of America (USA). Here they have focused about results of urbanization that is, losses of forest, pasture, range and crop lands. They have discussed the facts of a developed country but not developing countries. They also avoided social impacts fully with other economic and environmental impacts.

Tettey (2005), has focused in a thesis entitled 'Urbanization in Africa in Relation to Socio-economic Development: A Multifaceted

Quantitative Analysis' about urbanization, social and economic development in Africa. Here the author describes about socio-economic development in Africa, side by side relation with urbanization has also discussed. Here the writer neglected environmental development or degradation, which is very important in recent times. The author has willingly or ignorantly avoided this important factor. Here, the author has discussed problems such as inadequate infrastructure, waste management and inadequate housing, which are created by urbanization. Here also has discussed about problems, created by urbanization are difficult to eradicate and control.

Quigley (2008), has focused on the linkage between urbanization and economic development. It articulates the relationship between urban density and potential in productivity- through specialization, complementariness in production through the diffusion of knowledge and mimicry and simply through size and scale. The factors limiting the efficient sizes of cities are analyzed. He also focused on empirical knowledge- from underdeveloped countries as well as high income industrial societies- about the importance and magnitudes of these productivity gains. The analysis documents the close link between gains economic efficiency and the urbanizations of populations in most parts of the world. Here social and environmental discussion is fully avoided.

Schultink (2009), in 'Land Use Planning and Open Space Preservation : Economic Impacts of Low Density Urbanizing and Urban Sprawl' has analyzed about low densely residential areas in United States of America (USA), its impact on agriculture, service capacity etc., Analysis about developing countries and social analysis is absent here.

He has focused on a few area of sustainable development that means just touched.

Trivedi, Sareen and Dhayni (2010), have identified in an article entitled 'Rapid Urbanization- Its Impact on Mental Health: A South Asian Perspective' about impact of rapid urbanization on mental health, which is an important problem in society. Rapid and unplanned urbanization is sometimes associated with poverty, culture, environmental degradation and population's service capacity, which creates pressure on mental health. They have found that urbanization is responsible for degradation of mental health. They have focused on partial but exceptional impact of urbanization. Vast areas have not observed here.

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.

Rahman (1982), has done 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.

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 up-gradation 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.

Keka (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.

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 Mukaherjee (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.

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 favourable and unfavourable 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.

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 the 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, the 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.

Siddiqi (2004), has found out in his Ph. D. dissertation about rural urban migration in Lahore District. He has mentioned here about the extent of migration, distant range of migrants, profile of the rural migrants, the employment pattern of the rural migrants, the causes of migration from rural to urban areas etc. He has focused only a partial problem of urbanization, though it is a main problem of urbanization. He has neglected other social, economic and environmental aspects.

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.

2.2 Sustainable Development Related

Sustainable development is the latest issue throughout the world. All are trying to ensure this. But in this field a few research works have been completed.

Rodrigvez and Bonilla (2007), have mentioned in their book entitled 'Urbanization, Global Environmental Change and Sustainable Development in Latin America' about urbanization pattern, infrastructure, socio-environmental justice, climate change, land use change and global environmental change. Economic side is fully avoided here. Although environmental change is a crucial issue in present century, but economic change is not negligible.

Denig (2009), in a book entitled 'Sustainable Urban Infrastructure' has expressed his idea about such type of urban structure, which will carbon free. Here he has discussed on electricity demand, electricity supply and transportation. He has given priority on renewable energy that is, solar energy. This is important but partial.

Houpin (2010), in his book 'Urban Mobility and Sustainable Development in the Mediterranean Regional Diagnostic Outlook' has discussed about urban mobility and its effects. Here he has focused on movement of urban inhabitants, their transportation, occupation, recreation etc. with the relation of sustainable development. He has discussed only one item and has ignored vast area of sustainable development.

Khan (2008), in a paper entitled 'Challenges for Sustainable Development: Rapid Urbanization, Poverty and Capabilities in Bangladesh' has searched about rapid urbanization and poverty in Bangladesh. He also searched about carrying capacity of Bangladesh. Here he has found out lack of policies, existing policy implications, migration, lack of employment etc. Mainly he has emphasized on economic pressure created by urbanization. Social and environmental,

which covers most area of sustainable development is not mentioned here.

2.3   Research Gaps

After the aforesaid discussions, we can come to a decision that though there have been available works on various aspects of urbanization and sustainable development in Bangladesh and abroad, 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:

(1) Maximum studies have been carried out on various aspects separately and partially, which happens in an urban area. None has made any study on urbanization and its trends towards sustainable development, which poses a problem for the issue.

(2) Although, some studies have been conducted on either social or economic or environmental aspects of urban areas, these studies are mainly concentrated on partial aspects of urban areas and mostly they have tried to identify its unfavourable aspects only.

(3) Sustainable development contains three components. These are social development, economic development and environmental protection. There is no combined research work, which has covered all the three items.

(4) Since urbanization is an important issue and sustainable development is inseparably related to it; study should be conducted to explore the relationship between urbanization and sustainable development.

Furthermore, an in-depth study on the above issues is still to come. 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 with relation to sustainable development covering the recognized democratic period from 1991 to 2010. 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.

2.4   Sources of Data Collection

The study is based on both primary and secondary data.

2.4.1 The Study Areas

The areas covered by this study, comprises Gazipur sadar upazila of Gazipur district, Kushtia sadar upazila of Kushtia district and Sherpur upazila of Bogra district. For any kind of research, it is necessary to select study area/areas for fulfillment of the objective/objectives of the research. Acceptability of the data, are the another reasons behind the selection of the study area/areas. Bearing this in mind three old and advance urban areas (Appendix- 04) of Bangladesh, Gazipur municipal area, Kushtia municipal area and Sherpur municipal area have been selected as the study areas.

Gazipur municipality was established in 1986. Its area is 48 square kilometer. Though it is a new one, but it is well industrialized and is a famous municipal area of the country. There are 9 wards in the municipality. It is a 'First' class ('A' grade) municipality (Gazipur municipal office). Kushtia municipality was established in April 1, 1869. It is one of the oldest municipalities of Bangladesh. Its area is 13.32

square kilometer. There are 12 wards in the municipality. In 1872 its population was only 9245. When it was established then it was 'Third' class ('C' grade) municipality, after liberation in 1971 it was declared as 'Second' class ('B' grade) municipality and after 1990 it was categorized as 'First' class ('A' grade) municipality (Kushtia municipal office). Sherpur municipality of Sherpur Upazila in Bogra district was established in July 1, 1876. Jointly with Bogra municipality it is the oldest municipality of Bogra district. It is also older municipality in Bangladesh. Its area is 6.74 square kilometer. The municipality has 9 wards. It is now 'First' class ('A' grade) municipal area (Sherpur municipal office).
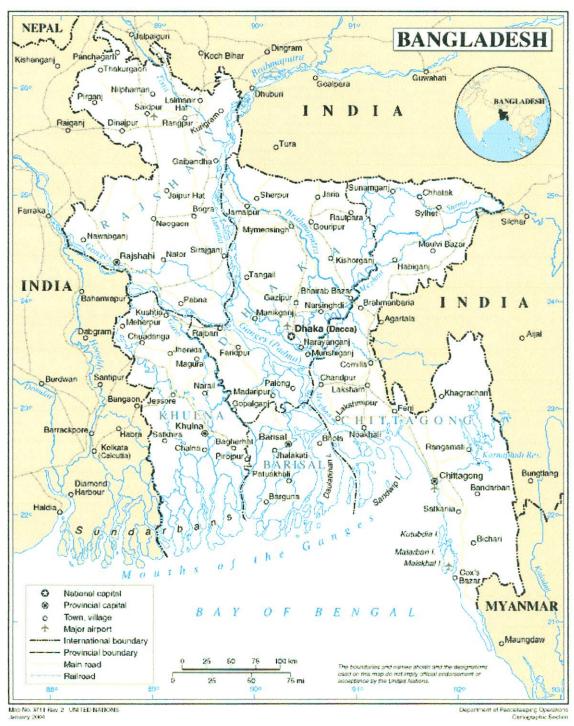
2.4.2 Rationale of Selecting the Study Areas

The river Padma and Jamuna have divided Bangladesh into main three parts. Number one- is the Northern region or Northbengal, number two- is the South-west region and number three- is the South-east region. It has taken mentionable and famous single municipal area from every part to avoid biasness and fulfillment of the research objectives.

Gazipur was a subdivision of former Dhaka district. Now, it is a district of Dhaka division. It is the 'entrance' to Dhaka for the people of northern and south-west regions of Bangladesh. It is well industrialized. Its natural forest keeps calm its atmosphere. Its social condition is also well enough.

Kushtia is a district under Khulna division. The district culturally leads the country. 'Fakir Lanon' is a famous saint in the Indian sub-continent. The district is industrially famous. It is the 'entrance' to the South-west region from the other parts of the country. The socio-environmental condition is able to lead the country. People are well behaved here.

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

Northbengal. 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 Northbengal. Sherpur is its old and famous thana, now which is Upazila. It is busier than any other Upazila of Bogra district except sadar Upazila. It is historically famous in the district. If Bogra is the 'entrance' to Northbengal, then Sherpur is the 'entrance' to Bogra. It is famous for 'Curd'. Its socio-economic and environmental condition is quite calm.

During the last 20 years the numbers of municipalities have increased rapidly in the study areas (Appendix-03). As the specific objectives of this research, are to find out the social, economic and environmental impacts of urbanization, Gazipur, Kushtia and Sherpur municipal areas are seemed as the ideal areas to find out the aforementioned objectives. The cost of collection of primary data is expensive and the researcher has found limited financial assistance. Moreover, the researcher has faced time constraint as a government employee. Thus the researcher has selected Gazipur, Kushtia and Sherpur municipalities for minimize cost and time constraint. However, Gazipur, Kushtia and Sherpur municipalities searches as representative urban areas of Bangladesh because of, there location and socio-economic and environmental importance.

2.4.3 Sampling Technique

Sampling technique plays a vital role in research work. Sampling provides sufficient information about population. It plays a 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 Gazipur, Kushtia and Sherpur municipal authorities by systematic random sampling method.

2.4.4 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 waste 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 & Rubin, 2000).

The area of this research is vast. There are 37056, 22852 and 6278 households respectively in Gazipur, Kushtia and Sherpur municipality. 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 '30' samples from each area, who are the main respondents. Sample determination is shown in Table- 2.1.

N.B. Main sample selecting formula:

Selected sample = Total house hold / Sample size = Every 'A' th number household

Table- 2.1
Sample Determination

Area	Total household	Sample size	Determined sample
Gazipur	37056	30	Every 1235 th number household
Kushtia	28852	30	Every 761 th number household
Sherpur	6278	30	Every 209 th number household

In another side 39, 43 and 39 respondents (Government and Municipal officials, Social Elites etc.) as auxiliary respondents have taken for the research respectively from Gazipur, Kushtia and Sherpur municipal areas. The total samples of this study have been selected from the aforesaid study areas and they have been categorized as in the following Table- 2.2.

Table- 2.2
List of Samples

a)	Urban inhabitants	:	90
b)	Present municipal Mayors and Councillors	:	43
c)	Upazila nirbahy officers	:	03
d)	Upazila fishery officers	:	03
e)	Upazila livestock officers	:	03
f)	Upazila agriculture officers	:	03
g)	Upazila forest officers	:	03
h)	Thana police officers(OC)	:	03
i)	Sanitary officers of municipalities	:	03
j)	Medical officers of municipalities	:	03
k)	Chief engineers of municipalities	:	03
l)	Tax officers of municipalities	:	03
m)	License officers of municipalities	:	03
n)	Social Elites (Teachers-03, NGO workers-03, Ex. Mayors and Councillors-03, Businessmen-03, others-03 from each area)	:	45

Total= 211

The main respondents (urban inhabitants) of this research from every research area are '30' in number, who are the family head. The main respondents are mostly permanent inhabitant, middle class and educate. All information has collected from the aforesaid main samples by field survey. Total respondents are '211' in number.

2.4.5 Data Sources

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 been collected from field level. The secondary data of this research have been collected from various government, semi government, non government organizations and various web sites.

2.4.5.1 Primary Sources

The primary data have been collected from grass root level of these selected areas by the trained investigators through field survey. Before finalizing the questionnaires, a pretest of the questionnaires were conducted. '14' sets of questionnaires including '147' 'closed' and 'open' ended questions were used for this study. These are shown in the following Table- 2.3.

Table- 2.3

Distribution of Questionnaires

Respondent	Number of questionnaire set	Number of question
Urban inhabitants	1 set	50
Present municipal Mayors and Councillors	1 set	15
Upazila nirbahy officers	1 set	09
Upazila fishery officers	1 set	09
Upazila livestock officers	1 set	06
Upazila agriculture officers	1 set	06
Upazila forest officers	1 set	06
Thana police officers(OC)	1 set	06
Sanitary officers of municipalities	1 set	06
Medical officers of municipalities	1 set	06
Chief engineers of municipalities	1 set	06
Tax officers of municipalities	1 set	06
License officers of municipalities	1 set	06
Social Elites (Teachers-03, NGO workers-03, Ex. Mayors and Councillors-03, Businessmen-03, others-03)	1 set	10
Grand total	14 Sets	147 Questions

2.4.5.2 Secondary Sources

The secondary data were collected from related published and reported materials including books, journals, research reports, official documents, theses and dissertations. Documents available in Gazipur, Kushtia and Sherpur municipal offices; Gazipur sadar, Kushtia sadar and Sherpur upazila statistics offices; Bangladesh bureau of statistics; other government offices and 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.

2.4.5.3 Information Collected

To determine social impact of urbanization the data on dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning activities, migration, population density, traffic jam, social consciousness, religious affair, social recreational facilities drug addiction, prostitution and law & order situation were collected from both primary and secondary sources.

To measure economic impact of urbanization the data on financial classification, employment, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility, communication and transport, financial institutions, 'land value, land ownership (without house) and house ownership' and 'livestock, poultry and fishery resources' were collected from not only primary but also secondary sources.

To determine environmental impact of urbanization the data on flora and land use, sanitary facilities, sewerage systems, pollution and slums were collected from both primary and secondary sources.

2.4.6   Period of Data Collection

The data (mainly primary), which are necessary for this research have been collected throughout the research period i.e., from July 2007 to June 2010. 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.

2.4.7 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. '15' (fifteen) 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 March 1, 2010 to March 31, 2010

Trip two: From May 1, 2010 to May 31, 2010 and

Trip three: From July 1, 2010 to July 31, 2010.

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

2.4.8 Methods of Data Processing and Analysis

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

2.4.8.1 Socio-Economic and Environmental Analysis

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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011.

2.4.8.2 Demographic and Statistical Analysis

All the quantitative data have taken from both the sources have presented here in simple tabular forms. Demographic formula, average and percentage have used in this research. Cross examination has also applied here.

2.4.9 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.

2.4.10 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
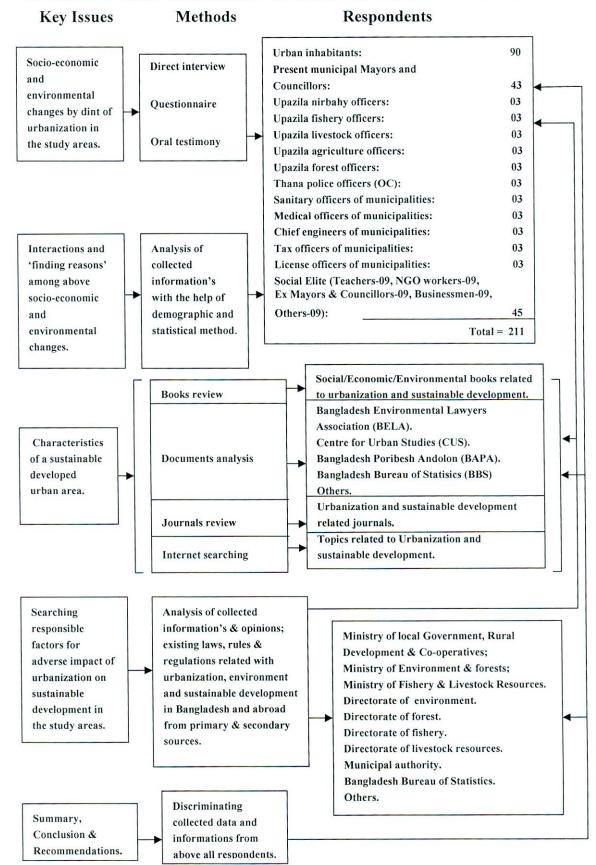
Thirdly, where ever possible, efforts were made to explain facts as participant observer.

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 were collected form secondary sources were not only received carefully after checking their acceptability, but also were cross checked with primary data and information form other sources to determine its reliability. Hence, it can be said that the data have collected from both primary and secondary sources for the present study are quite reliable and authentic.

2.4.11 Combined Methods of Data Collecting, Processing and Analysing

To find out the relationship between urbanization and sustainable development in Bangladesh, which is the main objective of this research and to investigate the impacts of urbanization on sustainable (social / economic / environmental) development, which are the specific objectives of this research the researcher has divided his task into three parts. They are key issues, methods and respondents. Key issues are consists of five terms. They are- a) socio-economic and environmental changes by dint of urbanization in the study areas, b) interactions and 'finding reasons' among above socio-economic and environmental changes, c) characteristics of a sustainable developed urban area, d) searching responsible factors for adverse impact of urbanization on sustainable development in the study areas and e) summary, recommendations & conclusion. For fulfillment the demand of key issues it has settled appropriate methods and according to the methods the respondents has selected properly. The full process has focused clearly in the following chart.

METHODS OF DATA COLLECTING, PROCESSING AND ANALYSING AT A GLANCE:

Key Issues	Methods	Respondents

Key Issues: Socio-economic and environmental changes by dint of urbanization in the study areas.

Methods: Direct interview, Questionnaire, Oral testimony

Respondents:

Urban inhabitants:	90
Present municipal Mayors and Councillors:	43
Upazila nirbahy officers:	03
Upazila fishery officers:	03
Upazila livestock officers:	03
Upazila agriculture officers:	03
Upazila forest officers:	03
Thana police officers (OC):	03
Sanitary officers of municipalities:	03
Medical officers of municipalities:	03
Chief engineers of municipalities:	03
Tax officers of municipalities:	03
License officers of municipalities:	03
Social Elite (Teachers-09, NGO workers-09, Ex Mayors & Councillors-09, Businessmen-09, Others-09):	45
Total =	**211**

Key Issues: Interactions and 'finding reasons' among above socio-economic and environmental changes.

Methods: Analysis of collected information's with the help of demographic and statistical method.

Key Issues: Characteristics of a sustainable developed urban area.

Methods: Books review; Documents analysis; Journals review; Internet searching

Respondents: Social/Economic/Environmental books related to urbanization and sustainable development. Bangladesh Environmental Lawyers Association (BELA). Centre for Urban Studies (CUS). Bangladesh Poribesh Andolon (BAPA). Bangladesh Bureau of Statisics (BBS) Others. Urbanization and sustainable development related journals. Topics related to Urbanization and sustainable development.

Key Issues: Searching responsible factors for adverse impact of urbanization on sustainable development in the study areas.

Methods: Analysis of collected information's & opinions; existing laws, rules & regulations related with urbanization, environment and sustainable development in Bangladesh and abroad from primary & secondary sources.

Respondents: Ministry of local Government, Rural Development & Co-operatives; Ministry of Environment & forests; Ministry of Fishery & Livestock Resources. Directorate of environment. Directorate of forest. Directorate of fishery. Directorate of livestock resources. Municipal authority. Bangladesh Bureau of Statistics. Others.

Key Issues: Summary, Conclusion & Recommendations.

Methods: Discriminating collected data and informations from above all respondents.

CHAPTER THREE

THEORITICAL AND METHODOLOGICAL FRAMEWORK

This study is designed mainly to establish a link between urbanization and sustainable development in Bangladesh. This is the main objective of this research. To do so, we need first to explore the existing urbanization theories as well as sustainable development ideas. Based on the existing theories a suitable framework will be developed to carry out the present work. Since urbanization affects sustainable development, an in-depth knowledge about the components of urbanization is necessary. In section 3.1 various theories on urbanization will be discussed first. In the subsequent sections the concept of sustainable development and a link will be established.

3.1   Urbanization theories

Various theories are used to explain urban growth and these theories include (i) modernization, (ii) dependency and (iii) urban bias theories. These are explained below:

3.1.1 Modernization Theory

Modernization theory was developed in the mid 20th century. Modernization is the term used for the transition from the traditional society of the past to modern society as found in the west. Modernization theory presents the idea that by introducing modern methods of production like the use of advanced technology for industry the underdeveloped countries will experience a strengthening in their economics and this will lead them to development. This theory holds that the modernization of states through economic development encourages

other forms of development like social and political development. This theory focuses on individual countries for analysis and it is examined mainly with economic development as operationalized variables such as Gross Domestic Product (GDP) per capita.

According to the modernization school, which is the view shared by the classical economists, there cannot be urbanization without industrialization (Berliner, 1977). In other words, the more industrialized a society is, the more urbanized it is and that is believed to be as a result of agriculture releasing surplus rural labour for industries located in the cities (Dutt, 2001). Urban researchers adopted an analytical tool based on evolutionary and functionalist perspectives in explaining this theory. The evolutionary perspective consists of a framework in which the social changes are unidirectional, progressive and gradual. The evolution is irreversible as the rural primitive stage advances to high level of advanced urban-based society. The functionalist perspective recognized that as society proceeds towards modernization, systematic and transformative changes take place; giving rise to change from traditional values to modern ones. Technology and industrialization based economic growth become engines of growth (Kasarda and Crenshaw, 1991). Thus there is a need for a country to experience migration from rural to urban areas in order to become an industrial (modern) society (Bradshaw, 1987). This is based on the assumption that the development process and urbanization move along a continuum.

According to modernization theory, urban areas contain modernizing institutions such as schools, factories, entertainment centres and the mass media, as well as advanced medical care (Bradshaw, 1987).

These institutions then serve as a pull factor for the rural dwellers (urban pull), encouraging them to migrate into the urban areas. Examples of such attractions are there in both developed and developing countries. Factories in England attracted a large number of migrants from rural areas to settle in cities with the advent of the Industrial Revolution which began in the second half of the 18th Century. The development of fuel powered tractors in the early 20th century led to the migration of cotton plantation workers from the south of the United States (rural-push) to take up jobs in places located in the North East and the Midwest. Moreover "rural push" has caused a large scale rural to urban migration in the recent years in the developing countries.

3.1.2 Dependency Theory

In view of the flaws of modernization theory and its inability to account for Third World underdevelopment, an alternative theory was devised by a group of scholars known collectively as the dependency school, which originated in Latin America. The school holds that development in the developing countries is conditioned by the growth and expansion of Europe. The school addresses certain issues not considered by modernization theory. It lays importance on historical processes in explaining the changes which have occurred in the structure of cities as a result of the switch from the pre-capitalist to capitalist mode of production. It also lays emphasis on the dependent nature of capitalist dependent in the Third World which places emphasis on external economic forces in the study of cities. The dependency school argues that the developed countries use the developing countries as a source of input (raw material supplier) for their factories. This results in foreign investment in large-scale agricultural production which displaces peasant

farmers in the rural areas. The displaced farmers then move to the urban areas to seek employment (Firebaugh, 1979; Walton, 1977; Brandshaw, 1987).

Also large foreign investments in capital-intensive manufacturing in the urban areas resulted in increased output and industrialization in the urban areas. This then does have a multiplier effect since business spring up to provide services that are linked earlier directly or indirectly to the manufacturing activities in the urban areas. This creates the false impression for the rural dwellers that there are high-paying employment opportunities for them in the urban areas hence their migration to the urban areas. On their arrival in the urban areas and to their dismay they cannot get the high paying employment; they end up in the informal sector. The informal sector workers are the least paid among the urban labour force. This theory argues that the core, consisting industrialized nations, dominate over the periphery which consists of the Third World. The Third World urban development is, thus, conditioned by the developed world.

The recent economic globalization trends have restructured the labour-capital relationship between the developed and developing worlds. In the new structure of economic globalization it is not only the less skilled jobs related garment, shoe and handbag making but also upscale jobs such as chip design, engineering, basic research and financial analysis that are out-sourced by the multinational corporations to developing countries. The labour costs are much cheaper in the developing countries. These semi-skilled and upscale jobs are being created increasingly in the developing countries. This in turn causes growth in supporting service sector employment leading to labour

moving into the urban centres to fill up these jobs hence growth in urban population (Kentor, 1981).

3.1.3 Urban Bias Theory

Another approach to understanding urban development in developing countries is through the application of urban bias theory. This theory shifts the emphasis of urban development from the economic perspective to political perspective. This perspective, spearheaded by Lipton (1977), argues that policies favour the urban areas to the detriment of the rural areas, hence the concentration of facilities and the creation of favourable conditions in the urban areas. State policies allegedly overtax the rural citizens with similar incomes. The productions of the rural areas, notably agricultural products, are overtaxed due to price twists. Overtaxing works in the following way. State controlled marketing boards buy agricultural products from the local farmers at an artificially low price and then resell these products to the consumers at the prevailing higher market price; the difference is often used to provide facilities in the urban areas.

In addition, governments in the developing countries tend to invest domestic capital on the provision of development facilities. These facilities are largely located in the urban areas while a large proportion of the population is found in the rural areas. The facilities include hospitals, schools, libraries and other government/ semi-government facilities. Investable resources in favour of the rural dwellers, who are basically farmers, in the form of roads, small-scale irrigation facilities, agricultural machinery and storage facilities are often downplayed by the policy makers. Higher standards of living are created in the urban areas resulting in the creation of disparity between the urban and the rural areas. As a

result, the rural dwellers tend to migrate to the urban areas to take advantage of the favourable policies.

Pre-colonial Urbanization Ignored by the Above Three Theories:

Several underlying factors contributing to urbanization do exist, which have not been covered by modernization theory or urban bias theory. Dependency theory is not considered here because it is based on the continuation of colonial-based dependence. The urbanization process which took place before western colonialization cannot be explained by either modernization or urban bias theories because there had not been any drastic innovations in terms of technology when it comes to production. Moreover, according to Becker, Hamer and Morrison (1994), no urban area in pre-colonial Africa rose to be a manufacturing centre. Rather according to Miner (1967) urbanization during the pre-colonial era was as a result of politics. According to the modernization school of thought, political development is a product of economic development. According to Miner's (1967) analysis, economic development did not occur before the political development. It was rather the opposite; thus the presence of defense. Urban areas developed not only because of establishment of administrative centres but trading, port activities, religious activities and defense needs also caused town and cities to originate and grow. Rural surpluses as well as growth of exchange economy resulted from the provision of defense and the creation of transshipment posts. This led to the establishment and growth of urban areas. The above factors were used to explain the development of Audoghast, Kumbi Saleh, Gao and Timbuktu as urban areas during the pre-colonial era.

3.2   Causes of Urban Growth

Urban population grows in two ways:

(1) by natural increase (more births than deaths) and

(2) by immigration.

3.2.1   Natural Increase

Natural increase is fueled by improved food supplies, better sanitation, and advances in medical care that reduce death rates and cause populations to grow both within cities and in the rural areas around them.

3.2.2   Immigration

Immigration is the second reason why population grows, and it is the largest source of its growth. Immigration to cities can be caused both by *push factors* that force people out of the country and by *pull factors* that draw them into the city.

3.2.2.1 Immigration Push Factors

The "surplus" population is forced to migrate to cities in search for jobs, food, and housing. In some places, economic forces or political, racial, or religious conflicts drive people out of their homes. The United Nations (UN) estimated that in 1992 at least 10 million people fled their native country and that another 30 or 40 million were internal refugees within their own country, displaced by political, economic, or social instability.

3.2.2.2 Immigration Pull Factors

Even in the most chaotic cities, people are there by choice, attracted by the excitement, vitality, and opportunity to meet others like themselves. The most important thing to them is that cities offer jobs, housing, entertainment, and freedom from the constraints of village traditions. Possibilities exist in the city for upward social mobility, prestige, and power not available in the country.

3.3 Urban Living– Attractions and Effects

Urban areas are equipped with all the modern amenities. The modern-day facilities like the Internet, telephone, television and satellite communication facilities are widely available in the urban areas. A majority of the households of the urban areas are blessed with this technological advancement. The newly developing shopping complexes, theatres, food malls and restaurants are a commonplace in urban cities. Huge constructions, large housing complexes, skyscrapers are found in most of the urban metropolitan cities. Elevators, escalators, storeyed parking areas and towering constructions add to the magnificence of the urban cities. Due to a greater availability of all the modern facilities along with an increase in the number of educational facilities and career opportunities, people of the urban areas lead an economically more stable and a luxurious life.

The increasing attraction of the people towards the urban parts of the world has resulted in **crowding of urban areas**. The increasing population, majority of which prefers settling in urban cities, has led to **an imbalance in the density of human population**. Excessive industrialization has invited **environmental problems like pollution**.

However, the rise in economic growth that has resulted in self-sufficiency in the common masses has resulted in a self-centreed nature of society. While technological advancement has brought the world closer, human beings have gone **far apart from each other**. Buildings that touch the skies have **built walls between people**. The rise in prosperity has been **eclipsed by the decline in peace** (Oak, 2010).

3.4 Sustainable Development Policy

"Sustainable development is a policy approach that has gained quite a lot of popularity in recent years, specially in international circles. By attaching a specific interpretation to sustainability, population control policies have become the overriding approach to development, thus becoming the primary tool used to "promote" economic development in developing countries and to protect the environment" (Aguirre, 2002). **'Mary Jo Anderson'** suggests that the real purpose of sustainable development is to contain and limit economic development in developing countries, and in so doing control population growth (Anderson, 2002). It is suggested that this is the reason the main focus of most programs is still on low-income agriculture.

'Joan Veon', a businesswoman and international reporter, who covered 64 global meetings on sustainable development, posits that: "Sustainable development has continued to evolve as that of protecting the world's resources while its true agenda is to control the world's resources. It should be noted that Agenda 21 sets up the global infrastructure needed to manage, count, and control all of the world's assets."

3.5   The Notion of Capital in Sustainable Development

The sustainable development debate is based on the assumption that societies need to manage three types of capital (economic, social, and natural), which may be non-substitutable and whose consumption might be irreversible (Dyllick, 2002).

Most societies and their governments aim to increase income as rapidly as possible over long periods. How do they ensure that economic growth does not depend unsustainably on the consumption of natural resources? Rising income depends on increases in the capital stock and the productivity with which labour and capital produce goods and services. In most economic analysis, capital stock has meant **human-made capital:** machines, buildings, and infrastructure **(made capital),** as well as the education and experience of the labour force **(human capital).** What if production also consumes natural resources, however? The productivity of made capital and labour will decline as natural resources are depleted, unless more resources are discovered, greater amounts are invested in made capital, or technological change increases productivity.

Natural capital is the value of a country's existing stock of natural resources, including fisheries, forests, mineral deposits, water, and the environment. Natural capital produces goods and services, just like labour and made capital. It can be, and usually is, depleted in the process of production, just as made capital is depreciated. It also, through natural growth of renewable resources and investment in discovery of new reserves, can be augmented, just as investment augments the stock of made capital (Perkins, 2001).

Daly (1991), for example, points to the fact that natural capital can not necessarily be substituted by economic capital. While it is possible that we can find ways to replace some natural resources, it is much more unlikely that they will ever be able to replace eco-system services, such as the protection provided by the ozone layer, or the climate stabilizing function of the Amazonian forest. In fact natural capital, social capital and economic capital are often complementarities. A further obstacle to substitutability lies also in the multi-functionality of many natural resources. Forests, for example, not only provide the raw material for paper (which can be substituted quite easily), but they also maintain biodiversity, regulate water flow, and absorb CO_2.

Another problem of natural and social capital deterioration lies in their partial irreversibility. The loss in biodiversity, for example, is often definite. The same can be true for cultural diversity. For example with globalization advancing quickly the number of indigenous languages is dropping at alarming rates. Moreover, the depletion of natural and social capital may have non-linear consequences. Consumption of natural and social capital may have no observable impact until a certain threshold is reached. A lake can, for example, absorb nutrients for a long time while actually increasing its productivity. However, once a certain level of algae is reached lack of oxygen causes the lake's ecosystem to break down suddenly.

3.6   Sustainability

If an economy consumes natural capital in producing current income, then the economy's capacity to generate income will decline in the future unless the natural capital is replaced. For the moment, consider

a constant population. A test for a sustainable economy is its capacity to maintain consumption at a constant level indefinitely. To achieve this, the depletion of natural capital must be replaced by made capital, technological change must be generated to increase the productivity of all capital and labour, or both must be done. This suggests an alternative, if partial, criterion for sustainability: the maintenance of the total stock of capital, both natural and made. The depletion of natural capital must be compensated for by net investment in made capital.

Therefore sustainability can involve the depletion of natural resources and the eventual decline of farming, fishing, forestry, mining, petroleum, and other sectors dependent on natural resources. As these industries decline, others grow, including manufacturing, utilities, construction, finance, transportation, telecommunications, trade, health, education, and other services. Indeed, this transformation is what most people have in mind when they speak of development. When an economy develops from a natural resource base, the net benefits or rents from the primary sectors provide much of the finance for secondary and tertiary industries. And some of the finance may go into research and development of new technologies that will increase productivity.

The transformation to made capital does not justify the wanton use of resources. Resources should be exploited efficiently. The substitution of made capital for natural capital may not be productive or even possible forever. Natural resources also are used in manufacturing and services, as raw materials, fuel, and waste sinks. Unless technology continues to reduce this dependence on raw materials, it is possible that a country, or even the planet, may run out of needed resources. Further, if the population is growing and a society wants its income per capita to grow

as well, then it becomes necessary to invest more than resources rents to continuously increase the total capital stock. Within these limits, however, some societies may choose to accelerate resource depletion in favour of investment in other industries and can do it sustainably if resource rents are invested productively (Perkins, 2001).

Environmental sustainability is the process of making sure current processes of interaction with the environment are pursued with the idea of keeping the environment as pristine as naturally possible based on ideal-seeking behaviour. An "unsustainable situation" occurs when natural capital (the sum total of nature's resources) is used up faster than it can be replenished. Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally. Inherently the concept of sustainable development is intertwined with the concept of carrying capacity. Theoretically, the long-term result of environmental degradation is the inability to sustain human life. Such degradation on a global scale could imply extinction for humanity.

Consumption of renewable resources	State of environment	Sustainability
More than nature's ability to replenish	Environmental degradation	Not sustainable
Equal to nature's ability to replenish	Environmental equilibrium	Steady state economy
Less than nature's ability to replenish	Environmental renewal	Environmentally sustainable

(Daly, 1991).

Another way of looking at the characteristics of a sustainable community is by examining behavioural patterns, resource consumption patterns, and policies. In a report prepared for the Ontario Round Table on Environment and Economy, **Nigel Richardson,** a consultant, compares strategies for their sustainability or lack of sustainability.

More Sustainable	Less Sustainable
Compact forms of residential Development.	Low-density, spread-out residential development.
Mixed land use; homes, jobs and shopping in close proximity/TD.	Segregation of land uses: homes, jobs and shopping separated into uniform tracts or concentrations.
Employment based primarily on education and skills.	Employment based primarily on environment polluting or non-renewable resource based industry.
Movement on foot and by bicycle and transit.	Heavy dependence on private cars.
Wind and solar energy.	Thermal and nuclear energy.
Tertiary treatment of sewage; use of natural means of sewage treatment.	Discharge of sewage into water bodies or water-courses untreated or with low level of treatment.
Protection and use of natural hydrologic systems.	Hard surfaces preventing infiltration; channeling natural water-courses.
Natural open space; protection of wetlands, woodlands, stream valleys, habitat, etc.; use of manure, compost, integrated pest management, etc.	Destruction of natural landscape; "manicured" parkland with exotic species; heavy use of chemical fertilizers, herbicides, pesticides.
Reduction of waste; recovery, re-use and recycling of waste materials.	Landfills, incinerators.

3.7   Linkage between Urbanization and Sustainable Development

Urban areas are the engines of productivity and growth in the country. This is manifested in the increasing contribution of urban sector to national income.
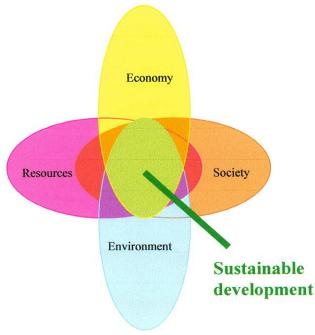
Some of the chief forces driving urbanization today are shifting of jobs from agriculture to industry and the concentration of economic opportunities in the urban areas. Urbanization is associated with higher incomes, improved health, higher literacy, improved quality of life and other benefits. Yet along with the benefits of urbanization come environmental and social ills. Since with urbanization the concentration of people is increasing in cities so is the demand for basic necessities like food, energy, drinking water and shelter. The result is in terms of poor quality housing, lack of water supply and sanitation facility and lack of proper waste disposal facility leading to spread of communicable diseases.

Urbanization **affects sustainable development in three major ways:** (i) implications due to urban poverty which is a result of migration, (ii) stressed infrastructure and management systems and finally (iii) increasing consumerism. These problems warrant major concerns on three accounts. **Firstly** the prevailing pattern and trend of Urbanization is more material and energy intensive. **Secondly** the discharge of pollutants and generation of solid waste in cities is particularly harmful because it is uncontrollable and **thirdly** the financial, institutional, technological and infrastructure systems available for help to control these problems in the region at present are inadequate (Kumar, 2009).

3.8   Urbanization and Sustainable development- coordination and balance

Sustainability is the continuation while development is the move towards well being. Sustainable development has the principle to meet the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, United Nations, 1987). 'Development' refers to the continued improvement of the living standards by economic growth. The whole concept of sustainability refers to such improvement without sacrificing our environmental qualities.

In the sustainable urban development process, the economical development is the foundation, the natural ecology protection is the condition, and the society progress is a goal. But these are complex and mutually affect each other. Only if a society can maintain well coordination between economy, resources and environment, can the society confirm to the sustainable development

requirements.

A new town is not only a residential area but also a self-sufficient community:

- it should have a well developed transportation network so that residents can move easily between new towns and urban areas;

- it should have its own commercial and industrial centres, so that there are certain job opportunities in the area and to fulfill its function as an autonomous community;

- it should also have various governmental and recreational facilities, e.g., schools, hospitals, libraries, stadiums, government offices, to fulfill various needs of residents.

According to Gary Pivo (Chair of the Department of Urban Design and Planning at the University of Washington), Sustainable development also referred to as "Sustainable Urbanization". Only in recent years has the concept of sustainable development begun to be applied to the field of urban planning. Government agencies at all levels are adopting plans to make urban growth more sustainable. A close examination of such plans shows six basic principles derived from research- we might call them the six C's being applied.

First- Compactness: The first principle is that more compact, densely developed cities are less auto dependent, less expensive to serve with infrastructure, and put less pressure on nearby farm, forest, and environmentally sensitive areas.

Second- Completeness: A second principle of sustainable urbanization is that communities should be made more complete. A complete community is one in which the segregation of urban activities has been reduced. The residents of a complete community have the opportunity to work and shop in close proximity to their homes. The elimination of long commutes

reduces traffic congestion, air pollution, energy use, and water pollution- to say nothing of psychic stress.

Third- Conservation: A third principle of sustainable urbanization— conservation— involves the use of a number of tools (in addition to development regulations) to protect environmentally sensitive areas. Such tools may include tax incentives, fee-simple and less-than-fee-simple land acquisition, cluster development, and the use of transferable development rights, to name just a few. In the category of development regulations, we know that the elimination of free or abundant parking promotes alternatives to single-occupancy driving, thereby saving energy, reducing air pollution, and helping to control the buildup of greenhouse gases.

Fourth, Fifth and Sixth– Comfort, Coordination and collaboration: Comfort takes note of the fact that it is important to create public spaces and routes that are pleasant for pedestrians and for non-auto users, such as bicyclists. A study in Portland found that more people walk when there are continuous sidewalks, streets are easy to cross and not confusing, and the topography is conductive to walking. Coordination involves joint planning by numerous jurisdictions. One example is creating a land use and transportation plan for Oregon's Willamette Valley from Portland to Eugene. The same project— Partnership for the Willamette Valley's Future- illustrates the principle of collaboration. Funded by the state of Oregon, federal agencies and private foundations, this effort is bringing together Oregon community leaders from many interest sectors in order to establish ongoing dialogue about issues of common concern in the Willamette Valley.

Sustainable cities will be those which are dynamic, manage their limited resources efficiently and effectively, have good governance, respond well to shocks and other adversaries, innovate and adapt quickly to

economic, social, cultural, environmental and physical change and upheaval (Roberts & Kanaley 2006).

3.9   Agenda 21- An Overview

AGENDA 21 is one of five documents agreed during the United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro in June 1992(1). Signed by 179 Heads of Government, it is a blueprint for sustainable development in the 21st century, aimed at providing a high quality environment and healthy economy for all the peoples of the world.

Agenda 21 is a guide for individuals, businesses and governments in making choices for less environmentally destructive developments, and ultimately a challenge to translate understanding into action in developing sustainable lifestyles. The alternative to this action is unacceptable levels of human suffering and environmental damage, as forecast in the 1987 Brundtland Report, **"Our Common Future"**.
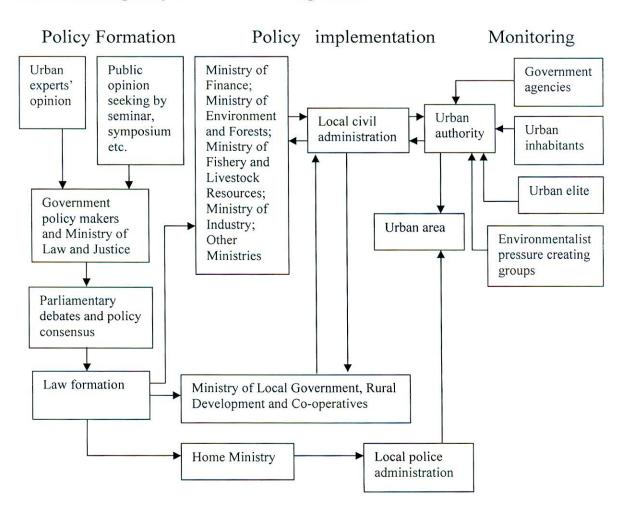
Agenda 21 sees sustainable development as a way to reverse both poverty and environmental degradation. A major theme is to eradicate poverty by giving poor people more access to the resources they need to live sustainably, including information and skills. It calls upon governments working in participation with international organisations, business, regional and local governments and non-governmental organisations (NGOs) and citizens groups to develop national strategies for sustainable development in an ongoing process of consultation and global democratization from local to international levels from 1993/4 - 1997. Sections of the Agenda 21 overview are shown in the Appendix- 05.

3.10   Conceptual Framework for Sustainable Urbanization

The above discussion suggests that there is a close relationship between urbanization and sustainable development. Urbanization is a symbol of development. The rate of urbanization is increasing not only in the world but

also in Bangladesh. To establish sustainable (Social, Economic & Environmental) development in our urban areas it should prevailed linkage within all sectors properly related to urbanization. That is linkage within Government policy makers; Ministry of Local Government, Rural Development and Co-operatives; Home Ministry; Ministry of Environment and Forests; Ministry of Fishery and Livestock Resources; Ministry of Law and Justice; Ministry of Finance; Ministry of Industry; urban authority; urban elite; urban inhabitants; environmentalist pressure creating groups; local civil administration; local police administration etc. is essential. Corruption alleviation, confirming accountability, regular monitoring, and social consciousness are also necessary for this.

Sustainable (Social, Economic & Environmental) development based urbanization policy framework at a glance:

3.11 Study Methodology
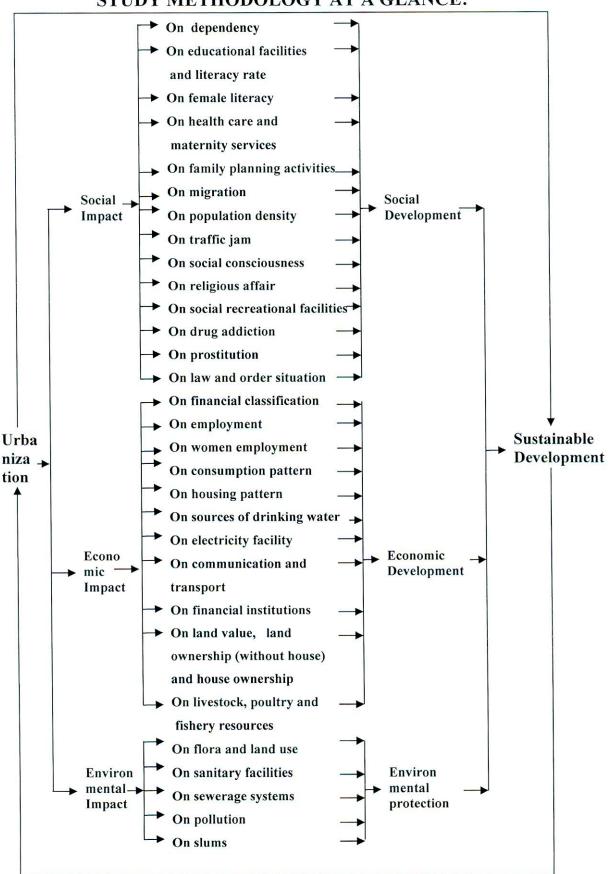
The main objective of this research is the relationship between urbanization and sustainable development in Bangladesh and the specific objectives of this research are the impacts of urbanization on sustainable (social, economic and environmental) development. To analyse the above main and specific objectives the researcher has proposed the following methodology:

Urbanization has three kinds of impact. They are- social impact, economic impact and environmental impact. Social, economic and environmental components are 14, 11 and 5 in numbers respectively. On the contrary, sustainable development means social development, economic development and environmental protection. The components of social development, economic development and environmental protection are also respectively in numbers 14, 11 and 5.

Since, urbanization and sustainable development are related hence, if social, economic and environmental impacts of urbanization are favourable or unfavourable then sustainable development will also be favourable or unfavourable respectively. By favourable impact of urbanization sustainable development will be ensured, which will make urbanization more fruitful i.e., comfortable. On the other side, unfavourable impact of urbanization will destroy sustainable development and make harmful or uncomfortable urbanization.

In a diagram on the next page the study methodology has presented clearly.

STUDY METHODOLOGY AT A GLANCE:

Social Impact
- On dependency →
- On educational facilities and literacy rate →
- On female literacy →
- On health care and maternity services →
- On family planning activities →
- On migration →
- On population density →
- On traffic jam →
- On social consciousness →
- On religious affair →
- On social recreational facilities →
- On drug addiction →
- On prostitution →
- On law and order situation →

→ **Social Development**

Economic Impact
- On financial classification →
- On employment →
- On women employment →
- On consumption pattern →
- On housing pattern →
- On sources of drinking water →
- On electricity facility →
- On communication and transport →
- On financial institutions →
- On land value, land ownership (without house) and house ownership →
- On livestock, poultry and fishery resources →

→ **Economic Development**

Environmental Impact
- On flora and land use →
- On sanitary facilities →
- On sewerage systems →
- On pollution →
- On slums →

→ **Environmental protection**

Urbanization → **Sustainable Development**

CHAPTER FOUR

SOCIO-ECONOMIC AND ENVIRONMENTAL CONDITIONS OF THE STUDY AREAS

4.1   Brief Discussion about Bangladesh

The Peoples Republic of Bangladesh, republic of southern Asia, in the northeastern portion of the Indian subcontinent 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. During that period Bangladesh was a part of the British Indian provinces of Bengal and Asam. The British reign was terminated after 190 years in August, 1947 and the sub-continent was partitioned into India and Pakistan. Bangladesh was then a part of Pakistan and was known as East Pakistan province. 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.

The country, Bangladesh is situated in the north eastern part of South Asia between latitudes 20^0 34' and 26^0 38' N [about 390 miles (625 km) from its extreme north and south extensions] and between longitudes 88^0 01'and 92^0 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 Encyclopedia Britannica, 2002, Volume-1).

It's area 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.

Except the hilly regions in the north-east, some areas of highlands in the north and north western part the country consists of low, flat and fertile land. 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.

Total forest area of the Country covers about 13.36% of the land area. The country produces timber, bamboo, and cane. Sundari trees grew in the Sundarbans located in the south-western part of the country bordering the Bay of Bengal. Plantation of rubber in the hilly regions of the country was undertaken recently and extraction of rubber had already started. There are varieties of wild animals in the forest areas of Bangladesh. 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.

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

monsoon climate. Winter, which is quite pleasant begins in November and ends in February. The maximum temperature recorded in Summer months, which begins in March and ends in June. Monsoon starts in July and stays up to October.

The country holds about 160 million population. Dhaka is its capital. A parliamentary form of government governs Bangladesh. The Prime-Minister is the chief executive of the country. The country is divided into 7 Divisions, 64 Zilas, 6 City Corporations, 312 Municipalities, 483 Upazilas, 599 Thanas and 4498 Union Parishads (Statistical Pocket Book Bangladesh, 2009).

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 is one of the lowest in the world. Rice, wheat, jute, sugarcane, tobacco, oilseeds, pulses and potatoes are the principal crops. 68.5 % people of the labour force are employed in agriculture sector, which is the main occupation of the country. This sector directly contributes around 25% to the gross domestic products (according to Revised GDP Series based on 1995-96 prices).

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 abounding. With the Bay of Bengal in the south, the country enjoys geographic advantage for marine fishing.
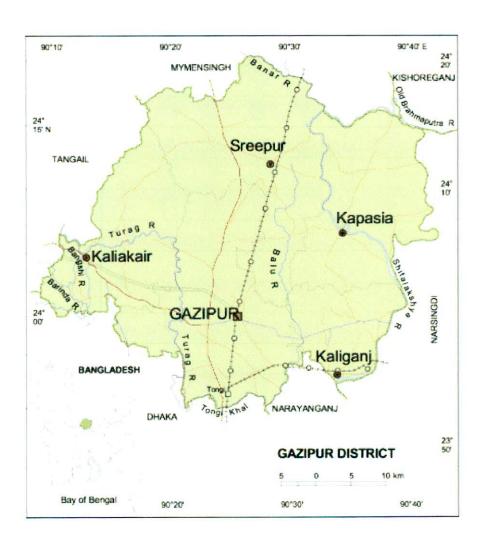
A few proven mineral resources exist in Bangladesh. The country has enormous deposit of natural gas. Extensive radio-active sand deposits have been found all along the beaches from Kutubdia to Teknaf. A survey estimates the reserve to be of the order of 0.5 million tons of sand containing a significant amount of usable heavy minerals.

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 is contributing about 30% of the GDP (Bangladesh Economic Review, 2010).

4.2 Brief Description about Gazipur District

4.2.1 Background, Geographic Area and Location

Gazipur district was previously a subdivision of Dhaka district. It was upgraded to a district in March 1, 1984. Nothing is definitely known about the name of the district. It is believed that long ago this area was prominent as the adobe of a famous Gazi family. Gazipur might have been named after the name of the Gazi family.

It lies between $23^0 53'$ and $24^0 21'$ north latitudes and between $90^0 09'$ and $92^0 39'$ east longitudes. The total area of the district is 1741.53 square kilometer (672.41 square miles) of which 17.53 square kilometer is riverine and 273.42 square kilometer is under forest. It is bounded on the north by Mymenshing and Kishoreganj districts, on the east by Narsingdi district, on the south by Naranyanganj and Dhaka districts and on the west by Tangail district. Gazipur district is consisted of 5 upazilas, 2 municipalities, 45 unions, 768 mauzas, 1162 villages, 21 wards and 68 mahallas. Its upazilas are Gazipur sadar, Kaliakair, Kaliganj, Kapasia and Sreepur. Municipalities are Tongi, Gazipur, Sreepur and Kaliakair.

4.2.2 Socio-economic and Environmental Conditions

Population density is about 2,000 per square kilometer in Gazipur district. Average literacy rate is about 60% . Among the people living here about 92% are muslim and about 8% are hindu and others. People of all religion live here with peace and happiness. Some tribal population lives here. They are Rajbangshi (Koch), Garo, Mnadi etc.

Agriculture is main occupation. About 50% people related with this occupation. The district is industrially developed. Aluminum factory, textile mills, pharmaceutical industry, cosmetics industry, machine tools factory, diesel plant, security printing press, ordnance factory, ceramics factory, packaging industry, brick field, garments industry etc. are available here. It is enriched in cottage industry. Such as, weaving, goldsmith, blacksmith, potteries, bamboo and cane work, tailoring, bidi, nakshi kantha work, shital pati, wood work etc. are exists here.

Various establishments such as Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Institute (BARI), Seed Certifying Agency, Security Printing Press, Machine Tools Factory,

Bangladesh Ordnance Factory, Diesel Plant, Dhaka University of Engineering and Technology (DUET), Bangladesh Rural Advancement Committee (BRAC) Dairy Firm, Cremation Ghat etc. are located here.

Total land under cultivation is 1,25,287.53 hectares, fallow land 16,935.35 hectares. About 12% people are landless. Main crops are paddy, jute, mustard seed, sugarcane, chilli, arum, turmeric, ginger etc. Main fruits are jackfruit, pineapple, litchi, blackberry, guava, mango, papaya, kamranga, palm, boroi, karamcha, wood apple, tamarind etc. Its annual average temperature is maximum 36^0C and minimum 12.7^0C ; annual rainfall is 2376 mm. Main rivers are Old Brahmaputra, Shitalakshya, Turag, Bangshi, Balu and Banar (Bangladesh Population Census- 1991 & 2001; Community Series, Zila: Gazipur and Deputy Commissioner's Office, Gazipur District).

4.3 Brief Description about Gazipur Sadar Upazila

4.3.1 Background, Geographic Area and Location

Gazipur sadar upazila was established in 1983 consists of former Joydevpur and Tongi thanas. It is the largest upazila in terms of population and is the second largest Upazila in terms of area in the district. It is not definitely known about the origin of name of the Upazila. There is hearsay that in the past it was an adobe of a famous Gazi family. The Upazila might have derived its name from the name of Gazi family.

The Upazila occupies an area of 446.38 square kilometer including 0.31 square kilometer river area and 54.52 square kilometer forest area. It is located between $23^0 53'$ and $24^0 11'$ north latitudes and between $90^0 20'$ and $90^0 30'$ east longitudes. The Upazila is bounded on the north by Sreepur Upazila, on the east by Sreepur and Kaliganj upazilas and Rupganj Upazila of Narayanganj zila, on the south by Uttara thana and Mirpur thana of Dhaka megacity and on the west by Kaliakair and Savar upazilas. The Upazila consists of 8 unions, 183 mauzas, 261 villages and 2 municipalities, 21 wards and 68 mahallahs. The municipalities are Gazipur and Tongi municipality.

4.3.2 Socio-economic and Environmental Conditions

Total population of Gazipur sadar Upazila is approximately 9,37,398. Its density of population is about 2,100 per square kilometer. About 93%

muslim and about 7% hindu people live here. Its literacy rate is about 65%.

Main occupation of the people live here is agriculture. More or less 30% people are related with agriculture. The upazila is industrially developed. There are aluminium factory, textile mills, pharmaceutical industry, cosmetics industry, machine tools factory, diesel plant, security printing press, ordnance factory, ceramics factory, packaging industry, brick field, garments industry and two Bangladesh Small and Cottage Industries Corporation (BSCIC) industrial area in Gazipur sadar upazila. There are also cottage industries here, like, weaving, goldsmith, blacksmith, potteries, bamboo and cane work, tailoring, bidi, wood work etc.
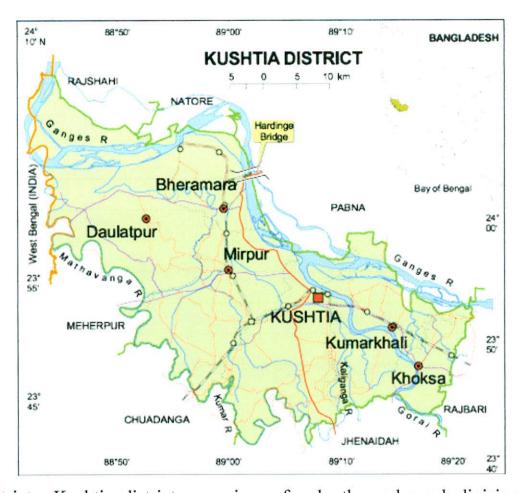
Various establishments such as Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Institute (BARI), Seed Certifying A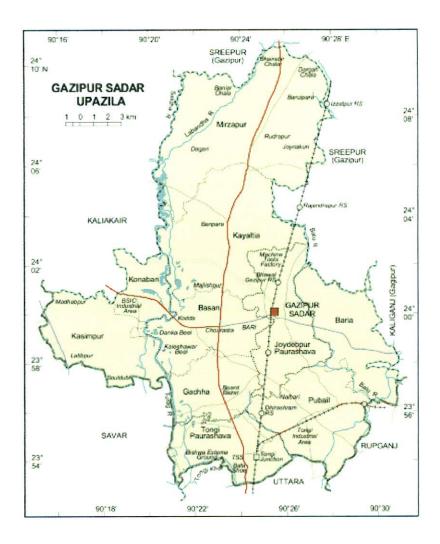gency, Security Printing Press, Machine Tools Factory, Bangladesh Ordnance Factory, Diesel Plant, Dhaka University of Engineering and Technology (DUET), Bangladesh Rural Advancement Committee (BRAC) Dairy Firm, Cremation Ghat etc. are located here.

Total land is 41300 hectare. In it cultivable land is 30,645 hectares, fallow land is 1140 hectares and forest is 5052 hectares. About 22% people are landless. Main crops are paddy, jute, mustard seed and turmeric. Main fruits are jackfruit, pineapple, litchi, blackberry, guava, mango, papaya, palm, boroi, wood apple, tamarind and jambura. Main rivers of Gazipur sadar upazila are Turag, Balu, Labandaha and Salda. Tongi khal is noted (Bangladesh Population Census- 1991 & 2001; Community Series, Zila: Gazipur and Upazila Nirbahi Officer's Office, Gazipur Sadar Upazila).

4.4   Brief Description about Kushtia District

4.4.1 Background, Geographic Area and Location

Kushtia was once a part of 'Nadia' district of the undivided India. It became a new district in 1947 consisting of Kushtia sadar, Chuadanga and Meherpur subdivisions. All these three subdivisions are now upgraded to

KUSHTIA DISTRICT

districts. Kushtia district comprises of only the sadar sub-division of former Kushtia district. It is renamed as Kushtia district in March 1, 1984. It is generally believed that the district Kushtia might derive its name from the word 'Kushta' meaning 'Jute' which was abundantly grown in this area. It lies between $23^0 42$ ' and $24^0 12'$ north latitudes and between $88^0 42'$ and $89^0 22'$ east longitudes. The total area of the district is 1,621.15 square kilometer (625.93 square miles) of which 63.09 square kilometer (24.36 square miles) is riverine . The district is bounded on the north by Rajshahi, Natore and Pabna districts, on the east by Pabna and Rajbari districts, on the south by Jhenaidah, Chuadanga and Meherpur districts and on the west by Chuadanga and Meherpur districts and India. The district is consisted of 6 upazilas, 61 unions, 711 mauzas and 978 villages. It also comprised 5 municipalities, 48 wards and 77 mahallas. Its

upazilas are Kushtia sadar, Kumarkhali, Daulatpur, Mirpur, Bheramara and Khoksa.

4.4.2 Socio-economic and Environmental Conditions

Population density is about 1,800 per square kilometer in Kushtia district. Average literacy rate is about 58% . People of all religion live here with peace and happiness. Among the people living here about 96% are muslim and about 4% are hindu. Agriculture is the main occupation. About 45% people related with this occupation in Kushtia. Kushtia is not an ancient district town. It has been developed as a river port during the reign of 'Emperor Shahjahan'. The 'East Indian Company' made intensive use of the port, but the growth of the district town owes much to the settlement by the indigo planters and traders. The district town was connected with Kolkata by rail in 1860; since then it experienced quick development and became a good location for mills and factories including those like the 'Jagneshwar Engineering Works (1896)', 'Renwick and Company (1904)' and 'The Mohini Mills (1919)'. The district town got a new momentum for development with the establishment of the headquarters of the 'Ganges-Kabodak Project' and a number of government offices in 1954. The district is industrially developed till today. There are ice factory, flour mills, textile mills, rice mills, jute mills, tobacco mills, cable industries etc. in the district. It is also enriched with cottage industry. Such as, weaving, bamboo works, goldsmith, blacksmith, wood work, tailoring, welding etc.
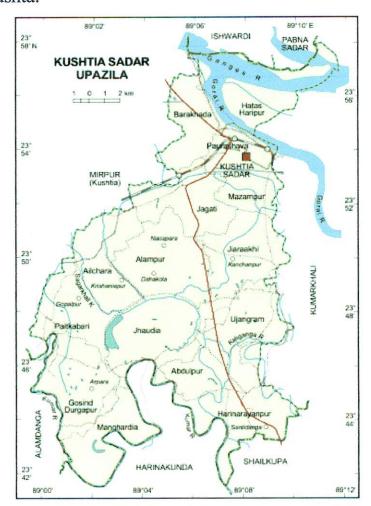
Total land under cultivation is 1,16,181.52 hectares, fallow land 13,164.19 hectares. About 43% people are landless. Main crops are paddy, jute, sugarcane, pulses, oil seeds etc. Main fruits are mango, banana, jackfruit, litchi, etc. Its annual average highest temperature is

37.8^0C and lowest temperature is 11.2^0C; annual rainfall is 1467 mm. Main rivers are The Padma, Garai, Mathabhanga, Kaliganga and Kumar (Bangladesh Population Census- 1991 & 2001; Community Series, Zila: Kushtia and Deputy Commissioner's Office, Kushtia District).

4.5 Brief Description about Kushtia Sadar Upazila

4.5.1 Background, Geographic Area and Location

Kushtia sadar is the second most populous Upazila of Kushtia district, came into existence as a thana in 1823. Nothing is definitely known about the origin of the Upazila name. It is learnt that, in the past, this area was famous for growing jute meaning 'Kushta' in 'Bengali'. It is generally believed that the Upazila might have originated its name from that word Kushta.

The Upazila occupies an area of 316.27 square kilometer including 7.38 square kilometer river area. It is located between $23^0 42'$ and $23^0 59'$ north latitudes and between $88^0 55'$ and $89^0 04'$ east longitudes. The Upazila is bounded on the north by Pabna sadar and Ishwardi upazilas of Pabna district, on the east by Kumarkhali Upazila, on the south by Sailkupa and Harinakunda upazilas of Jhenaidah district and Alamdanga Upazila of Chuadanga district, on the west by Mirpur Upazila and Alamdanga Upazila of Chuadanga district. The Upazila consists of 14 unions, 111 mauzas, 165 villages. It also comprised of 1 municipality, 12 wards and 30 mahallahs. The municipality is Kushtia municipality.

4.5.2 Socio-economic and Environmental Conditions

Population density is about 2,000 per square kilometer in Kushtia sadar upazila. Average literacy rate is about 65%. People of all religion live here with peace and happiness. Among the people living here about 94% are muslim and about 6% are hindu. About 30% people live in Kushtia sadar upazila related with agriculture. That means agriculture is the main occupation.
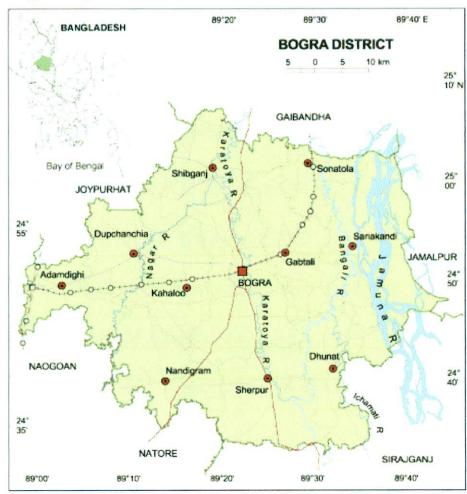
Kushtia is not an ancient town. It has been developed as a river port during the reign of 'Emperor Shahjahan'. The 'East India Company' made intensive use of the port, but the growth of the town owes much to the settlement by the indigo planters and traders. The town was connected with Kolkata by rail in 1860; since then it experienced quick development and became a good location for mills and factories including those like the 'Jagneshwar Engineering Works (1896)', 'Renwick and Company (1904)' and 'The Mohini Mills (1919)'. The town got a new momentum for development with the establishment of the headquarters of the 'Ganges-Kabodak Project' and a number of government offices in 1954. The upazila is industrially developed. Among the industry units in Kushtia sadar Upazila are The Jagati Sugar Mills, BRB Cables Ltd., Renwick Jaggesswar Factory, North Bengal Plastics, The Mohini Jute Mills Ltd., Tobacco industries etc. It is also rich in

cottage industries specially Naksi Kantha, bamboo and cane etc. Total land under cultivation is 37,333.06 hectares, fallow land is 999.15 hectares. Main crops are paddy, wheat, jute, sugarcane, potato, tobacco leaf, betel leaf etc. Main fruits are mango, banana, jackfruit, litchi, etc. Main rivers are The Padma, Garai, Kaliganga and Kumar (Bangladesh Population Census- 1991 & 2001; Community Series, Zila: Kushtia and Upazila Nirbahi Officer's Office, Kushtia Sadar Upazila).

4.6   Brief Description about Bogra District

4.6.1   Background, Geographic Area and Location

Bogra, the legendary of glorious historical background, became a district with one subdivision in 1821. The present Bogra district was carved out from former Bogra sadar subdivision only. It is turned into district again in 1984. It is generally believed that the district was named after the name of

Sultan Mohammad Nasiruddin Bughra Khan who was an independent ruler of Bengal during 1279-1282. Bogra district lies between $24^0 32'$ and $25^0 07'$ north latitudes and between $88^0 58'$ and $88^0 95'$ east longitudes. The total area of the district is 2919.90 square kilometer (1127.38 square miles) of which 92.02 square kilometer (35.53 square miles) is riverine. It is bounded on the north by Gaibandha and Joypurhat districts, on the east by Jamalpur and Sirajganj districts, on the south by Sirajganj and Natore districts and on the west by Naogaon and Joypurhat districts. Bogra district is consisted of 12 upazilas, 108 unions, 1,782 mauzas, 2,695 villages, 11 municipalities, 102 wards and 154 mahallas. Its upazilas are Bogra sadar, Shahjahanpur, Sherpur, Dhunat, Sariakandi, Sonatala, Shibganj, Gabtali, Khahaloo, Nandigram, Dhupchanchia and Adamdighi. Its municipalities are Bogra, Santahar, Sherpur, Dhunat, Sariakandi, Sonatala, Shibganj, Gabtali, Kahaloo, Nandigram and Dhupchanchia.

4.6.2 Socio-economic and Environmental Conditions

Population density is about 2,000 per square kilometer in Bogra district. Average literacy rate is about 65%. Among the people living here about 91% are muslim and about 9% are hindu and others. The town is famous for its cultural activities. Agriculture is main occupation. About 50% people related with this occupation. Bogra is known as the industrial city of the Northbengal. Constructions of the Bangabandhu Januna Multipurpose Bridge had enhanced all kinds of trade and commerce in Bogra. Cotton spinning mills, cold storages, garments industry, ceramic industry, match factory, iron and steel induatry, rice mills, flour mills, ice-cream & ice factory, bidi factory, soap factory, oil mills, saw mills, leather industry, hurricane (lamp) industry etc. are available here.
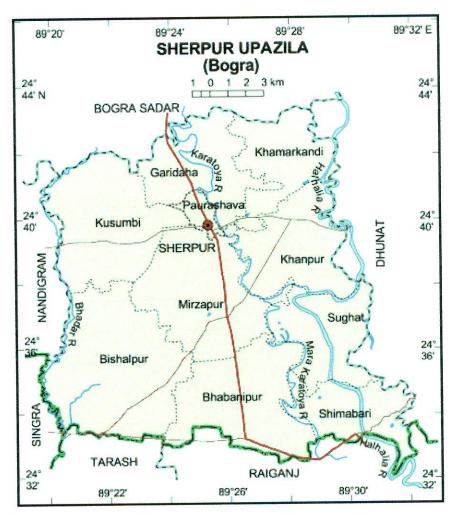
It is enrich with cottage industries. Such as, weaving, bamboo and cane work, goldsmith, blacksmith, potteries, wood work, tailoring, welding, embroidery etc.

Total arable land is 2,27,535 hectares, forest 299 hectares, fallow land 76793 hectares. About 20% people are landless. Main crops are paddy, jute, wheat, potato, mustard seed, peeper, vegetables, bamboo, sugarcane, betel leaf etc. Main fruits are mango, jackfruit, guava, blackberry, custard apple, Indian palm, papaya, pineapple, banana, coconut, wood apple, litchi, wild jackfruit, date palm, tamarind, lemon, betel nut etc.. Its annual average temperature is maximum 34.6^0C and minimum 11.9^0C; annual rainfall is 1610 mm. Main rivers are Karatoya, Nagar, Bangali, and Ichamati. Notable beels are Betgari, Kaigari, Subeel, Nuruler beel, Popadaha beel, Kespathar Kalidaha, Padma, Sattarail Garai, Arulia, Demradaha, Sara, Gobarchapa, Mahichbaran, Ziadaha, Ramchandrapur, Kokira, Bahuar beel and Kachiar beel. Adamdighi, Sangshar, Badla, Sil kawrer dighi, Sahardighi, Kuldighi, Khadash dighi are also notable water bodies (Bangladesh Population Census- 1991 & 2001; Community Series, Zila: Bogra and Deputy Commissioner's Office, Bogra District).

4.7   Brief Description about Sherpur Upazila

4.7.1   Background, Geographic Area and Location

Sherpur Upazila stands fourth in terms of its area and population size in the Bogra district. The Upazila situated on Karatoya river bank, came into existence as thana on August 12, 1870. Nothing is definitely known about origin of the Upazila name. However, Sherpur town is an ancient place of historical significance. It is said that during the reign of Shersha, the then pathan sultan of Delhi, a military camp was set up at Sherpur which became well-known thereafter. The place name Sherpur people also used for Upazila name. This name for the Upazila has remained unchanged.

The Upazila occupies an area of 296.27 square kilometer. It is located between $24^0 32'$ and $24^0 44'$ north latitudes and between $89^0 20'$ and $89^0 32'$ east longitudes. The Upazila is bounded on the north by Bogra sadar Upazila and on the east by Dhunat Upazila. On other flank, Raiganj and Tarash Upazilas border its south and Nandigram and Singra upazilas its west. Sherpur Upazila consists of 1 municipality, 9 wards, 19 mahallas and 9 unions, 220 mauzas, and 319 villages.

4.7.2 Socio-economic and Environmental Conditions

Density of population in Sherpur upazila is about 1,800 per square kilometer. About 88% muslim and about 12% hindu & other people live here. Its literacy rate is about 60%. Some tribal (Tribalci) population lives here. Religious affection is very well. Main occupation of the people live

here is agriculture. More or less 50% people are related with agriculture. There are cold storage, rice mills, flour mills etc. in Sherpur Upazila. There are also cottage industries likely, weaving, bamboo and cane work, goldsmith, blacksmith, potteries, wood work, tailoring, welding etc.

Total arable land is 23697.41 hectares. Main crops are paddy, jute, corn wheat, potato, chilli, onion, vegetables, banana, betel leaf etc. Main fruits are banana, mango, jackfruit etc. Main rivers of Sherpur upazila are Bangali and Karatoya (Bangladesh Population Census- 1991 & 2001; Community Series, Zila: Bogra and Upazila Nirbahi Officer's Office, Sherpur Upazila).

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

CHAPTER FIVE

SOCIAL IMPACT OF URBANIZATION

Impact means change by dint of something on another thing. 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. In this chapter, social impact of urbanization in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 will be presented. Among the factors, dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning activities, migration, population density, traffic jam, social consciousness, religious affair, social recreational facilities, drug addiction, prostitution and 'law and order situation' will be discussed based on the collected information.

5.1 Impact of Urbanization on Dependency

Dependency 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, populations in age groups of 0-14 and 60+ are counted as dependent or inactive, while populations 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 populations in the independent group. The reverse will be result with increasing or decreasing proportion of the dependent people. The impact

of urbanization on dependency in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 has shown in Table- 5.1.

Table- 5.1

Dependency

Year / Age Group	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
0-14	39,050	25,724	6,294	39,681	23,900	6,948	48,437	31,515	8,293	36	38	45	+24.04	+22.51	+31.76
15-59	54,154	43,359	9,185	77,896	55,127	14,233	1,39,298	75,477	23,742	91	95	113	+157.23	+74.07	+158.49
60+	3,513	3,344	679	5,224	4,631	1,190	11,261	6,120	2,817	11	10	9	+220.55	+83.01	+314.87
Total Population	96,717	72,427	16,158	1,22,801	83,658	22,371	1,98,996	1,13,112	34,852	138	143	167	+105.75	+56.17	+115.70
Dependency Ratio (%)	78.56	67.04	75.52	57.65	51.76	57.18	53.01	49.86	46.79	51.65	50.53	47.79	-25.55	-17.18	-28.73

N.B.: Dependency Ratio =

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

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.

The table- 5.1 shows that populations of age group 0-14 have increased by 24.04%, 22.51% and 31.76%; age group 15-59 have increased by 157.23%, 74.07% and 158.49%; age group 60+ have increased by 220.55%, 83.01% and 314.87%; total populations have increased by 105.75%, 56.17% and 115.70% during the period of 1991 to 2011 respectively in Gazipur, Kushtia and Sherpur municipal areas. The table has also focused that dependency ratio has decreased by 25.55%, 17.18% and 28.73% during the same period in the same areas, which is encouraging for development. Decreasing dependency ratio indicates

decreasing dependent or inactive people and increasing independent or active people. Populations in age group 0-14 have increased at a lower rate than the total populations. It may be due to decreasing birth rate, which is also noticeable in Table- 5.5. From the table it can also be seen that populations in age group 60+ have increased at a higher rate than the total populations. This indicates that longevity of people is increasing. This may be by dint of modern science and increasing health care services, which is supported by Table- 5.4. The field survey report of 2011 has shown that the dependency ratio is 51.65%, 50.53% and 47.79% respectively in Gazipur, Kushtia and Sherpur municipal areas 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 dependency in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is favourable for urban development.

Hossain (1982) has focused in his M.Phil. thesis entitled, 'Patterns of Urbanization of Rajshahi Town- A Socio-Economic Study' that about 54% of total population in 0-14 age group and only about 2% are in 60+ group. He has also shown that only 38% families are aware about family planning and about 26% of total families have used family planning materials. On the other hand, only 23% families received health care facilities from government. As a result birth and death rate both were high.

5.2 Impact of Urbanization on Educational Facilities and Literacy Rate

Education broadens mind and develops rationality. In addition, education creates comprehension in individuals to assess economic as well as social environment's difference in different locations in decision

making for settlement. Moreover in certain cases education helps in getting some white-collar jobs as well. Again '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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table- 5.2.

Table- 5.2

Educational Facilities and Literacy Rate

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Kinder Garten School	2	3	Nil	16	21	4	25	33	8	+1,150	+1,000	+ ∞
Primary School	18	12	4	22	16	5	28	21	6	+55.56	+75	+50
High School	6	7	2	13	12	3	18	18	4	+200	+157.14	+100
College	1	11	1	2	18	2	4	29	3	+300	+163.64	+200
Madrasha	24	8	1	52	16	2	75	24	2	+212.50	+200	+100
Total	51	41	8	105	83	16	150	125	23	+194.12	+204.88	+187.50
Literate Population *(7+ years)	39,328	39,250	7,336	69,186	52,088	14,924	1,28,441	83,587	23,814	+226.59	+112.96	+224.62
Total Population *(7+ years)	77,469	61,232	13,318	1,03,994	73,086	19,210	1,73,520	1,00,719	30,321	+123.99	+64.49	+127.67
Literacy Rate (%) (7+ years)	50.77	64.11	55.08	66.53	71.27	77.69	74.02	82.99	78.54	+23.25	+14.88	+23.46

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

N.B.: Literacy Rate (7+ years) =
[Literate Population (7+ years)/ Total Population (7+ years)] X 100
Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001.

The above table shows that the numbers of kindergarten schools have increased by 1150%, 1000% and from nil to 8; primary schools have increased by 55.56%, 75% and 50%; high schools have increased by 200%, 157.14% and 100%; madrashas have increased by 212.50%, 200% and 100% during 1991 to 2011 respectively in Gazipur, Kushtia and Sherpur municipal areas. On the other hand the numbers of literate populations (7+ years) have increased by 226.59%, 112.96% and 224.62%; total populations (7+ years) have increased by 123.99%, 64.49% and 127.67% in the same period respectively in Gazipur, Kushtia and Sherpur municipal areas. Literacy rates have also increased by 23.25%, 14.88% and 23.46% respectively. Though, the numbers of kindergarten schools, high schools, colleges and madrashas have increased notably, the numbers of primary schools have increased at a lower rate than those. The numbers of kindergarten schools have increased at much more higher rate than primary schools. This indicates that people are attracted by non government sector. In spite of higher costs people have preference for such educational facilities. The numbers of madrashas have increased to threefold in the case of Gazipur and Kushtia, but twofold for Sherpur municipal area. The numbers of literate populations (7+ years) have increased more rate than the number of total populations (7+ years), which means people are being conscious and it is supported by section 5.9. By increasing literacy rate, our nation is being graceful not only in this subcontinent but also in the world. The increased

populations, as well as the increased literacy rates may be due to the expansion of educational facilities. The aforesaid discussions help us to conclude that the impact of urbanization on educational facilities and literacy rate in our study areas during 1991 to 2011 is favourable.

5.3   Impact of Urbanization on Female Literacy

More or less half of the total population in our country is women. We cannot imagine our development without woman's participation. They play a vital role in all kinds of development. To make them efficient for development education is necessary. Woman education is necessary for social balance. Our government has taken various steps to make literate women. The impact of urbanization on female literacy of Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table- 5.3.

Table- 5.3

Female Literacy

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Literate Woman *(7+ years)	15,748	16,739	3,062	30,518	23,558	6,604	56,728	35,749	12,147	40	46	54	+260.22	+113.57	+296.70
Total Woman (7+ years)	35,792	29,112	6,387	48,527	35,261	9,181	82,473	50,986	15,382	61	68	71	+130.42	+75.14	+140.83
Female Literacy Rate (%) (7+ years)	44	57.50	47.94	62.89	66.81	71.93	68.78	70.12	78.97	65.57	67.65	76.06	+21.57	+12.62	+31.03

* '7+ years' means seven and above years old.
N.B.: Female Literacy Rate (7+ years) =
   [Literate Women (7+ years) ÷ Total Women (7+ years)] X 100
Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.

The above table shows that the numbers of literate women have increased by 260.22%, 113.57% and 296.70% respectively in Gazipur, Kushtia and Sherpur municipal areas. On the other hand, numbers of total women have increased by 130.42%, 75.14% and 140.83% during the same period. It implies that the numbers of literate women have increased more than total women, which is a favourable aspect of urbanization. Moreover, female literacy rate has increased in Gazipur, Kushtia and Sherpur municipal areas respectively by 21.57%, 12.62% and 31.03% during the same period. This is the outcome of increased educational facilities and is supported by Table- 5.2.

5.4 Impact of Urbanization on Health Care and Maternity Services

Health care and maternity services are 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 developed health care and maternity services in a developed area. Good health guarantees higher productivity and income level. It also increases life expectancy. Urbanization made Gazipur, Kushtia and Sherpur as developed areas and hence we expect an improved health and maternity services in these areas. To justify this, it is necessary to find out the impact of urbanization on health care and maternity services in Gazipur, Kushtia and Sherpur municipal areas. The fact is shown in Table- 5.4.

Table- 5.4

Health Care and Maternity Services

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Hospital	1	5	1	1	5	1	1	6	1	Nil	+20	Nil
Private Clinic	1	6	Nil	7	16	4	12	26	8	+1,100	+333.33	+∞
Pathological Centre	2	11	Nil	6	21	4	15	34	7	+650	+209.09	+∞
Vaccination Centre	2	2	1	2	4	2	3	6	2	+50	+200	+100
Blood Bank	1	4	Nil	3	16	1	8	25	2	+700	+525	+∞
Doctor	12	80	8	32	120	17	107	150	28	+791.67	+87.5	+250
Nurse	16	100	10	46	160	22	142	200	35	+787.50	+100	+250
Homeopathic Medical Centre	6	10	4	12	12	5	21	16	12	+250	+60	+200
Ayurvedic Medical Centre	6	18	14	8	16	12	9	14	12	+50	-22.22	-14.29
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Sources: District civil surgeon offices, Gazipur & Kushtia; Upazila hospital, Sherpur, Bogra; Homeopathic doctors associations, Gazipur & Kushtia Districts and Sherpur Upazila; Ayurvedic medical associations, Gazipur & Kushtia Districts and Sherpur Upazila.

It can be seen from the above table that the numbers of hospitals have increased by Nil, 20% and Nil; Private Clinics have increased by 1100%, 333.33% and from nil to 8; pathological centres have increased by 650%, 209.09% and from nil to 7; vaccination centres have increased by 50%, 200% and 100%; blood banks have increased by 700%, 525% and from nil to 2; doctors have increased by 791.67%, 87.5% and 250%; nurses have increased by 787.50%, 100% and 250%; homeopathic

medical centres have increased by 250%, 60% and 200%; ayurbedic medical centres have increased by 50%, decreased by 22.22% and 14.29% between 1991and 2011 respectively in Gazipur, Kushtia and Sherpur municipal areas. While total populations have increased by 105.75%, 56.17% and 115.70%, the numbers of private clinics, pathological centres, blood banks, doctors, nurses and homeopathic medical centres have increased at much higher rate than those. The numbers of hospitals and vaccination centres have increased at a lower rate than increase of the number of total population. In contrast, the numbers of ayurbedic medical centres have decreased.

Thus the result indicates that the impact of urbanization on health care and maternity services in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is in favour of urban inhabitants. It is worthwhile to mention that the numbers of private clinics and pathological centres have increased very rapidly. This reminds us the success story of privatization. If we look into the other side of the coin we can see that government hospitals remain almost unchanged which indicates a deadlock of the government sector. The decreased numbers of ayurbedic medical centres give an indication of people's inclination toward modern medical facilities. The field survey report shows that majority of the population have used allopathic mode of treatment. Also majority of the respondents have opined that health care and maternity services have increased. These are similar to the results of the secondary sources. The above conditions of health care and maternity services in Gazipur, Kushtia and Sherpur municipal areas show that the Impact of Urbanization on Health Care and Maternity Services is convenient.

5.5 Impact of Urbanization on Family Planning Activities

If men and women are the two wheels of family life cycle children are the stimulants to run these wheels. A family will be incomplete if there are no children. On the contrary development of a nation can be hampered if the growth of population is not controlled. Small size family norm is an ideal situation for the well being of families in all respect (economically, physically, socially and psychologically) (Iqbal, 1998). The world's population is about 7 billion now. Population problem is considered the major problem not only for Bangladesh but also for the world. The study areas are not out of this problem. So family planning activities is necessary here. Here family planning means 'pre planed 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 Planning'. The impact of urbanization on family planning activities in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table– 5.5.

Table- 5.5

Family Planning Activities

Year		User of Family Planning Instruments	Rate of family Planning Instruments Users (%)	Total Family	Total Population	Average Size of Family
1991	Gazipur	12,879	64	20,124	96,717	4.81
	Kushtia	7,128	52.04	13,697	72,427	5.29
	Sherpur	1,845	61.01	3,024	16,158	5.28
2001	Gazipur	17,008	66.76	25,477	1,22,801	4.82
	Kushtia	11,414	63	18,118	83,668	4.62
	Sherpur	3,728	75.37	4,946	22,371	4.61
2011	Gazipur	29,424	70.97	41,458	1,98,996	4.76
	Kushtia	19,536	77	25,371	1,13,112	4.46
	Sherpur	6,256	81.78	7,650	34,852	4.56
Field Survey (2011)	Gazipur	25	83.33	30	138	4.6
	Kushtia	22	73.33	30	143	4.77
	Sherpur	23	76.67	30	167	5.57
Gross Change From 1991 to 2011(%)	Gazipur	+128.46	+6.97	+106.01	+105.75	-1.04
	Kushtia	+174.07	+24.96	+85.23	+56.17	-15.69
	Sherpur	+239.08	+20.77	+152.98	+115.70	-13.64

N.B.: i) Average Size of Family = Total Population / Total Family

ii) Rate of Family Planning Instrument Users =

[User of Family Planning Instruments/ Total Family] x 100

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.

The above table indicates that the numbers of family planning materials users have increased by 128.46%, 174.07% and 239.08%; the rates of family planning materials users have increased by 6.97%, 24.96% and 20.77%; the numbers of total families have increased by 106.01%, 85.23% and 152.98%; total populations have increased by 105.75%, 56.17% and 115.70%; the average sizes of families have decreased by

1.04%, 15.69% and 13.64% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period. Though the increasing rate of total families is high, the increasing rate 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 instruments users, average sizes of house holds have decreased considerably. The numbers of family planning materials users are not only increasing but also the rate of family planning materials users are increasing. It is notable that the numbers of total families are increasing higher than total population. That is, the families are dividing more quickly. But average sizes of families are decreasing for increasing rate of family planning materials users and increasing people's consciousness (Table– 5.9) which is a hopeful sign.

According to the field survey report, 83.33%, 73.33% and 76.67% respondents respectively in Gazipur, Kushtia and Sherpur municipal areas have opined in 2011 that they use family planning materials and average sizes of households are 4.6, 4.77 and 5.57 respectively in the same areas in 2011 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 Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period is hopeful and helpful for urban citizens and society.

5.6 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. According to **'International Organization for Migration (IOM)'** the number of migrants in the world will be about 405 million by 2050. Gazipur, Kushtia and Sherpur municipal areas are not only urban area but also industrial area. So, they are facing problems created from migration specially after liberation in 1971. Table- 5.6 has illustrated the impact of urbanization on migration in Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period.

Table- 5.6

Trend of Migration

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
In Migrant	1,450	4,200	1,500	2,200	7,000	3,200	4,200	10,500	4,600	7	14	28	+189.66	+150	+206.67
Out Migrant	625	3,000	600	908	5,500	1,000	1,970	7,200	1,800	5	11	9	+215.20	+140	+200
Net Migrant	825	1,200	900	1,292	1,500	2,200	2,230	3,300	2,800	2	3	19	+170.30	+175	+211.11
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	138	143	167	+105.75	+56.17	+115.70

N. B.: Net migration = Inmigration – Outmigration

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.

From the above table it can be seen that the numbers of inmigrants have increased by 189.66%, 150% and 206.67% as compared to 215.20%, 140% and 200% increase of outmigrants respectively in

Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period. The net migrants have increased by 170.30%, 175% and 211.11%; total population have increased by 105.75%, 56.17% and 115.70% respectively during the same period and same places. The numbers of inmigrants are much higher than the outmigrants. Thus there is a substantial increase in the net migration which is an important factor for the increased rate of growth of the total population. Thus, it can be said that in spite of increasing family planning materials users (Table- 5.5), the increasing net migration contributes to the total population of Gazipur, Kushtia and Sherpur municipal areas which have increased at a very high rate 105.75%, 56.17% and 115.70% respectively. Annual increase is about 5%, 3% and 6%. The field survey data confirms the result of the secondary data.

From the above discussions we understand that the impact of urbanization of inmigrants is very much inconvenient and on outmigrants is convenient. Inmigrants are almost 2.5 times of outmigrants. That is the impact of urbanization on migration in Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period is inconvenient, which creates various problems for urban inhabitants.

The above result is similar to that of Islam (1999). As he mentioned in his article entitled 'Urbanization, Migration and Development in Bangladesh: Recent Trends and Emerging Issues' that some dominant push factors of rural-urban migration in Bangladesh, which included population pressure, adverse person to land ratio, landlessness, poverty, natural calamities, law and order situation, and lack of social and cultural opportunities. On the other hand, job opportunities and higher wages are the dominant pull factors. A large number of

women come to Dhaka and other metropolises for formal sector industrial employment whilst men seek opportunities in the informal sector. Urbanisation and urban growth occurring due to migration (and other factors) have both favourable and unfavourable consequences or impacts. Some of the favourable consequences are such that it helps to achieve higher productivity, better income, higher age at marriage and reduced fertility rates etc. It also benefits people socio-culturally by modernising them through improved access to information technology and benefits democratisation of the society.

On the other hand, the unfavourable impacts can be grouped as follows:

·Environmental consequences.

·Encroachment of productive agricultural land and forests.
·Extreme pressure on housing, growth of slums and the pressure on urban services. In Dhaka about 30 per cent of the populations live in slums.
·Economic consequences, leading to income inequality and poverty, ill effects of globalization.

·Social consequences, resulting in increased violence, crime, and social degradation.

·Cultural consequences: entry of alien culture and loss of national cultural identity.
·Political consequences: Criminalization of politics.

5.7 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 countries. Higher density creates more problems. Dense

population is one of the mentionable out come of urbanization. Gazipur, Kushtia and Sherpur municipal areas are also facing this problem. The impact of urbanization on population density in Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period is shown in Table 5.7 below.

Table– 5.7
Population Density

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70
Total Area (Km^2)	48	13.32	6.74	48	13.32	6.74	48	13.32	6.74	Nil	Nil	Nil
Population Density (Per Km^2)	2,014.94	5,437.46	2,397.33	2,558.35	6,281.38	3,119.14	4,145.75	8,491.89	5,170.92	+105.75	+56.17	+115.70

N.B.: Population density (Per Km^2) = Total population / Total area (Km^2)

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001.

From the above table it can be seen that the numbers of total populations have increased by 105.75%, 56.17% and 115.70% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. Again the total area of Gazipur, Kushtia and Sherpur municipal areas during 1991–2011 period remain unchanged and it is

respectively 48 Km^2, 13.32 Km^2. and 6.74 Km^2. Naturally densities per Km^2 have increased and those are respectively 105.75%, 56.17% and 115.70% during 1991 to 2011. Though the numbers of total populations have increased rapidly by 105.75%, 56.17% and 115.70% during 1991 to 2011 in the same areas, the total area of the municipalities remain unchanged during the internal period. As a result the density of population per Km^2 has also increased as the same rate of total populations in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. So, from the above discussions we have understood that the impact of urbanization on population density is adverse in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011, which is liable for creating various social, economic and environmental problems on urban dwellers in the aforesaid areas.

5.8   Impact of Urbanization on Traffic Jam

Traffic jam indicates excess vehicle 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. Gazipur, Kushtia and Sherpur municipal areas are not out of this problem. The impact of urbanization on traffic jam in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 has shown in Table- 5.8.

Table– 5.8

Traffic Jam

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Rickshaw	2,200	4,000	890	4,800	5,000	1,348	8,100	7,000	3,643	+268.18	+75	+309.33
Rickshaw Van	150	800	80	375	1,200	215	650	2,500	350	+333.33	+212.50	+337.50
Car/ Jeep/ Micro Bus/ Auto Rickshaw	1,200	600	1,150	1,600	1,000	2,060	2,200	2,500	3,025	+83.33	+316.67	+163.04
Bus/ Mini Bus	800	1,000	480	1,500	1,800	950	3,200	2,800	1,500	+300	+180	+212.50
Truck/ Mini Truck	900	1,200	275	2,000	2,500	700	4,500	3,500	1,200	+400	+191.67	+336.76
Total Vehicle	5,250	7,600	2,875	10,275	11,500	5,273	18,650	18,300	9,718	+255.24	+140.79	+138.02
Total Road (km)	92.19	62	17.991	118.66	79.052	17.991	148.02	114.81	17.991	+60.56	+85.18	Nil
Number of Traffic Police	4	24	4	4	24	6	4	24	6	Nil	Nil	+50

Sources: Gazipur, Kushtia & Sherpur municipal offices; Traffic police stations, Gazipur & Kushtia Districts and Sherpur Upazila; Micro bus/ Auto rickshaw/ Bus/ Mini bus/ Truck/ Mini truck owners associations, Gazipur & Kushtia Districts and Sherpur Upazila.

If we look in to Table 5.8, it can be observed that the numbers of rickshaws have increased by 268.18%, 75% and 309.33%; rickshaw vans have increased by 333.33%, 212.50% and 337.50%; car / jeep / micro bus/ auto rickshaws have increased by 83.33%, 316.67% and 163.04%; bus / mini buses have increased by 300%, 180% and 212.50%; truck / mini trucks have increased by 400%, 191.67% and 336.36%; total vehicles have increased by 255.24%, 140.79% and 138.02%; total roads (km) have increased by 60.56%, 85.18% and Nil; traffic polices have increased by Nil, Nil and 50% respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011. The numbers of rickshaws have increased rapidly to keep pace with increasing population; rickshaw

vans have increased rapidly, because rickshaw van serves as a substitute for trucks and pick ups; Cars / jeeps / micro buses/ auto rickshaws, buses / mini buses and trucks / mini trucks have increased at high rate because the all three areas are the entrance of separate vast areas. Total roads (km) have increased very little than total vehicles which are the main reason for traffic jam. Rapid increasing of population is also liable for traffic jam. On the contrary only 4, 24 and 6 traffic polices are controlling 18,650, 18,300 and 9,718 vehicles respectively in Gazipur, Kushtia and Sherpur municipal areas in 2011. This is very difficult for them to maintain. Moreover major portion of our drivers and passer-by are ignorant about traffic rules and unruly.

According to the field survey report in 2011, above 80% respondents have opined that traffic jam has increased, which is similar to the results of secondary sources. Thus the impact of urbanization on traffic jam in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is also adverse for the citizens of the aforesaid areas.

5.9 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 educated families of the society. On the other hand, it is lower in uneducated families of the society. Since urban area contains more educated families, so the degree of social consciousness is higher there. The impact of urbanization on social consciousness in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table- 5.9.

Table- 5.9

Social Consciousness

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Subscriber of Daily Newspaper	1,800	900	200	3,500	2,500	450	6,000	3,500	800	6	4	4	+233.33	+288.89	+300
Subscriber of Weekly/ Fortnightly/ Monthly Magazine	700	300	50	1,200	700	80	2,700	1,700	200	4	3	2	+285.71	+466.67	+300
Radio Owner	2800	1,100	600	2800	1,100	400	2800	800	100	4	2	2	Nil	-27.27	-83.33
Television Owner	7,600	2,000	800	12,800	6,500	2,000	2,8750	14,500	4,800	20	16	19	+278.29	+625	+500
Total Family	20,124	13,697	3,024	25,477	18,118	4,946	41,458	25,371	7,650	30	30	30	+106.01	+85.23	+152.98

Sources: Hawker labor unions, Gazipur & Kushtia Districts and Sherpur Upazila; Head post offices, Gazipur & Kushtia Districts and Sherpur Upazila; Shop owners associations, Gazipur & Kushtia Districts and Sherpur Upazila and Field survey.

From the above table one can observe that the numbers of subscribers of daily newspapers have increased by 233.33%, 288.89% and 300%; the numbers of subscribers of weekly / fortnightly / monthly magazines have increased by 285.71%, 466.67% and 300%; the numbers of radio listeners have changed by Nil, -27.27% and -83.33%; the numbers of television viewers have increased by 278.29%, 625% and 500%; total families have increased by 106.01%, 85.23% and 152.98% respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011. The numbers of subscribers of daily newspapers and weekly /

fortnightly / monthly magazines have increased 2 times than the increasing of total families. This means people have become literate and conscious which is supported by Table no– 5.2 and 5.3. It has also become possible for increasing financial condition of subscribers. Though the numbers of total families have increased, the numbers of television viewers have increased more than that. It detects upper trend of consumption of viewers, which is also supported by Table 6.4. Probably it has happened for financial upliftment (Table- 6.1) of urban dwellers. In case of the number of radio listeners, it has decreased. Because of the same reason that is, upper trend of consumption. It is also notable that about 100 television channels are producing 'NEWS' time to time and about 10 channels producing 'NEWS' 24 hours randomly which is one of the main reasons for decreasing radio listeners and increasing television viewers. The field survey report (in 2011) also strongly supports the results of the secondary sources.

5.10 Impact of Urbanization on Religious affair

Religious affair plays a vital role in maintaining the social order. It helps to develop people's character. The degree of religious practice of a person focuses his truthfulness, honesty, ethicality etc. Religious practice which causes to run one towards truthfulness, honesty and ethicality, helps a person to increase his acceptability in the society. It also helps to remove all kinds of corruption and accelerate all kinds of development. Here in Table 5.10 the impact of urbanization on religious affair in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown.

Table- 5.10

Religious places

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Number of Mosque	106	40	9	112	52	11	129	65	15	+2 16.98	+62.50	+66.67
Number of Mandir	8	18	8	11	25	10	13	27	10	+62.50	+50	+25
Number of Church	2	1	Nil	2	1	Nil	2	1	Nil	Nil	Nil	Nil
Number of Pagoda	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total	116	59	17	125	78	21	144	93	25	+24.14	+57.63	+47.06
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Sources: Gazipur, Kushtia & Sherpur municipal offices; Imam associations Gazipur & Kushtia Districts and Sherpur Upazila; Hindu-Buddha-Christian allied associations, Gazipur & Kushtia Districts and Sherpur Upazila.

From the table it can be observed that while the numbers of mosques have increased by 216.98%, 62.50% and 66.67%; mandirs have increased by 62.50%, 50% and 25%; the church remains unchanged in numbers respectively in Gazipur, Kushtia and Sherpur municipal areas during the 1991 to 2011 period. It is mentionable that the numbers of mosques have increased more than others which happen may be for above 85% people of our country are Muslim. The field survey report shows that about 90% respondents have opined that they pray regular according to their own religion. Since religious practice gets priority to increase ones truthfulness, honesty, ethicality, norms and values so, it can be assumed that the impact of urbanization on religious affair in Gazipur, Kushtia and Sherpur municipal areas during 1999 to 2011 is favourable.

5.11 Impact of Urbanization on Social Recreational Facilities

Recreation means free from all kinds of pressure. People can not live without recreation. The necessity of recreation has felt more to the people of 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 Gazipur, Kushtia and Sherpur municipal areas 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 has shown in Table 5.11.

Table- 5.11
Social Recreational Facilities

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Number of Park	1	1	Nil	1	2	1	1	2	1	Nil	+100	+∞
Number of Cinema Hall	2	5	2	3	3	2	3	3	2	+50	-40	Nil
Number of Play Ground	6	11	9	4	8	6	4	7	4	-33.33	-36.36	-55.56
Number of Theatre	2	2	Nil	6	4	2	11	7	3	+450	+250	+∞
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Source: Gazipur, Kushtia & Sherpur municipal office; Upazila statistics office of Gazipur sadar, Kushtia sadar & Sherpur and Bangladesh population census, 1991 & 2001.

The above table has focused that the numbers of parks have increased by Nil, 100% and from nil to 1; cinema halls have changed by +50%, -40% and Nil; play grounds have decreased by 33.33%, 36.36% and 55.56%; theatres have increased by 450%, 250% and from nil to 3 respectively in Gazipur, Kushtia and Sherpur municipal areas during

1991 to 2011 period. The numbers of parks have increased 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 for decreasing number of cinema halls is that, people are capable to watch cinema by television with the help of above 100 satellite channels, Video Cassette Players (VCP), Video Cassette Recorders (VCR), Video Compact Disks (VCD), Digital Versatile Disks (DVD) etc. in their own residence. Thus the cinema industry is at stake. The numbers of play grounds have decreased because of increasing land value (Table- 6.13). Rapid increasing of population is also liable for this. The numbers of theatres have increased rapidly because of modern cultural activities has increased now-a-days and private sector participation in this field. This sector has become profitable and many private investors have come forward in establishing community centres which were earlier used as theatre hall. Thus it would not be erroneous to conclude that the impact of urbanization on social recreational facilities is favourable.

5.12 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 communication system, addiction is more in developed area. That is, addiction is proportional to development. Gazipur, Kushtia and Sherpur municipal areas are developed urban area. They are not out of the problem. This incidence is shown in Table 5.12.

Table- 5.12
Drug Addiction

Year / Kind	1991			2001			2011			Field survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Addicted	1,500	1,000	200	4,500	2,500	325	10,400	4,000	850	6	3	2	+593.33	+300	+325
Death For Addiction	120	50	6	200	150	11	575	200	38	Nil	Nil	Nil	+379.17	+300	+533.33
Drug Seller	30	25	15	95	100	30	250	150	50	Nil	Nil	Nil	+733.33	+500	+233.33
Total Population	96,717	72,427	16,158	1,22,801	83,658	22,371	1,98,996	1,13,112	34,852	138	143	167	+105.75	+56.17	+115.70

Sources: Upazila somajseba offices of Gazipur sadar, Kushtia sadar & Sherpur ; Bangladesh population census, 1991 & 2001 and Field survey .

The aforementioned table shows that the numbers of drug addicts have increased by 593.33%, 300% and 325%; deaths for addiction by 379.17%, 300% and 533.33%; drug sellers by 733.33%, 500% and 233.33%; total population by 105.75%, 56.17% and 115.70% respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011. Though the numbers of total populations have increased rapidly, the numbers of drug addicts, deaths for addiction and drug sellers have increased more than that. Cent percent (90 among 90) respondents of field survey in 2011 have opined that the numbers of drug addicts have increased, which is as same as the results have obtain from secondary sources. Thus in short we can summarize that the impact of urbanization on drug addiction in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is unfavourable for the inhabitants.

5.13 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 are 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 Gazipur, Kushtia and Sherpur municipal areas there are no licensed or without licensed brothel. But these areas are 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is reflected in the following Table 5.13.

Table- 5.13

Prostitution

Year		Number of Sex Worker	Total Women *(10+ years)	Number of Customer	Total Male(10+years)
1991	Gazipur	215	32,361	550	38,096
	Kushtia	100	26,961	300	29,938
	Sherpur	60	5,742	115	6,215
2001	Gazipur	412	45,664	1,200	52,156
	Kushtia	230	33,413	570	35,813
	Sherpur	86	8,645	240	9,494
2011	Gazipur	995	77,321	3,200	95,548
	Kushtia	550	46,802	1,250	49,637
	Sherpur	152	14,866	475	14,839
Gross Change From 1991 to 2011(%)	Gazipur	+362.79	+138.93	+481.82	+150.81
	Kushtia	+450	+73.59	+316.67	+65.80
	Sherpur	+153.33	+158.90	+313.04	+138.76

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

Sources: Upazila somajseba offices of Gazipur sadar, Kushtia sadar & Sherpur ; Bangladesh population census, 1991 & 2001 .

One can observe from the Table 5.13 has reflected that the numbers of sex workers have increased by 362.79%, 450% and 153.33%; total women (10+ years) have increased by 138.93%, 73.59% and 158.90% respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011. On the other hand, the numbers of customers have increased by 481.82%, 316.67% and 313.04%; total male have increased by 150.81%, 65.80% and 138.76% in the same areas during the same period. Though the numbers of total women (10+ years) have increased rapidly, the numbers of sex workers have increased more than that. In another side, the numbers of total male (10+ years) have increased rapidly and the numbers of customers have increased more than that. The field survey report held in 2011 has pointed out about 80% respondents have opined that prostitution increases. This is not contradictory with the results have collected from secondary sources. So, it can be concluded that the impact of urbanization on prostitution in the above three areas during 1991 to 2011 is troublesome for environment of the aforesaid areas.

5.14 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is presented in the Table 5.14 below.

Table- 5.14

Law and Order Situation

Year		Number of Offence	Number of Police Station	Number of Police	Total Population
1991	Gazipur	300	2	60	96,717
	Kushtia	190	2	35	72,427
	Sherpur	88	2	28	16,158
2001	Gazipur	775	2	68	1,22,801
	Kushtia	450	3	53	83,668
	Sherpur	136	2	40	22,371
2011	Gazipur	1980	2	75	1,98,996
	Kushtia	1,050	3	53	1,13,112
	Sherpur	398	2	42	34,852
Gross Change From 1991 to 2011(%)	Gazipur	+560	Nil	+25	+105.75
	Kushtia	+452.63	+50	+51.43	+56.17
	Sherpur	+352.27	Nil	+50	115.70

Sources: Gazipur sadar, Kushtia sadar & Sherpur thanas; Bangladesh population census, 1991& 2001 and Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur.

The above table shows that the numbers of offences have increased by 560%, 452.63% and 352.27%; police stations by Nil, 50% and Nil; number of polices by 25%, 51.43% and 50%; total population by 105.75%, 56.17% and 115.70% respectively in Gazipur, Kushtia and Sherpur municipal areas between 1991 and 2011. Although the numbers of total populations have increased rapidly, the numbers of police stations and polices have not increased like that. The numbers of offences have increased more than total population. It may happen for increasing unemployment problem (Table- 6.2), which increases frustration and for this people have motivated to offence. According to the field survey

report held in 2011, 90% respondents have opined that law and order situation has degraded in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. This also supports the results have obtained from secondary sources. So, it is summarized that the impact of urbanization on law and order situation in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is incommodious for urban dwellers.

Dhirendra Kumar states in a book in 2009, 'What can we do about crime and violence in the city? Clearly, we all would benefit if the stresses in urban environments caused by pollution, noise, litter, squalor and congestion were reduced. We also should try to make decent housing, jobs, and education available to all. Perhaps we also need to find ways to divide the city into smaller neighborhoods, encourage diversity in population and housing, reduce the total population size and density, and provide opportunities for advancement and hope for the future so that people won't feel so alienated and angry'. Crime in big cities is often related to religion, lack of education, unemployment, and bad financial situation. The problem is much worst in the Developing Nations whereas people sometimes steal and kill in order for food and clothing. (Kumar, 2009)

In this chapter we have discussed about the impact of urbanization on fourteen major factors related to society for measuring the impact of urbanization on society in Gazipur, Kushtia and Sherpur municipal areas respectively during 1991 to 2011. One can understand about the impact of urbanization on society within a very short time from the above discussion. Our urban areas are increasing as rapidly that it is very necessary for an urban citizen to think that is the rapid increasing of

urban areas in Bangladesh necessary or not. On the other hand, it will help him to realize the existing urban social facilities are sufficient or not and also help him to suggest for making new policies and applying existing policies properly. It will also be helpful for urban planners. In brief, we can divide the outcome of urbanization into either favourable or unfavourable. Impact on dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning activities, social consciousness, religious affair and social recreational facilities are favourable. Contrary to this, there are unfavourable impact of urbanization on migration, population density, traffic jam, drug addiction, prostitution and 'law and order situation'. In the following chapter we would focus our attention on the economic impact of urbanization.

CHAPTER SIX

ECONOMIC IMPACT OF URBANIZATION

Economic impact 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 will be presented on economic aspects to indicate impact or change on main economic characteristics like financial classification, employment, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility, communication and transport, financial institutions, 'land value, land ownership (without dwelling unit) and house ownership' and 'livestock, poultry and fishery resources'.

6.1   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 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table 6.1.

Table- 6.1

Financial Classification

Year / Kind	1991 Gazi pur	1991 Kush tia	1991 Sher pur	2001 Gazi pur	2001 Kush tia	2001 Sher pur	2011 Gazi pur	2011 Kush tia	2011 Sher pur	Field Survey (2011) Gazi pur	Field Survey (2011) Kush tia	Field Survey (2011) Sher pur	Gross Change From 1991 to 2011(%) Gazi pur	Gross Change From 1991 to 2011(%) Kush tia	Gross Change From 1991 to 2011(%) Sher pur
Upper Class *(Per day 10$<)	30	40	4	175	100	15	325	176	60	1	Nil	Nil	+983.33	+340	+1,400
Upper Middle Class (Per day 5<10)	490	475	20	2,863	850	60	5,355	1,648	250	2	1	7	+992.86	+246.95	+1,150
Lower Middle Class (Per day 2<5)	1,800	3,020	800	6,150	3,925	1,200	12,421	4,784	3,060	7	6	9	+590.06	+58.41	+282.50
Poor (Per day 1<2)	4,924	3,672	900	4,837	4,373	1,600	7,424	5,795	1,800	7	9	9	+50.77	+57.82	+100
Extreme Poor (Per day<1$)	12,880	6,490	1,400	11,452	8,870	2,071	15,933	12,968	2,480	13	14	5	+23.70	+99.82	+77.14
Total Family	20,124	13,697	3,024	25,477	18,118	4,946	41,458	25,371	7,650	30	30	30	+106.01	+85.23	+152.98

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

Sources: Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Income tax offices- Gazipur, Kushtia and Bogra Districts; Bangladesh population census, 1991 & 2001 and Field survey.

The above table indicates that the numbers of people have increased by some 983.33%, 340% and 1400% in the upper class; 992.86%, 246.95% and 1150% in the upper middle class; 590.06%,

58.41% and 282.50% in the lower middle class; 50.77%, 57.82% and 100% in the poor class; 23.70%, 99.82% and 77.14% in the extreme poor class respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. The increase of the upper, upper middle and lower middle classes are higher than the increase of total numbers of families. This is an indication of improvement in the standard of living. One reason for the increased upper class may be due to the special development works done by the government in three areas. The families within poor and extreme poor classes have increased but at a lower rate than the numbers of total families. This indicates financial development. Improved financial condition is also supported by the increasing per capita income of the country. However the field survey report does not confirm this fact fully. This may be due to the hiding of facts by the respondents in exposing their income to the researcher. Also may be due to some statistical biasness of the sample. From the foregoing discussions it can be said that impact of urbanization on financial classification in Gazipur, Kushtia and Sherpur municipal areas is helpful and this is a sign of financial development for the areas.

Poverty has long been considered as mainly a rural phenomenon, and the desire to improve living standards has typically been a principal motivation for migration from the countryside into the cities. Many city

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- 06.

Financial limits of poor and extreme poor group is followed 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).

Again financial limits of upper class, upper middle class and lower middle class is calculated after discussion with the Upazila statistics office of Gazipur sadar, Kushtia sadar & Sherpur following the exchange rate of Dollar ($) in 1991, 2001 and 2011 respectively.

dwellers are nevertheless poor by any definition. The World Bank estimates that, in 2000, almost 500 million urban residents in developing countries lived on less than US $1 per day (United Nations, 2003).

FACTS AND FIGURES ON POVERTY

A quarter of the world's population, 1.3 billion people, lives in severe poverty...

- Nearly 800 million people do not get enough food, and about 500 million people are chronically malnourished. More than a third of children are malnourished.

- In industrial countries more than 100 million people live below the poverty line, more than 5 million people are homeless and 37 million are jobless.

- Of the world's 23 million people living with HIV/AIDS more than 93% live in developing countries.

- More than 840 million adults are illiterate- 538 million of them are women.

- In developing countries 160 million pre-school children are underweight.

- 1.2 billion people live without access to safe drinking water.

Today's society has the resources to eradicate poverty...

- The net wealth of the 10 richest billionaires is $133 billion, more than 1.5 times the total national income of the least developed countries.

- The cost of eradicating poverty is 1% of global income.

- Effective debt relief to the 20 poorest countries would cost $5.5 billion- equivalent to the cost of building Euro Disney.

- Providing universal access to basic social services and transfers to alleviate income poverty would cost $80 billion, less than the net worth of the seven richest men in the world.

- Six countries can spend $700 million in nine days on dog and cat food.

- Today's world spends $92 billion on junk food, $66 billion on cosmetics and nearly $800 billion in 1995 for defence expenditure.

Extreme poverty can be banished from the globe in the early part of the 21st Century

- The proportion of human kind living in poverty has fallen faster in the past 50 years than in the previous 500 years.

- Since 1960 child death rates in developing countries have more than halved, malnutrition rates have declined by almost a third, the proportion of children out of primary school has fallen from more than half to less than a quarter.

- Over the past three decades the population in developing countries with access to safe water almost doubled- from 36 per cent to nearly 70 per cent.

- The extension of basic immunisation over the past two decades has saved the lives of three million children.

- In 1960-93 average life expectancy increased by more than a third in developing countries.

Poverty is no longer inevitable and should thus no longer be tolerated. (UNDP, 1999)

6.2 Impact of Urbanization on Employment

Employment is another important indicator for measuring the economic impact of urbanization. It discusses about various kinds of

occupation, in which people are engaged. The degree of employment detects the degree of financial mobility. This two are proportionately related to each other. One's occupation determines not only his economic status but also his social status. The impact of urbanization on occupational structure in Gazipur, Kushtia and Sherpur municipal areas is shown in Table 6.2.

Table- 6.2

Employment Condition

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Total Eemployed *(10+ years)	48,937	39,042	9,031	62,433	42,579	11,199	91,822	53,923	16,873	65	74	82	+87.63	+38.12	+86.83
Total Unemployed (10+ years)	21,520	17,857	2,926	35,327	26,647	6,940	81,047	42,516	12,832	51	51	56	+276.61	+138.09	+338.55
Total Population (10+ years)	70,457	56,899	11,957	97,760	69,226	18,139	1,72,869	96,439	29,705	116	125	138	+145.35	+69.49	+148.43
Economic Activity Rate (10+ years)	69.46	68.62	75.53	63.86	61.51	61.74	53.12	55.91	56.80	56.03	59.2	59.42	-16.34	-12.71	-18.73

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

N.B.: Economic Activity Rate (10+ years) =
[Total Employed (10+ years)/ Total Population (10+ years)] X 100
Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur, Bangladesh population census, 1991 & 2001and Field survey.

The above table has depicted that the numbers of total employed people (10+ years) have increased by 87.63%, 38.12% and 86.83%; total unemployed people (10+ years) have increased by 276.61%, 138.09% and 338.55%; total populations (10+ years) have increased by 145.35%, 69.49% and 148.43% respectively in Gazipur, Kushtia and Sherpur municipal areas during the study period. Though the numbers of total populations (10+ years) have increased, the numbers of total unemployed people (10+ years) have increased more than that and the numbers of total employed people (10+ years) have increased at a slower rate. The numbers of total unemployed people (10+ years) have increased rapidly due to the increased number of inmigrants, which is shown in Table- 5.6. In Gazipur, Kushtia and Sherpur municipal areas 'Economic Activity Rates (10+ years)' have decreased by 16.34%, 12.71% and 18.73% accordingly. It has strongly focused reversed condition of employment. The field survey report shows that 'Economic Activity Rates (10+ years)' are 56.03%, 59.2% and 59.42% respectively in Gazipur, Kushtia and Sherpur.

From the above table apparently it has been 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 areas is unfavourable. On the other side, economic activity rates (10+ years) are unfavourable in all the three study areas. This may be a cause of towards creating problems for municipal areas. As a result, it is clear that impact of urbanization on employment is harmful.

6.3　Impact of Urbanization on Women Employment

Women constitute not only half of the total population, but also play a vital role to develop a nation or society. Women employment is necessary for social balance. In modern societies women are being employed in local, national and global level. It is a symbol of measuring the standard of a society. In an advanced society, women are employed at a higher rate. Urbanization helps a society to be advanced. It also helps the women to be employed. Women employment depends on various aspects, such as- literacy, employment opportunity, social status, awareness, skillness, personality, etc. of women. The impact of urbanization of women employment in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table 6.3.

Table– 6.3

Structure of Women Employment

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Women Employee *(10+ years)	850	720	85	1,950	1,550	155	4,608	2,650	334	5	5	2	+442.12	+268.06	+281.18
Total Women (10+ years)	32,361	27,961	5,742	45,664	33,413	8,645	77,321	46,802	14,866	54	63	67	+138.93	+67.38	+158.90
Women Economic Activity Rate (%) (10+ years)	2.63	2.58	1.48	4.27	4.64	1.79	5.96	5.66	2.25	9.26	7.94	2.99	+3.33	+3.08	+0.77

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

N.B.: Women Economic Activity Rate (10+ years) =
[Employed Woman (10+ years)/ Total Woman (10+ years)] X 100

Sources: **Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.**

In Table 6.3 it can be seen that the numbers of employed women (10+ years) have increased by 442.12%, 268.06% and 281.18%; total women (10+ years) have increased by 138.93%, 67.38% and 158.90% respectively in Gazipur, Kushtia and Sherpur. Although the numbers of total women (10+ years) have increased at a higher rate but the numbers of women employees (10+ years) have increased even higher rate than that. Women education, quotas in various jobs, government motivation, social recognition and eagerness of the families are helping to increase the numbers of women employees. 'Women Economic Activity Rates (10+ years)' have increased by 3.33%, 3.08% and 0.77% respectively, which proofs favourable sign of impact of urbanization on women employment.

According to the field survey (in 2011) report 9.26%, 7.94% and 2.99% women (10+ years) are employed in the respective areas. From the above discussions one can understand easily that the impact of urbanization on women employment (10+ years) is helpful.

6.4 Impact of Urbanization on Consumption Pattern

Consumption means to enjoy and get utility from some thing and 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. Increasing consumption detects increasing financial capability. Modern consumption items help the consumer to be familiar with modern life. The impact of urbanization on consumption pattern is shown in Table 6.4.

Table– 6.4
Consumption Pattern

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Radio/ Tape Recorder	4	3	18	4	3	14	4	2	2	Nil	-33.33	-60
Television (B/W)	6	9	7	6	7	11	3	3	3	-50	-66.67	-57.14
Television (Colour)	6	2	2	11	8	9	17	13	16	+183.33	+550	+700
Refrigerator	4	2	2	6	5	7	11	8	13	+175	+300	+550
Air Conditioner	1	Nil	Nil	1	Nil	Nil	3	1	2	+200	+∞	+∞
Computer	Nil	Nil	Nil	4	Nil	Nil	11	2	3	+∞	+∞	+∞
Electric Fan(Ceiling & Table)	10	6	8	17	14	19	22	19	23	+120	+216.67	+187.50
Water Pump	1	3	Nil	2	4	2	6	7	8	+500	+133.33	+∞
Washing Machine	1	1	Nil	3	2	1	8	6	3	+700	+500	+∞
Water Filter	Nil	Nil	Nil	3	3	Nil	10	8	4	+∞	+∞	+∞
Oven	Nil	Nil	Nil	1	2	Nil	4	5	2	+∞	+∞	+∞
Blender	Nil	Nil	Nil	2	2	Nil	6	5	6	+∞	+∞	+∞
Car / Jeep	1	Nil	Nil	2	Nil	1	3	2	2	+200	+∞	+∞
Box Khat	1	Nil	Nil	4	4	1	7	8	4	+600	+∞	+∞
Sofa Set	1	12	2	3	15	8	17	19	12	+1600	+58.33	+500
Show Case	4	16	4	9	19	11	21	23	26	+425	+43.45	+550
Wardrobe	3	6	1	12	11	5	18	16	18	+500	+166.67	+1,700
Bicycle	24	16	14	22	18	19	22	19	22	-8.33	+18.75	+57.14
Motor Cycle	3	2	2	5	5	6	6	8	9	+100	+300	+350
Dressing Table	4	10	8	8	13	14	18	21	28	+350	+110	+250
Dyning Table	8	10	9	14	12	16	16	23	26	+100	+130	+188.89
Almirah (Steel)	22	9	4	23	21	16	26	27	24	+18.18	+200	+500
Total Family	30	30	30	30	30	30	30	30	30	Nil	Nil	Nil

Source: Field survey (2011) in Gazipur, Kushtia & Sherpur municipal area.

Though the numbers of radios / tape recorders and televisions (black and white) users have decreased, the numbers of televisions (colour) users have increased very high rate. That is, financial and recreational conditions of the families have upgraded. The fact is supported by Table- 6.1. Social consciousness has also increased (Table- 5.9). On the other hand the numbers of refrigerators, air conditioners, computers, electric fans, water pumps, washing machines, water filters, ovens, blenders, cars / jeeps, box khats, sofa sets, show cases, wardrobes, bicycles, motor cycles, dressing tables, dyning tables and almirahs (steel) users have increased high rate. These all proves that the financial conditions of the people have developed and people are running towards luxurious life leading in the study areas, which is also supported by Table- 6.1. So, after above all discussions, it can be said that the impact of urbanization on consumption pattern in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 period is propitious for urban citizens, which has proved the increasing financial capability of the people of aforementioned areas.

Human consumption has increased so much now-a-days, that the world cannot keep pace with the changing situation. Human demand has increased two times by less than last 50 years. If we continue this life style then in 2030 we need one more earth. On the other side, if all the people of the world begin to lead their life style as like as the inhabitants of America or United Arab Emirate from today then we need four earths that is three more earth after 2030 (World Wide Fund for Nature, 2010).

6.5   Impact of Urbanization on Housing Pattern

House means where people live 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. During recent years residential mobility has attached the attention of scholars of different disciplines including the sociologists, economists and geographers. The sociologists are interested in the social aspects of mobility, the economists' focuses on links between mobility and housing markets, whereas the geographers are concerned with an overall analysis of the changing spatial structure of the city in relation to residential mobility. The following Table 6.5 sheds light on the impact of urbanization on housing pattern in Gazipur, Kushtia and Sherpur municipal areas.

Table– 6.5
Housing Pattern

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Tinshed House	3,173	1,747	1,918	4,245	1,960	1,029	7,718	2,969	286	4	5	6	+143.24	+69.95	-85.09
Tinshed Building	10,097	4,990	560	11,487	5,879	2,979	15,704	7,236	5,234	16	11	12	+55.53	+45.01	+834.64
Building	4,887	5,919	218	5,672	8,261	326	7,998	11,488	542	4	12	8	+63.66	+94.09	+148.62
Other	1,143	449	328	1,842	735	263	5,636	1,159	216	6	2	4	+393.09	+158.13	-34.15
Total House	19,300	13,105	3,024	23,246	16,835	4,597	37,056	22,852	6,278	30	30	30	+92	+74.38	+107.61

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.

The above table has exhibited that the numbers of tinshed houses have changed by +143.24%, +69.95% and -85.09%; tinshed buildings

have increased by 55.53%, 45.01% and 834.64%; buildings have increased by 63.66%, 94.09% and 148.62%; houses in other's group have changed by +393.09%, +158.13% and -34.15% & total houses have increased by 92%, 74.38% and 107.61% respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2006. Though the numbers of total houses have increased, the numbers of buildings have increased at a higher rate than that. In Gazipur houses in others (made by sack, straw, polythene, leaf of palm trees etc.) group have increased high rate. It may be for rapid increasing slums there (Table- 7.8). The case is same in Kushtia, but less than Gazipur. It is notable that houses in others group is 15% and 5% of total houses accordingly in Gazipur and Kushtia in 2011. On the other hand, in Sherpur tinshed houses and houses in others (made by sack, straw, polythene, leaf of palm trees etc.) group have decreased and the numbers of tinshed buildings have increased very rapidly. The numbers of tinshed houses and houses in others group have decreased, which have focused upper trend of middle class families.

The field survey report held in 2011 has shown that 13.33%, 16.67% and 20% houses are tinshed house; 53.33%, 36.67% and 40% houses are tinshed building; 13.33%, 40% and 26.67% houses are building; 20%, 6.67% and 13.33% houses are in others group respectively in Gazipur, Kushtia and Sherpur municipal areas. The field survey result has supported strictly the results have collected from secondary sources. After the above discussion from different angels it can be said doubtlessly that the housing pattern in the study areas is developing, which is helpful for urban areas and enough to proof that the financial capability of the dwellers of Gazipur, Kushtia and Sherpur municipal areas have increased during 1991 to 2011. This is also supported by Section 6.1.

6.6   Impact of Urbanization on Sources of Drinking Water

Waters cover 71% of the Earth's surface. Of this, 97.5% is the salty water of the Oceans and only 2.5% freshwater, most (about two-thirds) of which is locked up in the Antarctic ice sheet. That is, less than 1% is available as fresh water for human use. The remaining freshwater is found in lakes, rivers, wetlands, the soil, aquifers and atmosphere. Life depends on the solar-powered global water cycle, the evaporation from Oceans and land to form water vapour that later condenses from clouds as rain, which then becomes the renewable part of the freshwater supply. Awareness of the global importance of preserving water for ecosystem services has only recently emerged as, during the 20th century, more than half the world's wetlands have been lost along with their valuable environmental services. Biodiversity-rich freshwater ecosystems are currently declining faster than marine or land ecosystems making them the world's most vulnerable habitats (World wide fund for nature, 2008). 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 6.6 has illustrated the impact of urbanization on sources of drinking water in Gazipur, Kushtia and Sherpur municipal areas.

Table– 6.6

Sources of Drinking Water

Year Source	1991			2001			2011			Field Survey (2011)			Gross change from 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Municipal supply by pipe line	1,358	1,242	66	2,,206	1,805	148	2,500	5,800	300	4	11	8	+84.09	+366.99	+354.55
Tube-well	15,698	9,751	2,862	18,586	12,612	4,718	29,873	13,510	6,902	20	10	14	+90.30	+38.55	+141.16
Well	1,370	302	58	143	81	24	Nil	720	Nil	Nil	2	Nil	-100	+138.41	-100
Pond/Canal/River	83	61	38	24	4	2	Nil	12	Nil	Nil	Nil	Nil	-100	-80.33	-100
Own pump	1,615	2,341	Nil	4,518	3,616	54	9,085	5,329	448	6	7	8	+462.54	+127.64	+∞
Total family	20,124	13,697	3,024	25,477	18,118	4,946	41,458	25,371	7,650	30	30	30	+106.01	+85.23	+152.98

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur; Bangladesh population census, 1991 & 2001 and Field survey.

The above table has illustrated that the numbers of water users have increased by 84.09%, 366.99% and 354.55% from municipal supply by pipe line; 90.30%, 38.55% and 141.16% from tube-well; 462.54%, 127.64% and from nil to 448 by own pump's water respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011. The numbers of water users from well have changed by -100%, +138.41% and -100% respectively in the same areas in the same period. 100%, 80.33% and 100% water users from pond/canal/river have decreased accordingly. In comparison to this the numbers of total families have increased by 106.01%, 85.23% and 152.98% respectively. Though the numbers of total families have increased, the numbers of, municipal supply by pipe line and own pump water users have increased at a higher rate than that. On the other hand the numbers of families using tube-well water have increased less. Users of pond/canal/river water have decreased

about 100 percent in all areas in the mentioned period. Number of well water users have decreased by 100% both in Gazipur and Sherpur, but Kushtia is an exception and it is due to 'Arsenic Contamination'.

The above finding is a proof of the increasing financial capability and consciousness of the dwellers of the study areas. The field survey report is presented at the fifth column of Table 6.6, which shows similar trends of water users. The aforesaid discussions have proved that the impact of urbanization on sources of drinking water is favourable for urban inhabitants in the selected study areas.

6.7   Impact of Urbanization on Electricity Facility

Electricity is the heart of an urban area. It is a prerequisite to an area to be declared as urban. In an urban area, agriculture plays the minimum role. On the other hand industry, business, office etc., are totally dependent on electricity which plays the main role. Electricity is an important component to measure the economic impact of urbanization. The impact of urbanization on electricity facilities in Gazipur, Kushtia and Sherpur municipal areas is shown in Table 6.7.

Table– 6.7
Electricity Facility

Year / Kind	1991 Gazi pur	1991 Kush tia	1991 Sher pur	2001 Gazi pur	2001 Kush tia	2001 Sher pur	2011 Gazi pur	2011 Kush tia	2011 Sher pur	Field survey (2011) Gazi pur	Field survey (2011) Kush tia	Field survey (2011) Sher pur	Gross Change From 1991 to 2011(%) Gazi pur	Gross Change From 1991 to 2011(%) Kush tia	Gross Change From 1991 to 2011(%) Sher pur
Number of Electric Connection	11,122	8,257	1,599	16,147	12,052	3,646	28,393	19,220	4,822	27	27	26	+155.29	+132.77	+201.56
Total Holding	19,300	13,105	3,024	23,246	16,835	4,597	37,056	22,852	6,278	30	30	30	+92	+74.38	+107.61
Number of Road Light	1,200	480	165	2,500	850	475	3,640	1,600	808				+203.33	+233.33	+389.70
Number of Electric Pole	3,000	900	450	5,600	1,500	1,000	7,750	2,500	1,500				+158.33	+177.78	+233.33

Sources: Gazipur, Kushtia & Sherpur municipal offices; Rural electricification board (REB) office of Gazipur District ; Power development board (PDB) offices of Kushtia District and Sherpur Upazila; Bangladesh population census, 1991 & 2001 and Field survey.

The above table shows that the numbers of electric connections have increased by 155.29%, 132.77% and 201.56% as compared to the increase in the numbers of holdings by 92%, 74.38% and 107.61% of the study areas. In the same period the numbers of road lights have increased by 203%, 233% and 389%. Total electric poles have increased by 158.33%, 177.78% and 233.33% respectively. The figure indicates that the numbers of electric connections have increased at a much higher rate than increase in the numbers of holdings. The above result indicates the favourable impact of urbanization on electricity facility.

6.8 Impact of Urbanization on Communication and Transport

Communication means relation between each with other. 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 communication and transport system, the development of urban area is unimaginable. Transport and communication can be divided into three main categories and these are:

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

In the subsequent sections we will describe the status of these three components and impact of urbanization on these will be evaluated.

6.8.1 Impact of Urbanization on Telecommunication

The present era is an era of globalization. Information technology plays a vital role in urban development. Telecommunication facilities can be divided into two categories. These are:

i. land phone service and

ii. cellular phone service.

6.8.1.1 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 other sectors of our society. The impact of urbanization on land

phone service in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in the following table.

Table– 6.8

Land Phone Service

Year / Kind	1991			2001			2011			Field Survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Land Phone (T& T, Onetel, Rankstel,)	2,275	2,500	318	4,920	2,800	439	6,750	3,500	576	7	3	4	+196.70	+40	+81.13
Total Family	20,124	13,697	3,024	25,477	18,118	4,946	41,458	25,371	7,650	30	30	30	+106.01	+85.23	+152.95

Sources: T& T offices, Gazipur & Kushtia Districts and Sherpur Upazila; Rankstel offices- Gazipur, Kushtia and Bogra Districts; Onetel office- Bogra District; Bangladesh population census, 1991 & 2001 and Field survey.

According to the above table one can notice that the numbers of land phone connections have increased by 196.70%, 40% and 81.13% as against 106.01%, 85.23% and 152.95% increase of total families respectively in Gazipur, Kushtia and Sherpur municipalities during 1991 to 2011 period. This indicates that land phone connection have increased almost 2 times in Gazipur and 0.5 times in Kushtia and Sherpur of the increase of total families. Land phone's call charge within nationwide is the lowest than other cellular phone's call charge. For using land phone in business purposes may be it has increased rapidly in Gazipur. In Kushtia and Sherpur the urban dwellers may be attracted to cellular phone. It is also supported by Table- 6.9. This figure is also supported more or less by the field survey which is presented in the above table. After the aforementioned analysis the convenient impact of urbanization on land

phone service in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is perceivable.

6.8.1.2 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 has been playing more important roles than land phone in every sector like-service, business, transport, education, administration etc. The impact of urbanization on cellular phone service in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in Table 6.9.

Table– 6.9

Cellular Phone Service

Year / Kind	1991			2001			2011			Field survey (2011)			Gross Change From 2001 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Cellular Phone (Grameen phone, City cell, Aktel, Banglalink, Teletalk, Warid)	Nil	Nil	Nil	1,880	1,025	98	59,650	29,875	5,676	98	40	79	+3,072.87	+2,814.63	+5691.84
Total Population	96,717	72,427	16,158	1,22,801	83,658	22,371	1,98,996	1,13,112	34,852	138	143	167	+62.05	+35.21	+55.79

Sources: Grameen phone service centres- Gazipur, Kushtia and Bogra Districts; City cell service centres- Gazipur, Kushtia and Bogra Districts; Aktel service centres- Gazipur, Kushtia and Bogra Districts; Banglalink service centres- Gazipur, Kushtia and Bogra Districts; Teletalk customer care centres- Gazipur, Kushtia and Bogra Districts; Warid customer care centres- Gazipur, Kushtia and Bogra Districts; Bangladesh population census, 1991 & 2001 and Field survey.

The Table 6.9 shows that the numbers of cellular phones have increased by 3072.87%, 2814.63% and 5691.84% as against 62.05%, 35.21% and 55.79% increase of populations in three selected areas respectively during the 2001 to 2011 period. The total populations have increased around 1.5 times in Gazipur, Kushtia and Sherpur municipal areas during 2001 to 2011 period, on the contrary, the cellular phones users have increased by 30, 30 and 55 times in the same areas in the same period. 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 areas.

6.8.2 Impact of Urbanization on Transport System

Developed transport facilities are the part and parcel of modern life. It indicates the status of an urban area. Undeveloped transport system hinders development. With the development of social and economic infrastructure, better road facilities and rapid transportation people have an easy access to their working places. The impact of urbanization on transport system in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in the following table.

Table– 6.10

Transport System

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Kuchha Road (km)	62.71	18	9.441	54.82	8.502	5.181	36.92	9	2.741	-41.13	-50	-70.97
Semi Paka Road (km)	7.11	16	4.59	18.56	24.14	6.09	32.63	38	2.85	+358.93	+137.50	-37.91
Paka Road (km)	22.37	28	3.96	45.28	46.41	6.72	78.47	67.81	12.40	+250.78	+142.18	+213.13
Total Road (km)	92.19	62	17.991	118.66	79.052	17.991	148.02	114.81	17.991	+60.56	+85.18	Nil
Total Population	96,717	72,427	16,158	1,22,801	83,658	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Sources: Gazipur, Kushtia & Sherpur municipal offices; Bangladesh population census, 1991 & 2001.

The Table 6.10 shows that the lengths of kuchha roads have decreased by 41%, 50% and 71%; semi paka roads have changed by +359%, +138% and -38%; paka roads have increased by 250%, 142% and 213%; total road have increased by 60%, 85% and Nil; total population have increased by 106%, 56% and 116% respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991to 2011. Though total populations and the lengths of total road have increased the lengths of semipaka and paka roads have increased more than those. On the other hand the lengths of kuchha roads have decreased, which is due to conversion of part of kuchha roads to semipaka and paka roads. According to the field survey report held in 2011, maximum respondents

have opined that transport system has developed in the study areas, which supports strongly the result has obtained from secondary sources.

If we look into Table 5.8 of the previous chapter regarding traffic jam, we can see that roads network have developed to keep pace with the increase of the numbers of vehicles on the road. The lengths of total roads have increased, but lower than the increase of total number of vehicles during the 1991-2011 time intervals. Notable that only of those increased roads has access for vehicles. So, as a result, traffic jam has increased more. Thus, the impact of urbanization towards roads network is favourable.

6.8.3 Impact of Urbanization on Postal and Courier Services

The postal service which is a government organization, plays worth mentioning role in sending and receiving necessary confidential information, money, goods etc.. Courier services which are non government enterprises have been 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 expanding their branches in various places and operating their business successfully. These two services play an important role in urban areas in establishing a link within the rest of Bangladesh as well as world wide. The impact of urbanization on postal and courier services in Gazipur, Kushtia and Sherpur municipal areas can be observed from the table below:

Table– 6.11

Postal and Courier Services facilities

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Number of Post office	3	8	1	3	8	1	5	8	1	+66.67	Nil	Nil
Number of Courier Service Office	8	4	2	15	9	7	19	17	11	+137.50	+325	+450
Total Population	96,717	72,427	16,158	1,22,801	83,658	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Sources: Head post offices- Gazipur & Kushtia Districts ; Upazila post office, Sherpur; Continental courier service offices- Gazipur, Kushtia and Bogra Districts; Sunderban courier service offices- Gazipur, Kushtia and Bogra Districts ; Karatoa courier service offices- Gazipur, Kushtia and Bogra Districts; S.A. paribahan offices- Gazipur, Kushtia and Bogra Districts; PSL offices- Gazipur, Kushtia and Bogra Districts; Central courier service offices- Gazipur, Kushtia and Bogra Districts ; Bangladesh population census, 1991 & 2001.

If we analyze the table, we notice that while numbers of post offices have increased from 3, 8 and 1 in 1991 to 5, 8 and 1 in 2011, the numbers of courier services (including branch offices) have increased from 8, 4 and 2 to 19, 17 and 11 respectively in Gazipur, Kushtia and Sherpur municipal areas during same period. The numbers of courier services have increased at least 2 times of postal services in all the areas. This may be due to the old fashioned service of the postal services, as compared to the modern devices 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 increased numbers of courier services are higher than the increased populations.

If we summarize the link between urbanization and communication system as a whole, we can conclude that a developed communication 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 favourable and unfavourable effects, but the net result is obviously favourable for the community.

6.9   Impact of Urbanization on Financial Institutions

Financial institutions play 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is presented in Table 6.12.

Table– 6.12

Financial Institutions

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Bank	5	6	2	11	15	4	16	21	6	+220	+250	+200
Insurance Company	3	4	Nil	9	11	3	12	16	4	+300	+300	+∞
NGO	12	8	2	90	85	18	185	233	29	+1,441.67	2,812.50	+1,350
Co-operative	65	45	8	138	96	32	300	251	47	+361.54	+457.78	+487.50
Industry	90	107	6	235	195	12	420	375	15	+366.67	+250.47	+150
Market	4	8	1	9	14	3	16	21	6	+300	+162.50	+500
Shop	1,125	1,650	300	2,875	2,575	700	4,990	4,400	1,200	+343.56	+166.67	+300
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Sources: Gazipur, Kushtia & Sherpur municipal offices; Central shop owners associations, Gazipur & Kushtia Districts and Sherpur Upazila; Bangladesh population census, 1991 & 2001.

The above table shows that the numbers of banks have increased by 220%, 250% and 200% from 1991 to 2011. While during the same period the numbers of insurance companies have increased by 300%, 300% and from nil to 4; NGOs by 1441.67%, 2812.50% and 1350%; co-operatives by 361.54%%, 457.78% and 487.50%; Industries have increased by 366.67%, 250.47% and 150%; markets have increased by 300%, 162.50% and 500%; shops have increased by 343.56%, 166.67% and 300% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. If we analyze the figure we can observe that the numbers of NGOs have increased very rapidly, it has increased by 15 times from 1991 to 2011 in all areas. However majority of the NGOs are established on the political ground and after changing the government's tenure the activities of the political backed NGO's fall at stake. According to the field survey report 90% respondents 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011is absolutely helpful for urban inhabitants, which also focused that the financial condition of the people have developed and it is supported by Section- 6.1.

6.10 Impact of Urbanization on Land Value, Land Ownership (Without Dwelling Unit) and House Ownership

Land is the first component of production. Land value means transfer price of land. It indicates economic impact of urbanization. The area is more developed; the land value would be expected to be more there. Thus a favourable relationship is expected between these two variables. There is naturally land value of an urban area will be higher. Since development is the outcome of urbanization, land value in turn, is also the outcome of urbanization. On the other hand, more or less, total land of the world is fixed but its population is increasing at geometric rate which is also the reason for increasing land value. This incidence is shown in Table 6.13.

Land ownership (without dwelling unit) 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 our 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 in municipalities, the excess pressure on it, causes price of land to rise very high and fragmentation also the result. This result is depicted in Table 6.13.

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 owners gain 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 during 1991 to 2011 in Gazipur,

Kushtia and Sherpur municipal areas is also presented in the following table.

Table– 6.13

Land Value, Land Ownership (Without Dwelling Unit) & House Ownership

Year		Average Value Per Decimal *($)	Land Ownership	House Ownership	Municipal Area (Decimal)	Total Family
1991	Gazipur	1,225	9,348	19,300	12,18,800	20,124
	Kushtia	750	3,435	13,105	3,28,900	13,697
	Sherpur	30	1,272	3,024	1,66,500	3,024
2001	Gazipur	2,285	15,190	23,246	12,18,800	25,477
	Kushtia	1,915	5,791	16,835	3,28,900	18,118
	Sherpur	200	2,073	4,597	1,66,500	4,946
2011	Gazipur	5,500	22,132	37,056	12,18,800	41,458
	Kushtia	3,075	7,220	22,852	3,28,900	25,371
	Sherpur	800	2,489	6,278	1,66,500	7,650
Field Survey (2011)	Gazipur		14	22		30
	Kushtia		11	25		30
	Sherpur		9	26		30
Gross Change From 1991 to 2011(%)	Gazipur	+348.98	+136.76	+92	Nil	+106.01
	Kushtia	+310	+110.19	+74.38	Nil	+85.23
	Sherpur	+2,666.67	+95.68	+107.61	Nil	+152.98

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

N. B.: 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 number- 06. Land unit has shown in decimal here for government's recognized unit.

Sources: Sub registry offices- Gazipur & Kushtia Districts and Sherpur upazila; Gazipur, Kushtia & Sherpur municipal offices and Bangladesh population census, 1991 & 2001.

The aforesaid table shows that average land values per decimal in dollar have increased by 348.98%, 310% and 3666.67% on the contrary

the areas have unchanged during 1991 to 2011 and those are 1218800, 328900 and 166500 decimal respectively in Gazipur, Kushtia and Sherpur municipality. The numbers of total families have increased by 106.01%, 85.23% 152.98% between 1991 and 2011. The table shows that the numbers of land owners (without dwelling unit) have increased to 15190, 5791 and 2073 in 2001 as compared to the numbers of our base period, which were 9348, 3435 and 1272. These numbers have increased to 22132, 7220 and 2489 in 2011 respectively. During the 1991-2011 period, the total changes became almost +136.76% +110.19% and + 95.68%. The above table also shows that the numbers of house owners have increased by 92%, 74.38% and 107.61% during 1991 to 2011. If we look in the total numbers of houses, we see from 19300, 13105 and 3024 in 1991, it became 15190, 5791 and 4597 in 2001& at the end reached to 37056, 22852 and 6278 in 2011.

Since total municipal areas are unchanged and total families have increased rapidly, this may have increased land value rapidly. Inflation and increasing level income are the other reasons for increasing land value and land ownership (without dwelling unit). The numbers of total families have increased more than that of the increase of house ownership. The increased numbers of families, which are out comes of urbanization may have contributed to the increase in the numbers of house ownerships. Since urbanization affects favourably the income and social status of the people, it indirectly contributes towards a favourable outcome of house ownerships. The field survey report held in 2011 has shown that 14, 11 and 9 families per every 30 families (i.e., about 30%) in respective areas have extra land without houses and 22, 25 and 26 families per same families (i.e., about 80%) in same areas have own

houses which are similar to the collected information and most of the respondents have opined that land value have increased. Thus, in short, we can say that the impact of urbanization on land value, land ownership (without dwelling unit) and house ownership in Gazipur, Kushtia and Sherpur municipal areas produces an expected result similar to other developed area of the country.

6.11 Impact of Urbanization on Livestock, Poultry and Fishery Resources

Livestock, poultry and fishery resources play vital role in economic development. They are the main sources of animal protein. They also help 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 livestock, poultry and fishery resources. In Bogra, with the passing of time much of the forest and strolling ground have disappeared as a result of expansion of agriculture (for increasing population). These have adversely affect the animal community as well (Bari, 1979). Gazipur and Kushtia are not out of this threat. The impact of urbanization on livestock, poultry and fishery resources in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is depicted in the next table.

Table- 6.14

Livestock, Poultry and Fishery Resources

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Dairy Firm (5<)	12	5	3	65	12	8	122	21	16	+916.67	+320	+433.33
Goat's Firm (5<)	Nil	Nil	Nil	Nil	Nil	Nil	24	5	28	+∞	+∞	+∞
Sheep's Firm(5<)	Nil	Nil	Nil	Nil	Nil	Nil	6	1	8	+∞	+∞	+∞
Poultry Firm (200 <)	60	8	12	250	25	28	400	40	52	+566.67	+400	+333.33
Hatchery	Nil	1	Nil	7	2	Nil	10	4	Nil	+∞	+300	Nil
Pond (15 decimal<)	250	275	24	225	220	17	170	150	15	-32	-45.45	-37.50
River and Canal	1	3	1	1	3	1	1	3	1	Nil	Nil	Nil
Total Population	96,717	72,427	16,158	1,22,801	83,668	22,371	1,98,996	1,13,112	34,852	+105.75	+56.17	+115.70

Sources: Upazila live stock offices of Gazipur sadar, Kushtia sadar & Sherpur; Upazila fishery offices of Gazipur sadar, Kushtia sadar & Sherpur; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur and Bangladesh population census, 1991 & 2001.

The table has focused that the numbers of dairy firms have increased by 916.67%, 320% and 433.33%; poultry firms by 566.67%, 400% and 333.33% ; ponds have decreased by 32%, 45.45% and 37.50% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. Goat's firms are 24, 5 and 28; sheep's firms are 6, 1 and 8 in Gazipur, Kushtia and Sherpur municipal areas in 2011. It is notable that there are no goat's and sheep's firm in the study areas in 1991 and 2001. In Gazipur the numbers of hatcheries have increased by 42.86% from 2001 to 2011, in Kushtia it has increased by 300% from 1991 to 2011 and in Sherpur there is no hatchery in the research period. The numbers of dairy and poultry firms have increased at a 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 areas. On the other hand, the numbers of ponds have decreased for increasing population, which is increasing the demand of land for housing. Increasing land value is the other reason for this.

The field survey report of 2011 has shown that about 90% respondents have opined that domestic animals in firms have increased but in houses have decreased and reservoir of water has decreased, which are unanimous with the results have obtained from secondary sources. The above discussions have focused that the impact of urbanization on livestock, poultry and fishery resources in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is favourable for urban inhabitants.

In this chapter while examining the economic impact of urbanization, we have specially considered the impact of urbanization on various economic aspects. These are financial classification, employment, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility, communication and transport, financial institutions, 'land value, land ownership (without dwelling unit) and house ownership' and 'livestock, poultry and fishery resources'. The results, which we obtained, indicate both favourable and unfavourable. Urbanization is not all bad or all evil. It may be prudent to say that urbanization is driving the economies of all the countries in the South-Asian region and enabling them to surge ahead from strength to strength. The United Nation's Population Fund (UNFPA) report (2009) mentions "no country in the industrial age has ever achieved significant economic growth without urbanization". Need of the hour is judicious use of resources, balanced approach to development, and sound government policies.

CHAPTER SEVEN

ENVIRONMENTAL IMPACT OF URBANIZATION AND 'RELATIONSHIP BETWEEN URBANIZATION AND SUSTAINABLE DEVELOPMENT'

This chapter has divided into two sections. In Section- A environmental impact of urbanization in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 will be analysed. The impact or change on main environmental characteristics like- flora and land use, sanitary facilities, sewerage systems, pollution and slums are considered here. Moreover in Section- B of this chapter relationship between urbanization and sustainable development in the study areas will be discussed.

SECTION- A

ENVIRONMENTAL IMPACT OF URBANIZATION

When two or more things are related then one's impact occurs on another. That is, changes by dint of one on another thing are impact. 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 the 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).

7.1   Impact of Urbanization on Flora and Land Use

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 caused deforestation. The rapid rate of urbanization in many countries has been accompanied by an increasing demand for land use that, in turn, has caused an exhaustion of soils, forests, water, air and climate (Kreimer, Munasinghe and Preece, 1992). Gazipur, Kushtia and Sherpur municipal areas are not out of this process. Among the study areas, listed natural forest is presented only in Gazipur while there are some social forests in other areas. The impact of urbanization on flora in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is presented in table 7.1.

Urbanization plays an important role on cultivation. Increased urbanization results decreased cultivated land. Though, this is supported

by the characteristics of urban area, which is coated as 'three-forth of the adult male population of the area to which it refers are chiefly employed in pursuits other than agriculture'. In Bangladesh per year cultivated land is decreasing by 167 hectares. With changed area of cultivated land, the kinds of cultivation have changed. Here the researcher has used cultivated land as a main indicator to measure the impact of urbanization on cultivation. The impact of urbanization on cultivated land in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is illustrated in Table 7.1.

With the increase of population, the demand for shelter has also increased which created pressure on flora and cultivated land. Moreover, urbanization is the product of industrialization and land is the first component of industry. So, flora and cultivated land is also being pressured and destroyed / decreased by industrialization. The fact of Gazipur, Kushtia and Sherpur municipal areas has shown in the table below:

Table- 7.1

Flora and Land Use

Year		Area of Natural Forest (Acre)	Area of Social Forest (Acre)	Cultivated Land (Acre)	Home and Other (Acre)	Total Municipal Area (Acre)
1991	Gazipur	350	350	8,645	2,843	12,188
	Kushtia	Nil	280	790	2,219	3,289
	Sherpur	Nil	160	51.87	1,453.13	1,665
2001	Gazipur	275	260	7,410	4,243	12,188
	Kushtia	Nil	160	692	2,437	3,289
	Sherpur	Nil	102	39.92	1,523.08	1,665
2011	Gazipur	180	140	6,422	5,446	12,188
	Kushtia	Nil	96	424	2,769	3,289
	Sherpur	Nil	65	32.11	1,567.89	1,665
Gross Change From 1991 to 2011(%)	Gazipur	-48.57	-60	-25.71	+91.56	Nil
	Kushtia	Nil	-65.71	-46.33	+24.79	Nil
	Sherpur	Nil	-59.38	-38.10	+7.90	Nil

Sources: Upazila forest offices of Gazipur sadar, Kushtia sadar & Sherpur; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur and Gazipur, Kushtia & Sherpur municipal offices.

While in 1991 the total natural forest area was 350 acres, reduces in course of time, i.e., in 2001 it has become 275 acres, in 2011 reduces to 180 acres in Gazipur. The above table shows that the area of natural forest has decreased by 48.57% and the area of Gazipur municipality is 12188 acre during 1991 to 2011. It can be noticed there, that there is no natural forest in Kushtia and Sherpur municipal areas.

The above table shows that the areas of social forests have decreased by 60%, 65.71% and 59.38% in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. The gradual deforestation figures are shown in column three of Table 7.1. It can be noticed there that while in 1991 the total social forest areas were 350 acres, 280 acres and 160 acres respectively, those are reduced in course of time, i.e., in 2001 those have become 260 acres, 160 acres and 102 acres and at the end of our study period become only 140 acres, 96 acres and 65 acres. According to the table- 7.1, it indicates that the areas of cultivated lands have decreased by 25.71%, 46.33% and 38.10%. The rapidly increasing population (105.75%, 56.17% and 115.70%), of Gazipur, Kushtia and Sherpur municipalities demand for land, shelter and other uses have increased. From the above table it is also found that land uses for home and other purposes have increased by 91.56%, 24.79% and 7.90% respectively from 1991 to 2011. The field survey report (In 2011) has illustrated that 100 percent respondents (90 among 90) have opined that natural forest, social forest and cultivated land have decreased, which

supports strongly the results have obtained from secondary sources. The areas of the above municipalities are 12188, 3289 and 1665 acres. Since the areas of the studied municipalities are unchanged and land uses for home and other purposes have increased, the areas of natural forest, social forest and cultivated land have absolutely decreased. Several other reasons may enhance the deforestation, but the increased population pressure, which is an outcome of urbanization, may be the main reason for this. We can conclude safely that urbanization affects the natural forest, social forest and cultivated land unfavourably. On the other hand, it affects land use for home and others favourably. This may have long-term hazardous impact on the environment.

7.2 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.

7.2.1 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 7.2 below.

Table- 7.2

Latrine Facilities

Kind \ Year	1991			2001			2011			Field survey (2011)			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Sanitary Latrine	9,723	7,709	1,572	18,664	14,523	4,028	36,676	22,337	7,455	22	26	25	+277.21	+189.75	+374.24
Other	6,959	3,834	912	3,887	1,820	603	2,604	1,632	127	2	2	3	-62.58	-57.43	-86.07
None	3,442	2,154	540	2,926	1,775	315	2,178	1,402	68	6	2	2	-14.99	-34.91	-87.41
Total Family	20,124	13,697	3,024	25,477	18,118	4,946	41,458	25,371	7,650	30	30	30	+106.01	+85.23	+152.98

Sources: Gazipur, Kushtia & Sherpur municipal offices ; Upazila statistics offices of Gazipur sadar, Kushtia sadar & Sherpur ; Bangladesh population census, 1991 & 2001 and Field survey.

The above table has depicted that the numbers of sanitary latrines have increased by 277.21%, 189.75% and 374.24%; latrines in other group have decreased by 62.58%, 57.43% and 86.07%; families, who have no latrine have decreased by 14.99%, 37.91% and 87.41%; total family have increased by 106.01%, 85.23% and 152.98% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 period. Though the amounts of total family have increased rapidly, the numbers of sanitary latrines have increased higher than that. On the other hand the numbers of latrines in other group (non sanitary) and latrine less families have decreased. These have possible probably for increasing financial condition (Section- 6.1) and awareness (Section- 5.9) of urban dwellers of the study area. The field survey report (In 2011) has also supported the results have obtained from secondary sources. The above discussions have focused that the impact of urbanization on latrine

facility in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is advantageous for municipal dwellers.

7.2.2 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is shown in the Table 7.3.

Table- 7.3

Sanitary Facilities from Municipality

Year Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Dustbin	40	250	6	82	375	6	106	142	6	+165	-43.20	Nil
Dust Cart (Van)	Nil	50	Nil	15	50	Nil	15	60	9	+∞	+20	+∞
Dust Cart (Truck)	2	4	Nil	5	5	2	6	7	2	+200	+75	+∞
Employee (Sanitary)	25	120	4	46	260	4	60	316	4	+140	+163.33	Nil
Total Family	20,124	13,697	3,024	25,477	18,118	4,946	41,458	25,371	7,650	+106.01	+85.23	+152.98

Sources: Gazipur, Kushtia & Sherpur municipal offices and Bangladesh population census, 1991 & 2001.

The above table has shown that the numbers of dustbins have changed by +165%, -43.20% and nil; employees (sanitary) have increased by 140%, 163.33% and Nil respectively in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011. The numbers of dust carts (van) have increased from nil to 15, by 20% and from nil to 9; dust carts (truck) have increased by 200%, 75% and from nil to 2 ; total family have increased by 106.01%, 85.23% and 152.98% in the same areas in

the same period. The numbers of employees related with sanitation have increased more than total family except Sherpur. Lack of fund of municipal authority, specially low collecting rate of municipal tax may be liable for unchanged number of employees related with sanitation in Sherpur. Mismanagement and lack of awareness of urban authority can also be considered as responsible for this. From the above discussions it is very logical to say that the impact of urbanization on sanitary facilities from municipality in Gazipur, Kushtia and Sherpur municipal areas is on upper trend during 1991 to 2011. From the discussions in Subsections 7.2.1 and 7.2.2 we can conclude that the impact of urbanization on sanitary facilities from urban dwellers and from municipalities is both opportune in the respected areas in the aforementioned period.

7.3 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 system, then formulation of developed sewerage systems is possible. The following Table 7.4 has depicted the impact of urbanization on sewerage system in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 period.

Table- 7.4

Sewerage Systems

Year / Kind	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Kuchha Drain (km)	49.74	73	19.25	54.58	114	17.25	68.29	130	8.03	+37.29	+78.08	-58.29
Paka Drain (km)	8.62	32	Nil	17.23	66	2.00	22.78	115	11.22	+164.27	+259.38	$+\alpha$
Total Drain (km)	58.36	105	19.25	71.81	180	19.25	91.07	245	19.25	+56.05	+133.33	Nil
Total House	19,300	13,105	3,024	23,246	16,835	4,597	37,056	22,852	6,278	+92	+74.38	+107.61

Sources: Gazipur, Kushtia & Sherpur municipal offices and Bangladesh population census, 1991 & 2001.

The above table is exhibited that the lengths of kuchha drains have changed by +37.29%, +78.08% and -58.29% , paka drains have increased by 164.27%, 259.38% and α; total drain have increased by 56.05%, 133.33% and Nil; total house have increased by 92%, 74.38% and 107.61% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. Though the length of total drain has increased, the lengths of kuchha drains have increased lower than that and the lengths of paka drains have increased more than that, which is due to conversion of part of kuchha drains to paka drains. It has happened for increasing government allotment. The field survey report (In 2011) has shown that about 80% respondents have opined that the quality and quantity of sewerage facilities have increased, which is unanimous with the results have obtained from secondary sources. According to the above discussions it is clear that the impact of urbanization on sewerage systems is favourable.

Few cities in developing countries can afford to build modern waste treatment systems for their rapidly growing populations. The World Bank (2010) estimates that only 35 percent of urban residents in developing countries have satisfactory sanitation services. The situation is specially desperate in Latin America, where only 2 percent of urban sewage receive any treatment. In Egypt, Cairo's sewer system was built about fifty years ago to serve a population of 2 million people. It is now being overwhelmed by more than 11 million people. Less than one-tenth of India's 3,000 towns and cities have even partial sewage systems and water treatment facilities. Some 150 million of India's urban residents lack access to sanitary sewer systems. In Colombia, the Bogotá River, 200 KM (125 miles) downstream from Bogota's 5 million residents, still has an average fecal bacteria count of 7.3 million cells per liter, more than 700,000 times the safe drinking level and 3,500 times higher than the limit for swimming.

7.4 Impact of Urbanization on Pollution

Pollution is a widespread and growing threat. In developing regions, countries and localities often have strong measures in place to maintain the quality of air and water, but enforcement is apt to be minimal given the pressure of population growth and the high priority typically given to supporting industrial expansion. As a result, smog and exhaust fumes pervade the air of many cities, and water supplies are frequently contaminated. Even though urban residents in developing countries generate far less solid waste per capita than their counterparts in the industrialized world, its management is likely to exceed the capacity of the services set up to deal with it. In developed countries as well,

environmental controls are often seen as undermining economic growth (Hinrichsen, Salem and Blackburn, 2002). 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.

7.4.1   Impact of Urbanization on Air Pollution

Air pollution is more acute in urban areas than in rural areas. Polluted air is harmful for human health depending on the nature of the pollutant, concentration, duration of exposure and the state of health and age group of the recipient. Polluted air causes respiratory problem, asthma, bronchitis, headache and dizziness, nasal congestion, renal damage etc. Lead pollution has harmful affect on children that is 3 times more at risk than adults. Apart from impact on human health, air pollution has detrimental impact on the ecosystem, vegetation and livestock. In urban area, the main sources of air pollution are emission of harmful gaseous matters from vehicle, industrial sectors, and construction and open dumping of garbage. In rural area, main sources are brick kilns and wood and biomass consumption. Due to rapid urbanization the total numbers of vehicles has increased rapidly. The automobiles on the road are often very old, overloaded and poorly maintained and emit smoke far exceeding the prescribed limit. Industrial development is another major source of air pollution. Most of the industries in Bangladesh are situated in major urban areas. Food industry emits maximum amount of pollutants followed by cement, pulp and paper industry and textile. Among food

industry, most of the pollutants come from the sugar mills. The impact of urbanization on air pollution in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is focused in the Table 7.5 below.

Table- 7.5

Air Pollution

[Suspended Particulate Matters (SPM) in Microgram/M^3]

Year / Area	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Sensitive	420	280	325	560	375	462	820	560	589	+95.24	+100	+81.23
Residential	450	320	393	620	465	477	915	602	612	+103.33	+88.13	+55.73
Commercial and Mixed	510	415	480	739	508	596	1,030	632	692	+101.96	+52.29	+44.17
Industrial and Mixed	750	540	578	1,018	612	654	1,175	790	814	+56.67	+46.30	+40.83

Sources: Department of Environment– Dhaka, Khulna and Bogra Regional offices.

The table has exhibited that the amounts of SPM per cusec meter have increased in sensitive areas by 95.24%, 100% and 81.23%; in residential areas by 103.33%, 88.13% and 55.73%; in commercial and mixed areas by 101.96%, 52.29% and 44.17%; in industrial and mixed areas by 56.67%, 46.30% and 40.83% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 period. According to the 'Standards for Air' determined by the 'Department of Environment' (Appendix- 07) the amounts of SPM/m^3 in air are 100, 200, 400 and 500 respectively in sensitive, residential, commercial & mixed and industrial & mixed areas. The amounts of SPM/m^3 in sensitive, residential, commercial & mixed and industrial & mixed areas have increased; they

all are more than the standards for air determined by the 'Department of Environment' in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. The amounts of SPM/m^3 in sensitive, residential, commercial & mixed and industrial & mixed areas have increased because the numbers of vehicles (Table- 5.8) and industries (Table- 6.12) have increased in the study areas. The field survey report held in 2011 has shown that cent percent respondents have opined air pollution has increased, which has supported strongly the results have obtained from secondary sources. After the above discussions the result is clear that the impact of urbanization on air pollution in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is disadvantageous for urban inhabitants.

Uddin (2004) in his Ph.D. Thesis entitled 'Air Pollution Control in Urban Areas of Bangladesh: Quest for Sustainable Improvement of Air Quality of Dhaka City', has found out that the air quality of Dhaka city is the worst in the World. The air of Dhaka is enriched with CO_2, CO, N_2O, Pb, SO_2, various kinds of dust particles, toxic chemicals etc., which are causing various diseases for human beings mainly for infants and olds.

7.4.2 Impact of Urbanization on Water Pollution

Water pollution is a major problem in most parts of Bangladesh. The nature of the problem varies between regions and locations. For example, major urban water pollution is linked with disposal of untreated industrial wastes in the rivers and lakes and major rural water pollution is linked with open-air latrine by the rivers and creeks. Major rivers by the cities like the Buriganga, the Karnafuly, the Surma, the Karatoya, the Rupsa are heavily polluted rivers. Most of the pollution in these rivers originates from industrial discharge of untreated liquid wastes. Pollution in

rivers creates a major health risk and the financial cost is quite heavy. 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. Lack of awareness of urban people is also liable for water pollution. The impact of urbanization on water pollution in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is focused in the following Table 7.6.

Table– 7.6
Water Pollution
[Dinking water: Coli form (total) in n/100 ml]

Year / Place	1991			2001			2011			Gross Change From 1991 to 2011(%)		
	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Hotel	32	18	32	45	32	37	52	44	49	+62.50	+144.44	+53.13
Hospital	25	12	28	32	26	34	37	31	38	+48	+158.33	+35.71
School	8	Nil	8	10	6	11	10	8	12	+25	$+\alpha$	+50
Office	9	4	8	10	9	11	11	13	13	+22.22	+225	+62.50

Sources: Department of Environment– Dhaka, Khulna and Bogra Regional offices.

The table has explained that the numbers of coli forms (total) per hundred millilitre in the water has used for drinking in hotel have increased by 62.50%, 144.44% and 53.13%; hospitals by 48%, 158.33% and 35.71%; schools by 25%, α and 50% respectively in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. According to the 'Standards for Drinking Water' determined by the 'Department of Environment' (Appendix- 08) the amount of coli form (total) in drinking water is 0/100ml. The amounts of coli forms (total) in water per hundred millilitre in the water

have 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. Lack of sincerity of the authorities is liable for this. *It is notable, 'Department of Environment, Dhaka, Khulna and Bogra have examined municipal supply (by pipe line) water before reservation in tank, but not after reservation in tank for neglecting municipalities discredit'.* According to the Department of Environment, Bogra **'the Karatoya river is free from pollution'.** Department of Environment, Dhaka, Khulna and Bogra have informed **that the number of coli form / 100 ml in under ground water of Gazipur, Kushtia and Sherpur municipalities is 'zero'.** At last, after above discussions we can say doubtlessly that the impact of urbanization on water pollution in the study areas during 1991 to 2011 is unfavourable.

Increasing urbanization pollutes clean water supplies and much of the world still does not have access to clean, safe water. In the industrial world demand management has slowed absolute usage rates but increasingly water is being transported over vast distances from water-rich natural areas to population-dense urban areas and energy-hungry desalination is becoming more widely used. Greater emphasis is now being placed on the improved management of blue (harvestable) and green (soil water available for plant use) water, and this applies at all scales of water management (Hoekstra, 2006).

7.4.3 Impact of Urbanization 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 favourable symbol of urbanization. But, they are the main causes for sound pollution. The impact of urbanization on sound pollution in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is depicted in the Table- 7.7.

Table- 7.7

Sound Pollution

[Standards determined at decibel (dBa) unit]

Year	1991						2001						2011						Gross Change From 1991 to 2011(%)					
	Day			Night			Day			Night			Day			Night			Day			Night		
Area	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur	Gazi pur	Kush tia	Sher pur
Silent	49	45	47	37	36	39	57	46	47	44	36	39	64	48	53	54	39	46	+30.61	+6.67	+12.77	+45.95	+8.33	+17.95
Residential	62	50	50	46	42	42	68	50	52	59	42	45	79	53	56	63	44	48	+27.42	+6	+12	+36.96	+4.76	+14.29
Mixed	72	61	62	60	52	50	81	63	66	63	53	52	84	68	70	71	55	56	+16.67	+11.48	+12.90	+18.33	+5.77	+12
Commercial	81	71	76	67	62	63	89	73	82	74	63	67	94	78	86	82	69	73	+16.05	+9.86	+13.16	+22.39	+11.29	+15.87
Industrial	84	78	82	79	72	79	91	81	86	86	75	81	97	84	89	91	79	84	+15.48	+7.69	+8.54	+8.33	+9.72	+6.33

Sources: Department of Environment– Dhaka, Khulna and Bogra Regional offices.

168

The Table 7.7 shows out that the amounts of sound (In dBa) in silent areas have increased in day by 30.61%, 6.67% and 12.77%; in night by 45.95%, 8.33% and 17.95%; in residential areas have increased in day by 27.42%, 6% and 12%; in night by 36.96%, 4.76% and 14.29%; in mixed areas have increased in day by 16.67%, 11.48% and 12.90%; in night by 18.33%, 5.77% and 12%; in commercial areas have increased in day by 16.05%, 9.86% and 13.16%; in night by 22.39%, 11.29% and 15.87%; in industrial areas have increased in day by 15.48%, 7.69% and 8.54%; in night by 8.33%,9.72% and 7.33% accordingly in Gazipur, Kushtia and Sherpur municipal areas from 1991 to 2011 period.

According to the 'Standards for Sound' determined by the 'Departmental of Environment' (Appendix- 09) the amounts of sound (In dBa) are 45, 50, 60, 70 and 75 in day respectively in silent, residential, mixed, commercial and industrial areas. Moreover the amounts 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. The amounts of sound (In dBa) both in day and night have increased in silent, residential, mixed, commercial and industrial areas. The amounts 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– Dhaka, Khulna and Bogra Regional offices' in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. In silent, residential, mixed, commercial and industrial areas the amounts of sound (In dBa) have increased because the numbers of vehicles (Table- 5.8) and industries (Table- 6.12) have increased in the study areas. Cent percent respondents (90 among 90) of field survey in

2011 have opined that sound pollution have increased, which is as same as the results have counted from the secondary sources. The above result indicates the incommodious impact of urbanization on sound pollution in the above three study areas during 1991 to 2011. So we can conclude from Sub Sections 7.4.1, 7.4.2 and 7.4.3 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 areas during 1991 to 2011 period.

In a Ph.D. thesis entitled 'Appraisals of Noise Pollution, Traffic, and Land Use Patterns in Metropolitan Karachi through GIS and Remote Sensing Techniques' Mehdi (2002) has opined that 'the high level of noise pollution is associated with the geographical agglomeration of land use and traffic volume which resulted in high incidence of noise induced diseases and the population close to those areas are on vulnerable risk'.

7.5   Impact of Urbanization on Slums

A slum is a contiguous settlement where the inhabitants are characterised as having inadequate housing and basic services. A slum is often not recognized and addressed by the public authorities as an integral or equal part of the city. 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 not only in Bangladesh but also in the world. ***"Slums represent the worst of urban poverty and inequality. Yet the world has the resources, know-how and power to reach the target established in the Millennium Declaration. It***

is my hope that this report, and the best practices it identifies, will enable all actors involved to overcome the apathy and lack of political will that have been a barrier to progress, and move ahead with greater determination and knowledge in our common effort to help the world's slum dwellers to attain lives of dignity, prosperity and peace" (Mr. Annan, Former Secretary General, United Nations).

Slum settlements are a serious problem. The number of slum dwellers world-wide is rapidly approaching one billion and, if present trends continue, could double by 2030. On the outskirts of many large cities in developing countries, vast shanty towns have sprung up that are typically unplanned and lack basic services such as clean water, sewage, electricity, schools and health facilities. Housing tends to be in temporary, often illegal, structures and extremely crowded. Employment opportunities may be largely confined to the informal sector, providing inadequate income and little job security. At the same time, developed countries are estimated to have as many as 54 million people living in slum conditions [United Nations Centre for Human Settlements (UNCHS), 2003]. Generally slum people are illiterate, unconscious and financially insolvent. They are the liability for the society. This is a serious problem for the urban people of Bangladesh. There are 8,900 slums and 35,000,00 slum people in Dhaka city in 2011. The impact of urbanization on slums in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 is depicted in the following Table 7.8.

Table- 7.8

Growth of Slums

Year		Number of Slum	Number of Slum People	Total Population
1991	Gazipur	20	8,800	96,717
	Kushtia	6	4,500	72,427
	Sherpur	Nil	Nil	16,158
2001	Gazipur	38	14,800	1,22,801
	Kushtia	20	15,500	83,668
	Sherpur	1	300	22,371
2011	Gazipur	52	36,400	1,98,996
	Kushtia	45	33,700	1,13,112
	Sherpur	2	1,200	34,852
Gross Change From 1991 to 2011(%)	Gazipur	+160	+313.64	+105.75
	Kushtia	+650	+648.89	+56.17
	Sherpur	$+\alpha$	$+\alpha$	+115.70

Sources: Gazipur, Kushtia & Sherpur municipal offices; Upazila somajseba offices of Gazipur sadar, Kushtia sadar & Sherpur and Bangladesh population census, 1991 & 2001.

The above table shows that the numbers of slums have increased by 160%, 650% and α; slum people by 313.64%, 648.89% and α; total population by 105.75%, 56.17% and 115.70% accordingly in Gazipur, Kushtia and Sherpur municipal areas between 1991 and 2011. Though the numbers of total population have increased rapidly, the numbers of slums and slum people have increased higher than that. Rapid increasing of immigrants (Table- 5.6) may be liable for rapid increasing of slum and slum people. 90 among 90 respondents of field survey in 2011 have opined that slum and slum people have increased. The results are unanimous with the results have gained from secondary sources. The above discussions have pointed out that the impact of urbanization on slums in Gazipur, Kushtia and Sherpur municipal areas during 1991 to

2011 is inconvenient, which is creating various problems for urban inhabitants.

In Section-A of this chapter we have discussed about the impact of urbanization on five main factors related with environmental conditions, for measuring the impact of urbanization on environmental conditions in Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. We can conclude the observations that there are convenient impact of urbanization on sanitary facilities and sewerage systems as well as there are disadvantageous impact of urbanization on flora and cultivated land, pollution and slums in the aforesaid areas.

SECTION- B

RELATIONSHIP BETWEEN URBANIZATION AND SUSTAINABLE DEVELOPMENT

There is a close relationship between urbanization and sustainable development, which has discussed earlier. Our research areas are not out of this relation. In chapter five, six and Section- A of the present chapter we have observed and analysed about social, economic and environmental impacts of urbanization respectively. In Gazipur, Kushtia and Sherpur municipal areas which are our study areas we have observed the following socio-economic and environmental impacts of urbanization during 1991 to 2011. At the end of this section it has found relationship between urbanization and sustainable development in the study areas after analysing the observed gross impacts of urbanization.

In the chapter five we have observed the favourable social impact of urbanization on dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning

activities, social consciousness, religious affair and social recreational facilities. On the contrary in same areas there are unfavourable social impact of urbanization on migration, population density, traffic jam, drug addiction, prostitution and 'law and order situation'.

Convenient economic impact of urbanization on financial classification, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility, communication and transport, financial institutions, 'land value, land ownership (without dwelling unit) and house ownership' and 'livestock, poultry and fishery resources'. On the other side, inconvenient economic impact of urbanization on employment has seen in the sixth chapter.

On sanitary facilities and sewerage systems we have achieved propitious environmental impact of urbanization as well as there are disadvantageous environmental impact of urbanization on flora and cultivated land, pollution and slums in the research areas which have discussed in Section- A of the present chapter. Achieved result at a glance has shown in the next page.

Achieved result at a glance:

Impact of urbanization		Achieved Result			Average Result
		Gazipur	Kushtia	Sherpur	
Social	On dependency	Favourable	Favourable	Favourable	Favourable
	On educational facilities and literacy rate	Favourable	Favourable	Favourable	Favourable
	On female literacy	Favourable	Favourable	Favourable	Favourable
	On health care and maternity services	Favourable	Favourable	Favourable	Favourable
	On family planning activities	Favourable	Favourable	Favourable	Favourable
	On migration	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On population density	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On traffic jam	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On social consciousness	Favourable	Favourable	Favourable	Favourable
	On religious affair	Favourable	Favourable	Favourable	Favourable
	On social recreational facilities	Favourable	Favourable	Favourable	Favourable
	On drug addiction	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On prostitution	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On law and order situation	Unfavourable	Unfavourable	Unfavourable	Unfavourable
Economic	On financial classification	Favourable	Favourable	Favourable	Favourable
	On employment	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On women employment	Favourable	Favourable	Favourable	Favourable
	On consumption pattern	Favourable	Favourable	Favourable	Favourable
	On housing pattern	Favourable	Favourable	Favourable	Favourable
	On sources of drinking water	Favourable	Favourable	Favourable	Favourable
	On electricity facility	Favourable	Favourable	Favourable	Favourable
	On communication and transport	Favourable	Favourable	Favourable	Favourable
	On financial institutions	Favourable	Favourable	Favourable	Favourable
	On land value, land ownership (without house) and house ownership	Favourable	Favourable	Favourable	Favourable
	On livestock, poultry and fishery resources	Favourable	Favourable	Favourable	Favourable
Environmental	On flora and land use	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On sanitary facilities	Favourable	Favourable	Favourable	Favourable
	On sewerage systems	Favourable	Favourable	Favourable	Favourable
	On pollution	Unfavourable	Unfavourable	Unfavourable	Unfavourable
	On slums	Unfavourable	Unfavourable	Unfavourable	Unfavourable

The above table depicts that on eight social components among fourteen have favourable impact of urbanization, on ten among eleven economic components have favourable impact of urbanization and on three environmental components among five have unfavourable impact of urbanization in the study areas. According to the definition of sustainable development it is compulsory to ensure social development, economic development and environmental protection in an area for achieving sustainable development. Since in our studied urban areas social and economic impact of urbanization is helpful and environmental impact of urbanization is harmful hence social and economic development have achieved without environmental protection there.

CHAPTER EIGHT

SUMMARY, CONCLUSION AND RECOMMENDATIONS

As the title of this dissertation is 'Urbanization and Sustainable Development in 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 Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011. The research work enables us to know elaborately the socio-economic and environmental conditions of the study areas between 1991 and 2011 along with the impacts of urbanization on the socio-economic and environmental aspects which will help us to know about relation between urbanization and sustainable development.

8.1 Summary of Findings

In chapter five, the social characteristics like- dependency, educational facilities and literacy rate, female literacy, health care and maternity services, family planning activities, migration, population density, traffic jam, social consciousness, religious affair, social recreational facilities, drug addiction, prostitution and 'law and order situation' of Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 have examined for finding the social impact of urbanization. Here the researcher has observed the followings:

The impact of urbanization on dependency is favourable. In other words the dependency ratio has decreased. Here longevity of people has increased and birth rates have decreased. Educational facilities and literacy rate is favourable. Both educational institutions and literacy rate have increased. Female literacy rate is favourable and this is the result of available increasing educational facilities. Health care and maternity

services are in favour of urban inhabitants. That is, facilities related with health care and maternity services have increased. The family planning activities is helpful. It means the numbers of family planning materials users have increased and as a result average sizes of house holds have decreased. Migration rate is inconvenient. Here inmigrants have increased very rapidly. For which, in spite of decreasing birth rate and family size, the numbers of total population and total family have increased rapidly. Outmigrants have increased lower rate than inmigrants, net migrants have increased. Population density is adverse. Since the total areas of the municipalities remained unchanged, the increased inmigrants have caused total population to increase. Population density per km.^{2} has increased. Traffic jam has also adverse effect. Various kinds of vehicles have increased at higher rate than total roads. Again only of those increased roads have access for vehicles. Social consciousness is favourable. Here the numbers of newspaper and magazine readers, radio listeners and television viewers have increased. Religious affair is advantageous. Here, the numbers of religious places, where religious practice occurs have increased. Social recreational facilities are favouirable, which means the numbers of social recreational places have increased. Drug addiction is unfavourable. It means that, the numbers of addicts, deaths for addiction and drug sellers have increased. Prostitution is troublesome, which indicates the numbers of sex workers and customers have increased. Law and order situation is incommodious. It detects that the numbers of offences have increased.

In chapter six, the economic characteristics like- financial classification, employment, women employment, consumption pattern, housing pattern, sources of drinking water, electricity facility,

communication and transport, financial institutions, 'land value, land ownership (without dwelling unit) & house ownership' and 'livestock, poultry and fishery resources' of Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 have examined for observing the economic impact of urbanization. Here the worth mentioning findings are as follows:

The impact of urbanization on financial classification is helpful. Here the numbers of people in poor and extreme poor classes have increased lower than the people in upper, upper middle and lower middle classes. Employment is unfavourable, which indicates the numbers of unemployed (10+ years) people have increased at a high rate and the numbers of employed (10+ years) people have increased at a low rate, economic activity rates have decreased. Women employment is favourable. Women employment rates have not only increased rapidly but also women economic activity rates have increased rapidly. Consumption pattern is propitious. Here the consumption capacity of the people has increased. Housing pattern is convenient. It means that not only quantities of houses are increasing but also qualities of houses are improving. Sources of drinking water are hopeful, that is, the numbers of tube well, municipal supply by pipe line and own pump water users have increased high rate. In another side, the numbers of well and pond/ canal/ river water users have decreased. Electricity facility is advantageous. Here the numbers of electric connections and road lights have increased sufficiently. Transport and communication is favourable, which means telecommunication, transport system and postal & courier services have increased. Financial institutions is helpful, that is financial institutions are expanding in number and the people are being developed financially.

Land value, land ownership (without house) and house ownership is opportune. That is, land value has not only increased but also the numbers of land owners (without house) and house ownership have increased. Conditions of 'livestock, poultry and fishery resources' are favourable. That is, the conditions of 'livestock, poultry and fishery resources' have developed here.

In chapter seven, the environmental characteristics like- flora and land use, fauna, sanitary facilities, sewerage systems, pollution, slums, of Gazipur, Kushtia and Sherpur municipal areas during 1991 to 2011 have observed for examining the environmental impact of urbanization. The major findings are as follows:

The impact of urbanization on flora and land use is unfavourable. Here the area of natural forest, social forest and cultivated land has decreased and area of land uses for home & other purposes have increased. Sanitary facilities from urban dwellers are 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 also helpful. It means that, the facilities served by the municipal authority have increased. Sewerage systems are convenient, which means the sewerage facility has increased. Pollution trend is harmful. Here the degrees of air, water and sound pollutions have increased. The numbers of slums and slum people have increased which is inconvenient.

Other main 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 Gazipur, Kushtia and Sherpur municipal areas for the negligence of urban authority. There is no environmental wing in municipal offices.

Though the numbers of rickshaws and rickshaw vans in Gazipur, Kushtia and Sherpur municipal areas are respectively 8750, 9500 and 3993, only 5800, 5000 and 2393 of them are licensed in 2011. On the other hand, only about 10% rickshaw and rickshaw van pullers are licensed, others are illegal. There is no training institute or training system in the study areas for rickshaw and rickshaw van pullers. More over those who are licensed are also ignorant about driving rules, which is responsible for traffic jam and road accidents. It is not necessary to know about driving rules before being a license holder as rickshaw or rickshaw van puller in the selected municipal areas.

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 regularity; 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 authorities have not sufficient manpower to serve municipal dwellers properly. Corruption and lack of accountability of municipal authorities are liable for serving poor urban facilities related with socio-economic and environmental conditions to municipal dwellers.

In spite of various barriers, after the above observation of this research work it has found that social impact of urbanization is propitious, economic impact of urbanization is more propitious and

environmental impact of urbanization is inimical in Bangladesh. On the other hand sustainable development contains social development, economic development and environmental protection. So the aforesaid result detects that social impact of urbanization has conveniently advanced, economic impact of urbanization has more conveniently advanced and environmental impact of urbanization has inconveniently advanced towards sustainable development in Bangladesh.

8.2 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 an old wise saying in the study areas that *'Jodio Pore Cohor, Tobuo Chariona Shohor'* (though it seems that the whole city is full of natural calamity, in spite of that one should not leave it). Urban area is a combination of weals and woes. It is our duty to ensure weal's 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 urbanization moves mainly parallel to economic development, with a lower scale to social development and adversely related to environmental development. By dint of urbanization industrialization increases which create harm for environment. For our happiness and long existence on earth, we should take care of our environment. God has created everything in this universe in due proportion and measure both quantitatively and qualitatively. 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 planned economic growth, a constant increase of productive 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 pubic 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).

It can be referred with advantage to a well know case from the **Supreme Court of India** on pollution (*Sachidananda Pandey VS. State of West Bengal12 AIR 1987 SC 1109),* in which *Justice Reddy* remarked on a public interest Petition against *the construction of five star hotel* next to the historical *Calcutta Zoo* by saying: **"How can you buy or sell the sky, the warmth of the land, or the life that goes along with it since long time? It is not a question of only buying or selling land; we**

have to see the totality of the ecology involved when the matter involves invasion of the nature by man's desire to go on building".

Given the expected scale of urban population growth in the coming decades, continued growth in the number of urban poor will pose a fundamental challenge for global sustainability. A major concern is the development of mega cities and large urban areas in the developing world, because of the speed and scale of urbanization and the incapacity of these cities to provide sufficient housing and basic urban services. Improved urban environmental management could help avoid many unfavourable environmental impacts, particularly if governments adopt clear urban policies as an integral part of their economic policies. However, urban growth is not yet well managed in most of the rapidly urbanizing areas, and this leads to major environmental and health problems, mainly associated with poverty. Urbanization will continue to play a major role in the economy, environment and people's lives. The challenge is to learn how to live with urbanization while using its benefits and guiding undesirable and unfavourable impacts in manageable directions (Environment and Urbanization, 1995a & 1995b).

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 elites, 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.

8.3 Recommendations for Future Policy

Gazipur, Kushtia and Sherpur municipal areas are facing some socio-economic and environmental problems. Since, Gazipur, Kushtia and Sherpur municipal areas represents all urban areas of Bangladesh hence, these are not only the problems of Gazipur, Kushtia and Sherpur municipal areas, 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 electronic 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.

The study formulated main five policy recommendations below:

(1) *Invest in education:* Preparing people for the knowledge society and the global economy means re-engineering education. Education should meet tomorrow's needs and give people the knowledge and the tools that are applicable in ever changing circumstances. Creativity will be a highly valued asset, and everyone else will have to accept the need for life-long learning. We need education that promotes inquiry and

creativity, as well as opportunities for rapid re-training and skills development.

(2) ***Plan locally, but think globally:*** (a) We need to connect people. They need access to markets for their labour and their products. They need information and credit to seize new opportunities. They need to be able to influence decisions that affect their lives and livelihood. (b) We need to connect rural areas. Rural areas connected to markets see their income increase, because their products become more competitive and improved transport lowers the cost of living. However, rural areas have to be prepared for the new competition that will come with the connection; otherwise, they will be swept away by the larger market. (c) Some regions within countries are disadvantaged because of their location: they are landlocked or far from markets and transport nodes. However, they are often only isolated or landlocked in relation to the country they are part of. Through trade agreements, regions within countries can seek access to markets and transport nodes in adjacent countries to the benefit of both.

(3) ***Decentralize and devolve authority:*** Each region has its own strength and weaknesses, its opportunities and threats. Regional authorities together with the region's population can best decide what kind of development they want and how this can be achieved. If development plans can be decided locally, plans will match local needs and priorities. The population will develop a stronger commitment and ownership of the plans; resources can be mobilized locally; implementation will be easier and more productive.

(4) ***Build capacity:*** Local and regional governments will need to develop their capacity to assume new responsibilities and to balance

local, regional and national interests. Decentralization requires good governance: all sectors of society need to be involved in decision-making so that the decisions benefit all, but in particular the poor, and take into account the interests of the country as a whole.

(5) *Create safety nets:* Those who cannot participate in the knowledge society and the global economy will need social and economic safety nets, so that an economically lost generation does not become a socially lost generation. In accordance with the local values, safety nets should primarily be the responsibility of the family and the community. However, safety nets also need to be equitable. We need to think about new types of safety nets that preserve the values of cultures and at the same time meet the needs of a changing society.

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. The aim with such future study is to identify well in advance and create awareness among stakeholders about a few opportunities that will lead the process of urbanization towards the fulfilment of sustainability goals. This research may not be sufficient to fulfill all the demands in these areas, which is usual. In spite of various limitations, the researcher has done the work successfully, no doubt.

LIST OF APPENDICES

APPENDIX NUMBER- 01

Demographic Characteristics of the World, Asia and Bangladesh (1950-2050)
[Population (thousands); 2010-2050: Projections]

Year / Region	1950	1975	2000	2010	2025	2050
Total population (world)	2,52,93,45,	4,06,13,17,	6,21,53,68,	6,90,86,88,	8,01,18,33,	9,14,99,84,
Urban population (world)	72,93,17,	1,51,14,14,	2,83,74,31,	3,48,63,26,	4,53,59,25,	6,28,58,81,
Percentage of urban population (world)	28.83	37.21	45.65	50.46	56.62	68.70
Rural population (world)	1,80,00,28,	2,54,99,03,	3,27,79,37,	3,42,23,62,	3,47,59,08,	2,86,41,03,
Total population (Asia)	1,40,28,88,	2,37,93,74,	3,69,82,95,	3,96,67,41,	4,77,25,23,	5,23,14,85,
Urban population (Asia)	22,90,80,	57,18,48,	1,36,09,00,	1,55,73,14,	2,38,32,68,	3,38,23,65,
Percentage of urban population (Asia)	16.33	24.03	36.80	39.26	49.94	64.65
Rural population (Asia)	1,17,38,08,	1,80,75,26,	2,33,73,95,	2,40,94,27,	2,38,92,55,	1,84,91,20,
Total population (Bangladesh)	4,35,95,	7,90,49,	14,07,67,	16,44,25,	19,50,13,	22,24,95,
Urban population (Bangladesh)	18,67,	77,75,	3,32,08,	4,61,49,	7,28,44,	12,55,00,
Percentage of urban population (Bangladesh)	4.28	9.84	23.59	28.07	37.35	56.41
Rural population (Bangladesh)	4,17,28,	7,12,74,	10,75,59,	11,82,76,	12,21,69,	9,69,95,

Source: World Urbanization Prospects: The 2009 Revision.

APPENDIX NUMBER- 02

Urban Population of the Main Cities of Bangladesh (1950-2050)
[Population (thousands); 2010-2025: Projections]

Year / City	1950	1975	2000	2010	2025	Gross Change From 1950 to 2010 (%)
Dhaka	3,36,	22,21,	1,02,85,	1,16,48,	2,09,36,	+6,130.95
Chittagong	2,89,	10,17,	33,08,	49,62,	72,65,	+2,413.84
Rajshahi	39,	1,50,	6,78,	8,78,	13,28,	+3,305.13
Khulna	41,	4,72,	12,85,	16,82,	25,11,	+6,024.39

Source: World Urbanization Prospects: The 2009 Revision.

APPENDIX NUMBER- 03

Total Numbers of Municipalities in Gazipur, Kushtia & Bogra Districts and Bangladesh

Year	Number of municipality			
	Gazipur district	Kushtia district	Bogra district	Bangladesh
1991	02	03	03	94
2001	02	04	05	219
2010	04	05	11	309
Gross change(%) from 1991 to 2010	+100	+66.67	+266.67	+228.72

Sources: Statistical Year Book of Bangladesh, 1991 & 2001; Deputy Commissioners Offices- Gazipur, Kushtia and Bogra Districts.

APPENDIX NUMBER- 04

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
	Sherpur (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.

APPENDIX NUMBER- 05

Sections of the Agenda 21 Overview

GLOBAL PARTNERSHIP AND PARTICIPATION

The Rio Declaration states that only a global partnership will ensure that all nations will have a safer and more prosperous future. The agreement includes the following ideas:

- People are entitled to a healthy and productive life in harmony with nature.
- Eradicating poverty and reducing disparities in living standards in different parts of the world are essential to achieve sustainable development and meet the needs of the majority of people.
- Nations shall co-operate to conserve, protect and restore the health and integrity of the earth's ecosystem.
- Environmental issues are best handled with the participation of all concerned citizens. Nations shall facilitate and encourage public awareness and participation by making environmental information widely available.
- The full participation of women is essential to achieve sustainable development.
- The creativity, ideals and courage of youth and the knowledge of indigenous people are needed too. Nations should recognize and support the identity, culture and interests of indigenous people.
- Peace, development and environmental protection are interdependent and indivisible.

AGENDA 21 COMMITMENTS

Agenda 21 consists of 40 chapters in four sections of overlapping and interrelated issues involved in sustainable development.

0. Preamble

SECTION ONE

SOCIAL AND ECONOMIC DIMENSIONS

2. International Co-operation

3. Combating Poverty

4. Changing Consumption Patterns

5. Population and Sustainability

6. Protecting and Promoting Human Health

7. Sustainable Human Settlements

8. Making Decisions for Sustainable Development

SECTION TWO

CONSERVATION AND MANAGEMENT OF RESOURCES

9. Protecting the Atmosphere

10. Managing Land Sustainably

11. Combating Deforestation

12. Combating Desertification and Drought

13. Sustainable Mountain Development

14. Sustainable Agriculture and Rural Development

15. Conservation of Biological Diversity

16. Management of Biotechnology

17 Protecting and Managing Oceans

18. Protecting and Managing Fresh Water

19. Safer Use of Toxic Chemicals

20. Managing Hazardous Wastes

21. Managing Solid Wastes and Sewage

22. Managing Radioactive Wastes

SECTION THREE

STRENGTHENING THE ROLE OF MAJOR GROUPS

23. Preamble

24. Women in Sustainable Development

25. Children and Youth in Sustainable Development

26. Strengthening the Role of Indigenous People

27. Partnership with NGOs

28. Local Authorities

29. Workers and Trade Unions

30. Business and Industry

31. Scientists and Technologists

32. Strengthening the Role of Farmers

SECTION FOUR

MEANS OF IMPLEMENTATION

33. Financing Sustainable Development

34. Technology Transfer

35. Science for Sustainable Development

36. Education, Training and Public Awareness

37. Creating Capacity for Sustainable Development

38. Organizing for Sustainable Development

39. International Law

40. Information for Decision Making

(1) Often referred to as the 'Earth' or 'Rio Summit'.

(This Overview of Agenda 21 was prepared by the Bahá'í Information Office of the U.K., www.btinternet.com)

APPENDIX NUMBER- 06

List of the Exchange Rate of Dollar-Taka

Fiscal year	Taka against per Dollar (USA)
1990-91	35.6758
2000-01	53.9592
2010-11	69.5410

Sources: Statistical year book of Bangladesh, 2002 and Bangladesh Economic Review- 2010 (Bangla Version).

APPENDIX NUMBER- 07

Standards for Air
(Density in microgram per cusec meter)

SI. No.	Category of area's	Suspended Particulate Maters (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 centre, 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 SI. 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.

APPENDIX NUMBER- 08

Standards for Drinking Water

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

Source: A Compilation of Environmental Laws, 2002.

APPENDIX NUMBER- 09

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 meters 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 NUMBER- 10

Acronyms

A.D.- Anno Domini (in the year of our lord).

AIDS- Acquired Immune Deficiency Syndrome.

BAPA- Bangladesh Paribesh Andolon.

B.C.- Before Christ.

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 cetra (all the others).

FDP- Family Development Program.

GDP- Gross Domestic Product.

GNP- Gross National Product.

i.e.- idi est (which is to say).

IOM- International Organizaion for Migration.

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.

U.N.- United Nations.

UNCHS- United Nations Centre for Human Settlements.

UNDP- United Nations Development Program.

UNFPA- United Nation's Population Fund.

USA- United States of America.

VCD- Video Compact Disk.

VCP- Video Cassette Player.

VCR- Video Cassette Recorder.

BIBLIOGRAPHY

'A Compilation of Environmental Laws', 2002, Department of Environment and Bangladesh Environment Management Project, Ministry of Environment and Forest, Government of the People's Republic of Bangladesh.

Agency for International Development, 1968, 'Pacific Conference on Urban Growth- The New Urban Debate', Washington D.C. USA.

'Agenda 21- An Overview', Bahá'í Information Office of the U.K., www.btinternet.com

Aguirre, M.S., 2002, 'Sustainable Development: Why the Focus on Population', International Journal of Social Economics, vol. 29, 12: 923 - 945

Ahmad, N., 1968, 'An Economic Geography of East Pakistan', London, Oxford University Press.

Ahmed, A.I.M.U., 2004, 'Weber's Perspective on the City and Culture, Contemporary Urbanization and Bangladesh', http://www.bangladesh sociology.org/max% 20 weber %20-%20 Mahbub%20 Ahmed-htm

Alam, M.A., 2004, 'Growth of Informal Settlements and Its Effects on Urban Environment: Case Study of Three Selected Wards of Khulna City Corporation', Ph.D. Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Alam, S., 2004, 'Role of Family Planning Development Programme in Selected Slums in Dhaka City', Ph.D. Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Alam, S.M. and F. Alikhan, (edited), 1987, 'Poverty in Metropotitan Cities', Concept Publishing Company, New Delhi.

Allinson, G.D., 1975, 'Japanese Urbanism', University of California Press, Berkeley and Los Angeles, California.

Anderson, M.J., 2002, 'Sustainable Development', WFF voices online edition Vol. XVII, 1.

Anell, L. and B. Nygren, 1982, 'The Developing Countries and The World Economic Order', Methuen and Company Limited, London.

Ansari, M.A.S., 1963, 'Social Research in National Development', Peshawar, Pakistan Academy of Rural Development.

Arephin, S. and A.H. Shaikh, 1980, 'Some Aspects of Urban Social Structue in Bangladesh: A Case Study of Rajshahi City', Oriental Geographer.

Atiqullah, M. and F.K. Khan, 1965, 'Growth of Dacca City: 1908-1961', Social Science Research Project Publication, Dacca University.

Azam, M.G., 2004, 'Introductory Sociology', Milleniun Publiction, Dhaka, Bangladesh.

Ball, J. and C.B. Williams, 1952, 'Report Writing', Newyork, Ronald Company, Inc.

Bangladesh Bureau of Statistics, 1983, 'Bogra District Statistics', Statistical Division, Ministry of Finance and Planning, Government of the People's Republic of Bangladesh.

Bangladesh Bureau of Statistics, 1985, 'Bangladesh Population Census-1981, Community Tables of All Thanas of Bogra District, Bogra Sadar

and Joypurhat Sub Division', Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 1991, 'Statistical Year Book of Bangladesh, 1991', Twelfth edition, Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh.

Bangladesh Bureau of Statistics, June 1993, 'Bangladesh Population Census- 1991, Community Series, Zila: Gazipur', Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, June 1995, 'Bangladesh Population Census- 1991, Community Series, Zila: Bogra', Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, February 1996, 'Bangladesh Population Census- 1991, Community Series, Zila: Kushtia', Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 1997, 'Statistical Year Book of Bangladesh, 1996', Seventeenth Edition, Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh.

Bangladesh Bureau of Statistics, 2003, 'Statistical Year Book of Bangladesh, 2001, 22nd Edition', Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 2004, 'Statistical Year Book of Bangladesh, 2002, 23nd Edition', Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, October 2004, 'Bangladesh Population Census- 2001, Community Series, Zila: Bogra', Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, October 2006, 'Bangladesh Population Census- 2001, Community Series, Zila: Gazipur', Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, January 2007, 'Bangladesh Population Census- 2001, Community Series, Zila: Kushtia', Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics, 2010, 'Statistical Year Book of Bangladesh, 2008', 29th edition, Planning Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh.

Bangladesh Economic Review, 2010 (Bangla version), Ministry of Finance, Government of the Peoples Republic of Bangladesh.

Bari, K.G.M.L. (edited), 1979, 'Bangladesh District Gazetters Bogra', Government of the People's Republic of Bangladesh, Establishment Division.

Becker Charles, M., H. Amer, A. Andrew and R. Andrew Morrison, 1994, 'Beyond Urban Bias in Africa: Urbanization in the Era of Structural Adjustment', Portsmouth: Heinemann.

Begum, N. N., 1984, 'Samajic Gabeshana Porichiti', Knowledge View, Dhaka.

Bergel, E. E., 1955, 'Urban Sociology', McGraw- Hill Book Company, Inc, New York.

Berliner, J., 1977, 'Internal Migration: A Comparative Disciplinary View. In Alan Brown and Egon Neuberger (Eds), Internal Migration: A Comparative Perspective', New York: Academic Press.

Beyer, G. H. (edited), 1967, 'The Urban Explosion in Latin America', Cornell University Press, Ithaca, New York.

Bhagwati, J., 1971, 'The Economics of Underdeveloped Countries', World University Library, Weidenfeld and Nicolson, London.

Bhatia, A.S., 1992, 'Rural-Urban Migration- A Study of Socio-economic Implications', Deep and Deep Publication, New Delhi.

Bose, A., 1980, 'India's Urbanization 1901-2001', Tata McGraw-Hill Publishing Company, New Delhi.

Boudeville, J. R., 1957, 'Problems of Regional Economic Planning', University Press, Edinburgh.

Bradshaw, Y.W., 1987, 'Urbanization and Urban Development: A Global Study of Modernization, Urban Bias and Economic Dependency', American Sociological Review, 52(2).

Breese, G., 1966, 'Urbanization in Newly Developing Countries', Prentice Hall, Inc, Engle wood cliffs, USA.

Brown, L. (edited), 1993, 'The New Shorter Oxford English Dictionary, on Historical Principles', Volume- 1 and 2, Clarendon Press, Oxford.

Brundtland Commission, 1987, 'The World Commission on Environment and Development'.

Centre for Housing, Building and Planning, 9 September, 1966, 'Selected Conclusion and Recommendations of Regional and Metropolitan Planning, New Towns and Land Policies', United Nations.

Chang, S., 1981, 'Modernization and Chinas Urban Development', Annals of the Association of American Geographers.

Chaudhury, A.K.M.K., 1985, 'Land Use Planning in Bangladesh', National Institute of Local Government, Dhaka.

Chaudhury, R.H., 1980, 'Urbanization in Bangladesh', Centre for Urban Studies, Department of Geography, Dhaka University, Dhaka.

Chaudhury, A.H., 1998, 'Agenda 21 and the Role of Local Authorities in Urban Environmental Management', Asian Pacific Journal on Environment and Development, Volume- 5, Number- 2.

Crowin, R., P.H. Heffer nan, R.A. Johnston, M. Remy, J.A. Roberts and D.B. Tyler, 1975, 'Environmental Impact Assessment', Freeman, Cooper & Company, San Francisco.

Daly, H.E., 1991, 'Towards a Steady State Economy', San Francisco: Freeman.

Davis, K., 1961, 'Forward Urban Research and Its Significance', D. Van Nostrand Company, Newyork.

Denig, S., 2009, 'Sustainable Urban Infrastructure', Siemens AG, Munich Edition-Paths Toward A Carbon Free Future, Germany.

Department of Economic and Social Affairs, Population Division, 2004, 'World Urbanization Prospects: The 2003 Revision', United Nations, New York.

Department of Economic and Social Affairs, Population Division, 2010, 'World Urbanization Prospects: The 2009 Revision, United Nations, New York.

'Dictionary of Environmental Science', 2003, MeGraw-Hill.

Drakakis –Smith, D., 1987, 'The Third World City', Methuen, London.

Dutt, A.K., 2001, 'Global Urbanization: Trends, Form and Density Gradients', Allahabad: Professor R.N. Dubey Foundation.

Dyllick, T. and K. Hockerts, 2002, 'Beyond the Business Case for Corporate Sustainability', Business Strategy and the Environment, 11(2): 130-141

Elahi, K.M., 1972, 'Urbanization in Bangladesh: A Geodemographic Study', Oriental Geographer.

Environment and Urbanization (1995a), 'Urban Poverty I: Characteristics, Causes and Consequences', Environment and Urbanization- Special Issue, 7, 1

Environment and Urbanization (1995b), 'Urban Poverty II: From Understanding to Action', Environment and Urbanization- Special Issue, 7, 2

Erickson, P.A., 1979, 'Environmental Impact Assessment- Principles and Applications', Academic Press, Newyork.

Fainstein, N.I. and S.S. Fainstein (edited), 1982, 'Urban Policy Under Capitalism', Sage Publications, California.

Faroque, M., 1968, 'Some Aspects of the Urban Geography of Cox's Bazar', Oriental Geographer.

Firebaugh, G., 1979, 'Structural Determinants of Urbanization in Asia and Latin America 1950-1960', American Sociological Review, 44.

Gaan, N., 2000, 'Environment and National Security: The Case of South Asia', The University Press Limited, Dhaka, Bangladesh.

Ghosh, A., 2003, 'Urban Environment Management: Local Government and Community Action Urban Studies', Institute of Social Sciences, Series number- 7, Concept Publishing Company, New Delhi.

Gopal, M.H., 1970, 'An Introduction to Research Procedure in Social Sciences', Asia Publishing House, 2nd edition, Bombay.

Gottmann, J. and R.A. Harper, 1990, 'Since Megalopolis. The Urban Writings of Jean Gottmann', Baltimore: Johns Hopkins University Press.

Gugler, J. (edited), 1992, 'The Urbanization of the Third World', Oxford University Press, New York.

Han S.S., 1994, 'Controlled Urbanization in China, 1949-1989' Ph.D. Thesis, Department of Geography, Simon Frasher University, China.

Hauser, P.M. and L.F, Schnore, 1967, 'The Study of Urbanization', John Wiley & Sons, Inc., New York.

Hayata, N., 1996, 'Expanding Urban Sprawl: Growth of Low Income Settlements in Bagota, Colombia', The journal of 'Institute of Developing Economics', Voulume- 34, Number- 4.

Hinrichsen, D., R.M. Salem and R. Blackburn, 2002, 'Meeting the Urban Challenge', United Nation, Population Reports, 30, (4),

Hirsch, W.Z., 1975, 'Urban Economic Analysis', Tata-McGraw Hill Publishing Company Limited, New Delhi.

Hoekstra, A.Y., 2006, 'The Global Dimension of Water Governance: Nine Reasons for Global Arrangements in Order to Cope With Local Problems', Value of Water Research Report Series No. 20 UNESCO-IHE Institute for Water Education. Retrieved on: 2009-03-18.

Hossain, M.I., 2004, 'International Environmental Law- Bangladesh Perspective', Dhaka International University, Dhaka.

Hossain, M.M., 1982, 'Patterns of Urbanization of Rajshahi Town- A Socio-Economic Study', M.Phil. Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Hossain, S.M.A., 2000, 'Bogra: Growth and Development as a Regional Centre', Mrs. Lutfun Nahar, M.Sc, Fulbari, Bogra, Bangladesh.

Houpin, S., 2010, 'Urban Mobility and Sustainable Development in the Mediterranean Regional Diagnostic Outlook', Plan Bleu Regional Activity Centre, Valbonne.

Howarth, R.B. and R.B. Norgaard, 1992, 'Economics of Sustainability or the Sustainability of Economics: Different Paradigms,' Ecological Economics.

Islam, A.K.M.S., 2001, 'Social Aspects of Aging in Bangladesh: A Case Study of Rajshahi City', Ph.D. Thesis, 'Department of Sociology', Rajshahi University, Rajshahi, Bangladesh.

Islam, N., 1999, 'Urbanization, Migration and Development in Bangladesh: Recent Trends and Emerging Issues', www.cpd-bangladesh. Org/publications/cunfpa.html-40k

Islam, N., 2005, 'Natural Hazards in Bangladesh : Studies in perception, Impact and Coping Strategies', Disaster research management Centre, University of Dhaka, Dhaka, Bangladesh.

Islam, N. (edited), 1998, 'Recent Urban Studies, Bangladesh', Department of Geography and Environment, University of Dhaka, Dhaka, Bangladesh.

Iqbal, M., 1998, 'The Impact of Urbanization on the Structure and Functions of Urban Family in Pakistan', Ph.D. Thesis, 'Department of Sociology', University of Karachi, Karachi: 75270

James, J.R., 1973, 'Some Aspects of Town and Country Planning in Bangladesh', The Ford Foundation.

Johannesburg Declaration, 4 September, 2002, 'World Summit on Sustainable Development'.

Johnson, B.L.C., 1957, 'Site and Urban Regions of Chittagong', Oriental Geographer.

Jones, C.F. and G.G. Darkenwald, 1960, 'Economic Geography', Mac Millan Publications, New York.

Kabir, N.N., 1996, 'Impact of Income, Education, Nutrition and Family Planning Interventions on Women's Development', Bangladesh Academy for Rural Development (BARD), Kot bari, Comilla.

Kasarda, J.D. and E.M. Crenshaw, 1991, 'Third World Urbanization: Dimensions, Theories and Determinants', Annual Review of Sociology, 17(1).

Keka, I.R., 1999, 'Study of Some Environmental Parameters at Rajshahi City', M.Phil. Thesis, 'Department of Physics', Rajshahi University, Rajshahi, Bangladesh.

Kentor, J., 1981, 'Structural Determinants of Peripheral Urbanization: The Effects of International Dependence', American Sociological Review, 44(2).

Khan, A. (edited), 1968, 'Ajker Bogra Atit o Bartaman', Granthamela Prokashani, Bogra.

Khan, F.R., 1969, 'Principles of Socioligy', Shirin Publications, Dacca.

Khan, H., 2008, 'Challenges for Sustainable Development: Rapid Urbanization, Poverty and Capabilities in Bangladesh', Munich Personal RePEc Archive (MPRA), Paper No. 9290, United States of America.

Khan, M.A.H. (edited), 1967, 'Problems of Municipal Administration,' National Institute of Public Administration (NIPA), Dacca.

Khatun, H., 2003, 'Dhakaiyas on the Move', Academic Press and Publishers Limited, Dhaka, Bangladesh.

Khuda, Z.R.M.M., 2001, 'Environmental Degradation, Challenges of the 21st Century', Environmental Survey and Research Unit, Dhaka, Bangladesh.

Kothari, C.R., 2001, 'Research Methodology: Methods and Techniques' Wishha Prakashan, New Delhi.

Kreimer, A., M. Munasinghe, and M. Preece, 1992, 'Reducing Environmental Vulnerability and Management Disasters in Urban Areas. In Environmental Management and Urban Vulnerability', Edited by A.

Kreimer and M. Munasinghe (Eds), (Washington, D.C: World Bank Division Papers).

Kumar, D., 2009, 'Urbanization and Sustainable Development', Concept Publication Company, New Delhi.

Levin, R.I. and D.S. Rubin, 2000, 'Statistics for Management', Prentice Hall of India Private Limited, Newdelhi.

Lipton, M., 1977, 'Why Poor People Stay Poor: A Study of Urban Bias in World Development', Cambridge: Harvard University Press.

Mandal, R.B. (edited), 1982, 'Urbanization and Regional Development', Concept Publication Company, New Delhi.

Mc Carney, P.L. and R.E. Stren, 2003, 'Governance on the Ground: Innovations and Discontinuities in Cities of the Developing World', Woodrow Wilson centre press, Washington D.C. and The Johns Hopkins University Press, Baltimore and London.

McGurk, H., 1977, 'Ecological Factors in Human Development', North-Holland Publishing Company, Amsterdam.

Mehdi, M.R., 2002, 'Appraisals of Noise Pollution, Traffic, and Land Use Patterns in Metropolitan Karachi Through GIS and Remote Sensing Techniques', Ph.D. Thesis, 'Institute of Environmental Studies', University of Karachi, Karachi, Pakistan.

Miner, H., 1967, 'The City in Modern Africa', New York: Praeger.

Mitra, P.K. and J. Hossain, 2004, 'Orderly and Humane Migration- An Emerging Development Paradigm', 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Murtaza, M.G., 2000, 'Urban Poverty and Its Spatial Consequences: A Case Study of Khulna City', Ph.D. Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Najia, S.E., 2004, 'Development in Local Stage: Role of Local Government in Urban and Rural Development', Centre for Urban Studies, Dhaka and Bangladesh Institute of Planners (BIP), World Habitat Day Souvenir.

Oak, M., 2010, 'Urban vs Rural Living', www. Buzzle.com.

Obminsky, E. (edited), 1989, 'Economic Problems of Developing Countries', Academic Publishers, Dhaka.

Odum, H.W. and K. Jocher, 1929, 'An Introduction to Social Research', Henry Holt and Company, Newyork.

Patel, A.M., 1970, 'The Urban Centres of East Pakistan', Oriental Geographer.

Peattie, L. and R, Peattie, 1952, 'The City', Henry Schuman, NewYork.

Planning Commission, 1998, 'The Fifth Five Year Plan, 1997-2002, Ministry of Planning , Government of the People's Republic of Bangladesh, Dhaka.

Perkins, D.H., S. Radelet, D.R. Snodgrass, M. Gillis and M. Roemer, 2001, 'Economics of Development', W.W. Norton & Company, inc., United States of America.

Propa, F.A. and R. Mitra, 2004, 'An Evaluation of the Performance of Decentralization Policy in Bangladesh to Induce Urban Development: Case Study of Selected Upazilas', Centre for Urban Studies, Dhaka and Bangladesh Institute of Planners (BIP), World Habitat Day souvenir.

Qadir, S.R., 1973, 'Dacca-A City of Imbalance', Local Government Quaterly, Volume- 2, September & December, Number 3 and 4, Local Government Institute, Dacca.

Quigley, J.M., 2008, 'Urbanization, Agglomeration and Economic Development', The World Bank, United States of America.

Rahman, A.H.M.M. and M.I. Hussaine, 2004, 'Introductory Sociology', Lekhapoda, Dhaka, Bangladesh.

Rahman, G., 2004, 'Cities-Engines of Rural Development', Centre for Urban Studies, Dhaka and Bangladesh Institute of Planners (BIP), World Habitat Day Souvenir.

Rahman, M.H., 1996, 'Samajbijnan Parichiti', Hasan Book House, Dhaka, Bangladesh.

Rahman, M.A., 1982, 'Socio-economic Background in Deviants in Slums of Rajshahi Town', M.Phil. Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Ramachandran, R., 2000, 'Urbanization and Urban Systems in India', Oxford University Press, New Delhi.

Ramu, G.N., 1977, 'Family and Caste in Urban India- A Case Study', Vikas Publishing House Private Limited, New Delhi.

Rasheed, K.B.S., 2003, 'Urban Growth and Water Security Challenges', Bangladesh Institute of Planners (BIP) and Centre for Urban Studies, Dhaka, World Habitat Day Souvenir.

Roberts, B. and T. Kanaley, (Eds.), 2006, 'Urbanization and Sustainability in Asia: Case Studies of Good Practice', Manila, Philippines: Asian Development Bank Cities Alliance (World Bank).

Rodrigvez, R.S. and A. Bonilla, 2007, 'Urbanization, Global Environmental Change and Sustainable Development in Latin America', Inter American Institute for Global Change Research- IAI, Brazil.

Rondinelli, D.A., 1983, 'Towns and Small Cities in Developing Countries', Geographical Review.

Rouf, Q.A. and M. Elahi, 1992, 'Samagic Biggane Gabesana Padhiti: Tatta O Proyog', Sujaneshu Prokashani, Dhaka, Bangladesh.

Roy, D.P., 2004, 'City of Khulna: Origin and Development 1842-1984', Ph.D. Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

Sailure, S.L.R. and S. Rokshana, 2004, 'Paurahava Manual', New Warshi Book Corporation, Dhaka- 1000.

Schnore, L.F., 1965, 'The Urban Scene-Human Ecology and Demography', The Free Press, New York.

Schultink, G., 2009, 'Land Use Planning and Open Space Preservation: Economic Impacts of Low Density Urbanizing and Urban Sprawl', Journal of Civil, Environment and Architectural Engineering, Volume- 3, Issue 1, East Lansing, United States of America.

'Seminar on Planning for Urban and Regional Development Including Metropolitan Areas, New Towns and Land Policies', 1966, Nagoya, Japan.

Sen, P.C., 1929, 'Bograr Itihas', Second Edition, Bogra Commercial Sindicate.

Seraj, T.M. and C.M.Z. Sadeque, 2005, 'An Evaluation of Urban Governance of Dhaka City and Its Effects on The Growth of Private Real

Estate Sector', Centre for Urban Studies, Dhaka, Journal on Urbanization and Development, Volume- 48.

Shafi, S.A., 2005, 'Bashundhara City', Centre for Urban Studies, Dhaka, Journal on Urbanization and Development, Volume- 48.

Shakura, T., 2005, 'Cities in Transition: Transforming the Global built - Environment', Open House Press, Cheshire (U.K).

Siddhartha, K. and S. Mukherjee, 2000, 'Cities, Urbanization and Urban System', Kisalaya Publication, New Delhi.

Siddiqi, M.W., 2004, 'Rural-Urban Migration (A Case Study of Lahore District)' Ph.D. Thesis, Economics Department, University of the Punjab, Lahore, Pakistan.

Smith, D.D. (edited), 1988, 'Urbanization in the Developing World' Routledge, London.

Statistical Pocket Book Bangladesh, 2009, 'Bangladesh Bureau of Statistics', 30th edition, Planning Division, Ministry of Planning, Government of the People's Republic of Bangladesh.

Stretton, H., 1976, 'Capitalism, Socialism and the Environment', Cambriage University Press, London.

Sultana, N., 2002, 'Impact of Rural-Urban Migration in Bangladesh: A Case Study of Rajshahi City', Ph.D. Thesis, 'Department of Sociology, Rajshahi University, Rajshahi, Bangladesh.

Tang, Z., A.E. Bernie, J.L. Kyoung, C.P. Brayn, and H. Jon, 2005, 'Minimizing the Impact of Urbanization on Long Term Runoff', Journal of the American Water Resources Association, United States of America.

Tarafder, A.K.M.S., 1970, 'Dui Shatabdir Bukey (The History of Bogra)', Most. Omeda Khatun, Thana road, Bogra.

Tettey, C., 2005, 'Urbanization in Africa in Relation to Socio-economic Development: A Multifaceted Quantitative Analysis' Ph.D. Thesis, The Graduate Faculty, University of Akron, Ohio, United States of America.

'The Constitution of the People's Republic of Bangladesh', 1996, The Ministry of Law, Justice and Parliament Affairs.

'The New Encyclopedia Britannica', 2002, Volume- 1, 3 and 4, Fifteen edition, Encyclopedia Britannica, Inc, Chicago, USA.

'The Encyclopedia Americana', 1984, International edition, Volume- 9 and 27, Gholier Incorporated, Inc, USA.

Thrall, G.I., 1987, 'Land Use and Urban Form', Methuen and Company Limited, London.

Tompson, W., 1965, 'Population Problem', New York, McGraw-Hill, Inc.

Trivedi, J.K., Sareen, H, and Dhayni, M, 2010, 'Rapid Urbanization-Its Impact on Mental Health: A South Asian Perspective', Department of Psychiatry, CSM Medical University (Earlier KG Medical University), Lucknau, India. http://www.indianjpsychiatry.org

Turner, R.K., 1993, 'Sustainable Environmental Economics and Management: Principles and Practice', Belhaven Press, London and Newyork.

Uddin, M.N., 2004, 'Air Pollution Control in Urban Areas of Bangladesh: Quest for Sustainable Improvement of Air Quality of Dhaka City', Ph.D.

Thesis, 'Institute of Bangladesh Studies', Rajshahi University, Rajshahi, Bangladesh.

United Nations Centre for Human Settlements, 2003, 'The Challenge of Slums– Global Report on Human Settlements 2003'.

United Nations Development Programme, 1999, 'World Poverty Report'.

Vatuk, S., 1972, 'Kinship and Urbanization', University of California press, Berkeley and Los Angeles, California.

Veon, J., 2002, 'Sustainable Development, Agenda 21 and Prince Charlse'.

Walker, B., 1981, 'Welfare Economics and Urban Problem', Hutchinson and Company Limited, London.

Walton, J., 1977, 'Accumulation and Comparative Urban Systems: Theory and Some Tentative Contrasts of Latin America and Africa', Comparative Urban Research, 5(1).

Witeney, F., 1960, 'The Elements of Research', Prentice Hall, Newyork.

World Wide Fund for Nature, 2008, 'Living Planet Report', Retrieved on: 29-03-2009.

World Wide Fund for Nature, 2010, 'Living Planet Report', Retrieved on: 13-10-2010.

Young, P.V., 1977, 'Scientific Social Surveys and Research', Prentice Hall, India.

Zarkovich, S., 1966, 'Quality of Statistical Data', Food and Agricultural Organization of the United Nation, Rome, Italy.