UNIVERSITY OF DHAKA

# Citizens' Access to Urban Environmental Information in Dhaka: Understanding the Patterns, Processes and Requirements

being a Thesis submitted for the M Phil Degree in the Department of Geography and Environment, University of Dhaka

By

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# DECLARATION

I declare that this thesis is a presentation of my original research work, which was not previously included in any thesis, dissertation or report submitted to any institution for any degree or other qualification. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions.

The work was done under the guidance of Professor Dr Md Maksudur Rahman at the Department of Geography and Environment at Dhaka University, Dhaka.

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# Abstract

Dhaka is one of the most densely populated and rapidly growing cities in the world with 1.48 crore population and it has been acute facing environmental challenges due to rapid and unplanned urbanisation. Urban environmental information plays a crucial role for urban development, which helps city dwellers be aware of city environment and policymakers take right policies. So, understanding the patterns and processes of urban environment is a key to make information available to city dwellers. Thus, this study aims to understand the patterns and process of unban environmental information of Dhaka city. The household survey adopted for this study reveals an overview of the present status of urban environmental information dissemination while qualitative survey has explored the patterns and processes of urban environmental information of Dhaka city. Both the qualitative and quantitative surveys find that there is no integrated system in Dhaka city to disseminate urban environment information to the city dwellers. The ineffective urban environmental information dissemination is restricting the planned urban development and accelerating sufferings of city dwellers. Urban environmental information is being disseminated in the city in a haphazard manner. There is no central organisation, which collects urban environmental information. Access to urban environmental information is very crucial in coping with the environmental problems. But, Dhaka city experiences show that city dwellers have a little access to urban environmental information for lack of a proper dissemination system. The qualitative survey finds lack of coordination and the negligence of the authorities concerned are found to be the main underlying causes behind poor dissemination of urban environmental information. Although around 54 government bodies are involved in urban governance, they have no coordination at all. There is also poor governance in environmental information dissemination like other sectors in Dhaka city, which makes the city dwellers' lives miserable. Media always play a vital role in disseminating urban environmental information and city dwellers are highly dependent on media to get urban environmental information. During the household survey, about 89.7 percent of respondents found media's involvement in urban environmental information and think that media should play better role in this regard. The key reasons, which contribute to poor dissemination of urban environmental information, and the patterns and processes of the information, are analysed to suggest steps and policy guidelines towards introduction of an urban environmental information system for Dhaka city.

# Acronyms and Abbreviations

| | |
|---|---|
| AQI | Air Quality Index |
| BADC | Bangladesh Agricultural Development Corporation |
| BAPA | Bangladesh Paribesh Andolan |
| BBC | British Broadcasting Corporation |
| BBS | Bangladesh Bureau of Statistics |
| BCAS | Bangladesh Centre for Advance Studies |
| BELA | Bangladesh Environmental Lawyers Association |
| BIP | Bangladesh Institute of Planners |
| BoI | Board of Investment |
| BPDB | Bangladesh Power Development Board |
| BTV | Bangladesh Television |
| BWDB | Bangladesh Water Development Board |
| CCFVI | Coastal City Flood Vulnerability Index |
| CCTV | Closed-Circuit Television |
| CDMP | Comprehensive Disaster Management Programme |
| CEGIS | Center for Environmental and Geographic Information Services |
| CUS | Centre for Urban Studies |
| DAP | Detailed Area Plan |
| DDM | Directorate of Disaster Management |
| Desco | Dhaka Electric Supply Company Limited |

| | |
|---|---|
| DO | Dissolved Oxygen |
| DoE | Department of Environment |
| DoF | Department of Forest |
| DMP | Dhaka Metropolitan Police |
| DPHE | Department of Public Health Engineering |
| DNCC | Dhaka North City Corporation |
| DSCC | Dhaka South City Corporation |
| DWASA | Dhaka Water and Sewerage Authority |
| GDP | Gross Domestic Products |
| IWM | Institute of Water Modelling |
| IWFM | Institute of Water and Flood Management |
| JICA | Japan International Cooperation Agency |
| KPI | Key Persons Interview |
| LGD | Local Government Division |
| LGED | Local Government and Engineering Department |
| LGRD | Local Government and Rural Development |
| MoDMR | Ministry of Disaster Management and Relief |
| MoWR | Ministry of Water Resources |
| NGO | Non-government Organisation |
| NHA | National Housing Authority |
| PID | Press Information Department |

| | |
|---|---|
| PWD | Public Works Department |
| pH | Potential Hydrogen |
| PM | Particulate Matters |
| Poba | Poribesh Bachao Andolan |
| PWD | Public Works Department |
| RHD | Roads and Highways Department |
| Rajuk | Rajdhani Unnayan Kartripakkha |
| SMS | Short Message Service |
| SPM | Suspended Particulate Matters |
| SPARRSO | Bangladesh Space Research and Remote Sensing Organization |
| SSC | Secondary School Certificate |
| SO2 | Sulfur dioxide |
| UDD | Urban Development Directorate |
| UN/ECE | United Nations Economic Commission for Europe |
| UNICEF | The United Nations Children's Emergency Fund |
| WASA | Water and Sewerage Authority |
| WARPO | Water Resources Planning Organization |
| WHO | World Health Organization |

# Chapter: 1
# Introduction

## 1.1 Introduction

Urban environmental problem is common phenomenon in Bangladesh. The urban centres like Dhaka city are particularly vulnerable to increasing intensities and frequencies of environmental hazards in recent years ostensibly due to the impacts of rapid and unplanned urbanisation. People have been facing various environmental hazards like floods, landslides, unchecked water pollution, water-logging, air pollution and water contamination in urban life. Especially, the people who live in the proximity of the vulnerable pockets like urban slums have been suffering a lot of troubles in absence of civic amenities.

It is predicted that the capital Dhaka, the centre of commerce and culture in Bangladesh, may face a grim prospect of total collapse within a decade due to unplanned urbanisation and its excessive population, and in absence of civic facilities.

The frequency of environmental hazards in Dhaka has been increasing in recent years due to unplanned urbanisation and changing climate. As a result of rapid and unplanned urbanisation and population growth, the climatic factors are changing unevenly, which cause environmental degradation of the city (Roy et al. 2014). Many calamities brought out in the city over the last couple of years, for instance at least 25 people were killed in a building collapse in Begunbari area, known to be a poor area of the capital, due to faulty design of the building and excessive rainfall on June 1, 2010. On the same month the devastating fire at Nimtoli in Old Dhaka, nearly 120 people have died and hundreds are injured on June 3, 2010 got the media coverage globally.

According to experts, Dhaka city will face a series of environmental problems in coming years due to destruction of city environment caused by its rapid growth of unplanned urbanisation. Dhaka is one of the most populous and mega cities in the world. The area of the city is about 1,353 square kilometres with more than 14 million people. It will become fifth larger city by 2030 in terms of population (Rahman et al. 2008).

Although all the problems are increasing here in recent years, no integrated step is taken to manage the emerging crisis, particularly to inform these environmental problems to the citizens in due course. Media has been playing a vital role to inform the city dwellers by disseminating urban environmental information, which helps people take precautionary measures to face upcoming environmental problems. In this regard, this study focuses on finding out the ways how the urban environmental information could be reached at the doorsteps of the city dwellers effectively, aiming to make them aware of urban problems.

### 1.2 Importance of the Study

At present, about 14 million people live in the capital of Bangladesh, and a huge number of people will be migrating in the city in the coming years seeking employment opportunities aimed at leading a better life. The people are migrating to Dhaka at a rate of six percent per year from other parts of the country, and their family growth rate is also contributing to the increased city population, which creates great pressure on the city. The population growth rate stands at 3 percent in the city, against 7 percent growth in city slums, contributing to the 1.4 percent average growth rate over the country.

The Dhaka's environment is already threatened due to many reasons, including excessive population and destroying low-lying areas. Because of pollution increase, electricity and water supply, sanitation and other urban facilities in Dhaka might collapse under the excessive pressure of city dwellers and environmental chaos will increase in coming days. The city's ecosystem will be destroying, as the surplus population will be compelled to build their homes in low-lying areas including wetland. According to experts, Dhaka is also highly vulnerable to earthquake as Bangladesh is situated at a high risk zone for earthquake and an unprecedented human disaster may occur in the city anytime for even a moderate to heavy tremor (CDMP, 2010). Water-logging is occurred in the city every year in absence of comprehensive drainage system, which triggers the city in great water congestion especially during the monsoon. Dhaka will also face an acute water crisis in coming decades as its groundwater is declining gradually. So, socio-economic and health related disasters may break out in the city at any moment.

Nowadays, environmental information is crucial for a society. It can play an important role to aware of people and help policymakers take effective policy in addressing urban environmental problems. In this regard, it is highly required to know how citizens' access to urban environmental information and help them manage urban environmental problems.

### 1.3 Aim and Specific Objectives

**Aim:** The main aim of the study is to explore the citizens' access to environmental information for a better understanding of the need for public environmental information, aiming at getting knowledge and information regarding urban environmental problems.

**Objectives:** Specific objectives of the study are as follows:

I. To identify the patterns and processes of urban environmental information in Dhaka city.
II. To provide a better understanding of the causes and consequences of getting lack of access to information to cope with urban environmental problems.
III. To provide guidelines for preparing an integrated model on urban environmental information focusing Dhaka city that will create a wide range of avenue to get and disseminate information.
IV. To suggest some policy guidelines to provide a better access to urban environmental information for effective preparedness in addressing upcoming environmental problems in Dhaka.

### 1.4 Methodology

A multi-disciplinary, participatory and interactive method was followed in carrying out the study. The study involved collection, compilation and analysis of data/information obtained from primary and secondary sources on urban environmental information, citizen's access to environmental information, and identification of the best way to disseminate information in order to achieve the objectives of the study.

Both primary and secondary data was collected and incorporated in the following ways:

### 1.4.1 Primary Data Collection

Primary data was collected from household level to know what access the people have to urban environmental information. Household data was collected though a survey from both the newly developed Dhaka and old Dhaka dividing three classes of people – lower-income group, middle-income group and higher-income group. Key Persons Interviews (KIPs) were also conducted on six groups to know the state of urban environmental information.

#### 1.4.1.1 Household Survey

The household survey was carried out in the capital during September 1 to September 20 in 2015. Data was collected from two areas of each group – lower-income group, middle-income group and higher-income group - living in the city.

***Selection of the Groups and Income Pattern***

The classification of income group people in Bangladesh is mainly three types such as higher-, middle- and lower-income groups. According to the class divisions, new studies reveal that 40 percent people of lower income group (household monthly income Tk 2,000-Tk 5,000) live in Dhaka city while 53 percent people of middle-income group (monthly income Tk 5,001-Tk 50,000) and 7 percent of upper income group (income Tk 50,001-above) (Rajuk, 2014 and STP, 2005). Household data was collected through systematic random samplings from 300 households of the city as per the rate of percentages of three groups.

***Selection of the Study Areas***

Survey areas have been selected as per class division of city dwellers – lower income group, middle income group and higher income group - living in the city. Household data was collected from 120 households of lower income people living in city's slums Kalyanpur Pora Bostee (slum) and Korail Bostee (60 households in each slum). Some 80 households and 79 households were surveyed at Nimtoli and Malibagh respectively to gather information about middle income group. Survey on higher income people was conducted at Dhanmondhi and Gulshan areas. Data

of higher income group was collected from 11 households of Dhanmondhi while 10 households from Gulshan area.

**Table: 1** Sampling design and selection

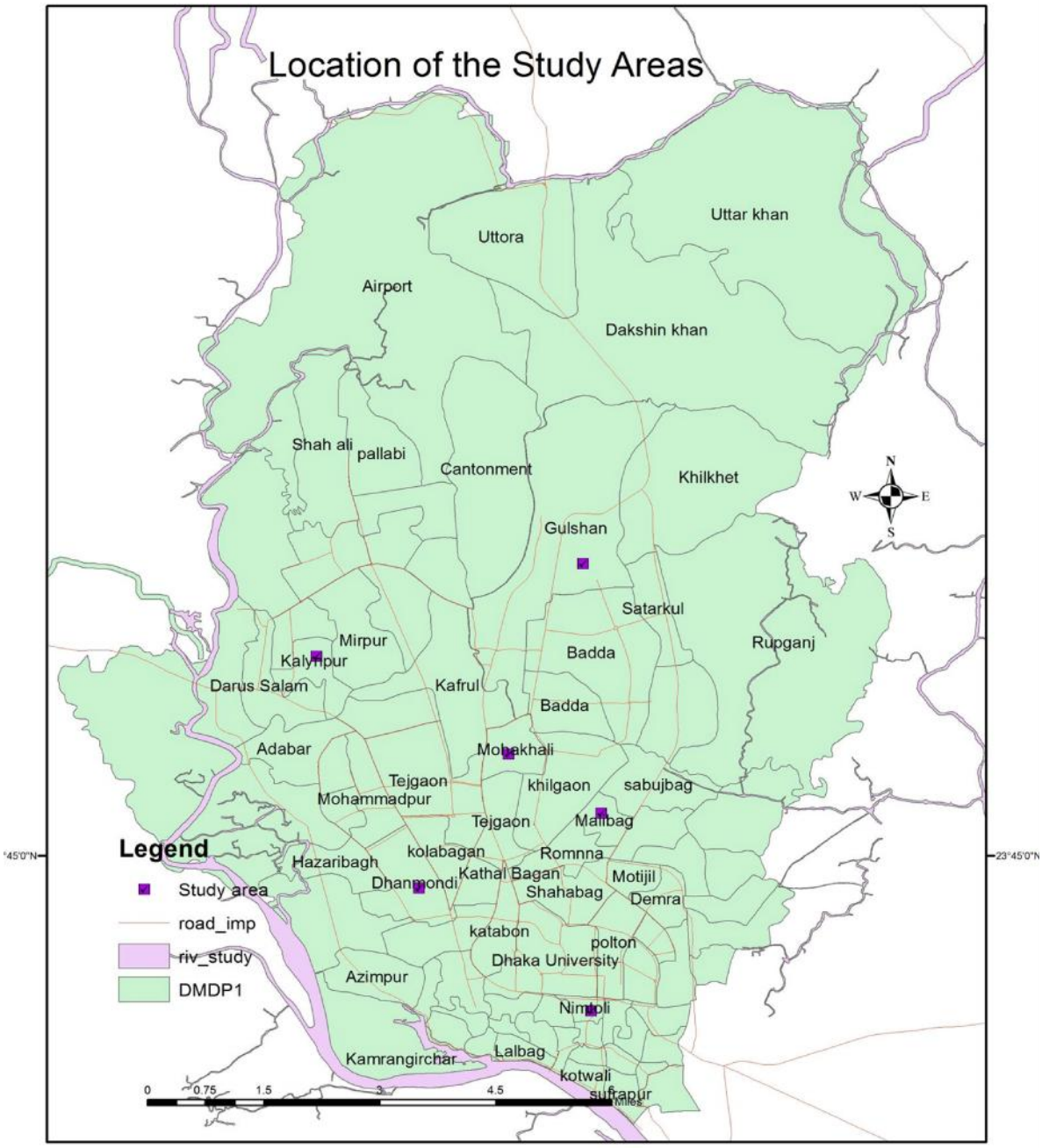
| Study Areas | Frequency | Percentage (%) |
|---|---|---|
| Kalyanpur Porabostee | 60 | 20.0 |
| Korail Bostee | 60 | 20.0 |
| Nimtoli | 80 | 26.7 |
| Malibagh | 79 | 26.3 |
| Gulshan | 10 | 3.3 |
| Dhanmondi | 11 | 3.7 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

***Questionnaire Design***

The household questionnaire was designed with six sections aiming to know overall scenario of households. First three sections were designed to collect general information, socioeconomic data and migration patterns of the households. Last three sections were designed to know the information related to the households' access to media, and their knowledge on environmental information and dissemination processes of urban environmental information. There were a total of 42 questions in the survey questionnaire (Appendix I).

**Map: 1** Locations of the study areas




Source: Base map collected from the GIS Lab, Department of Geography and Environment, University of Dhaka

***Pilot Survey***

Before conducting the household survey, a pilot survey was conducted in all survey areas. The aim of the pilot survey was to know the survey areas respondent's type and whether it was required to change in questionnaires. Two households from each group were surveyed during the pilot survey. After the pilot survey, a question was incorporated in the questionnaires to know whether media should play better role in dissemination of urban environmental information or not.

***Ethical Issues***

Importance was given on ethical issues during the study. No household was surveyed without permission of respondents and assured them of keeping their privacy and confidentiality. It was also assured that the respondents' addresses and other identities and private information would not be disclosed and the study was being carried out only for academic purpose.

***Refusal Rate***

Most of the household respondents had expressed enthusiasm to give their household information during the study. But, a few number of people, mostly from higher income group and middle income group, which would be less than five percent, refused to talk to in this regard.

**1.4.1.2 Key Persons Interview (KPI)**

Dhaka city is yet to form any integrated model on urban environmental information system. So, key persons interviews (KPIs) were taken during the study to identify the causes and consequences of lack of access to information aiming to suggest some policy guidelines to provide a better access to information and prepare an urban environmental information system of Dhaka city.

***Sampling Design***

A purposive sampling technique was adopted to select the respondents for KPI. Samples of KPIs were designed from different sections of people, including environmental reporters, senior

journalists, academics, researchers, professionals, policymakers and public representatives, who have involvement in urban environmental information.

***Selection of the KPI Samples***

KPI samples were selected from six groups - environmental reporters, senior journalists, academic/researchers, professionals, policymakers and public representatives. A total of 26 people were interviewed during the KPIs. At least two and maximum five persons were selected from each group.

The environmental reporters' group was selected particularly to know which sources they use to collect urban environmental information and how challenges they face in collecting the information. As media play a watchdog role, senior journalists were interviewed to know whether urban agencies are playing their respective role in information dissemination or not. Academic/researchers and professionals groups were selected to get information on patterns and processes of urban environmental information and their suggestions to introduce an integrated urban environmental information system for Dhaka city. KPIs were also conducted on policymakers to know present status of urban environmental governance in Dhaka. Public representatives like ward councilor were selected to take their experiences they face in dissemination urban information to the city dwellers and to know what they think of the introduction of an urban environmental system for the capital. Samples of the six groups are given in Table 2 bellow.

**Table: 2** Key Persons Interview (KPI) groups

| Group Name | Number of Respondents | Selection Criteria | Discussion Matters |
|---|---|---|---|
| Environmental reporters | 5 | Reporter | 1. Information dissemination<br>2. Role of respective agencies<br>3. Challenges to collection of urban environmental information<br>4. Benefits of urban environmental information<br>5. Urban Environmental information system |
| Senior journalists | 5 | 1. News editor<br>2. Chief news editor<br>3. Editor | 1. Urban environmental information<br>2. Role of respective agencies<br>3. Urban governance<br>4. Lack of coordination among the agencies<br>5. Urban Environmental information system |
| Academic/ Researchers | 5 | 1. University faculty members<br>2. Environmentalists, scientists<br>3. Independent researchers | 1. Patterns and processes of urban environmental information<br>2. Information dissemination<br>3. Role of respective agencies<br>4. Urban governance<br>5. Urban Environmental information system |
| Professionals | 4 | 1. Engineers<br>2.Urban planners<br>3. Architect<br>4. IT expert<br>5. Hydrologist | 1. Benefits of urban environmental information<br>2. Information dissemination<br>3. Role of respective agencies<br>4. Poor Urban governance |
| Policymakers | 5 | 1.Senior government officials<br>2. Heads of public institutions | 1. Patterns and processes of urban environmental information<br>2. Urban environmental Information dissemination<br>3. Policy formulation in urban governance<br>4. Political commitment in information dissemination<br>5. Urban Environmental information system |
| Public representatives | 2 | 1. Ward councilor<br>2. MP | 1. Information dissemination<br>2. Challenges of local government<br>3. Role of respective agencies<br>4. Urban governance<br>5. Urban Environmental information system |

***Questionnaire Design***

Separate questionnaire was designed for each group to understand their knowledge on urban environmental information because every group has no equal knowledge on it. Questionnaires were designed for professionals, reporters and senior journalists to know what kind of problems they face to get urban environmental information. Questionnaires designed for experts and policymakers specially giving emphasis on indentifying patterns and process of unban environmental information. A separate questionnaire designed for public representatives to know the policy gaps that impede to dissemination of urban environmental information to the city dwellers. Five to eight open-ended questions were inserted in the questionnaires (Appendix II).

***Pilot Survey***

Firstly, a pilot KPI survey was carried out on two environmental reporters and a policymaker to select suitable questions for KPIs aiming to understand the pattern and processes of urban environmental information, and brought some minor corrections with the questionnaires before conducting KPIs on different groups.

***Ethical Issues***

Ethical issues are always very important in conducting a research. Conducting the KPIs is not exceptional. Before going to conduct KPIs, permission of the interviewees was taken and assured them of keeping their privacy and confidentiality. It has been informed that the study was being carried out only for academic purpose, so their statements taken during KPIs to incorporate in the study will remain confidential. Thus, their remarks would not be disclosed in any way. Most of the KPIs were recorded in audio version, but some people, particularly the policymakers, did not agree to record their interviews. So, I took notes of their interviews. And three interviewees were interested to give their answers of the questions in written-format through email.

***Refusal Rate***

Key persons did not refuge to give interviews, but some of them were not able to give their interviews for time constraints and other limitations. A top senior government was supposed to give his interview. I went to his ministry office at the Secretariat five times, but did not give me interview. I particularly faced challenges to take interviews of policymakers and senior

journalists since it was very hard task to manage their time. After several efforts, I took interviews of two editors. It was relatively easy to interview academics, professionals, researchers and environmental reporters.

### 1.4.2 Secondary Data Collection

The secondary data is a vital part of this research. When a study is conducted in a unique field, the secondary data always play an important role to understand the problems of the study. So, the aim of collecting secondary data for my study was to give an in-depth background for the study. The secondary sources for the study was collected annual reports and other documents from the relevant government agencies in Bangladesh, relevant literature, and newspaper articles. Apart from these data sources, the project proposals, published and unpublished reports, books and journals of relevant organisations. Among the specific organisations are the Department of Environment (DoE), Rajuk (Rajdhani Unnayan Kartripakkha) and Centre for Urban Studies (CUS). For example, urban land use patterns data was collected from Rajuk. These data provides a background of changing context of urbanisation.

## 1.5 Organisation of the Thesis

Chapter one of this research gives an introduction about the importance of the study while its aims and objectives are described in the methodology of the study in detail. Literature review and conceptual development are incorporated in Chapter two. The patterns and processes of Dhaka's urban environmental information is discussed in Chapter three while current state of urban environmental information dissemination in Chapter four. Chapter five elucidates about urban environmental information system. The governance issue of urban environmental information and challenges of citizens' access to urban environmental information are highlighted in Chapter six. Finally, Chapter seven incorporates summery findings, recommendations and a conclusion of the study.

## 1.6 Conclusion

Dhaka city is facing multiple challenges in recent years due to unplanned and rapid urbanisation, pressure of excessive population, unchecked pollution and poor urban governance as well. Urbanisation of a chaotic city of a developing country like Dhaka is always a complex issue. Despite that, this chapter has given a background and describes the importance of the study since the city is currently facing various environmental challenges and the city dwellers are facing various environmental problems. The aims and objectives and methodology of the study are explained in the chapter, which gives a perception about the overall outcomes of the study.

# Chapter: 2

# Literature Review and Conceptual Development

## 2.1 Introduction

Despite having adverse socioeconomic and environmental consequences resulting from the rapid growth of urbanisation, the cities and towns are playing a crucial role in the national development in Bangladesh. The cities have existed in the history and played an important role in human destiny. But, contemporary urbanisation as a multi-layered phenomenon is a whole reality (Rahman, 2013). At present, city dwellers constitutes about 26 percent of total population of the country, but their contribution to the Gross Domestic Product (GDP) is more than 45 percent indicating that the productivity in urban areas is much higher than that of in rural areas (LGD, 2011). The total urban population of Bangladesh is already over 36 million and this population is growing at the rate of nearly 4 percent per annum (LGD, 2011).

Dhaka is the most densely populated and rapidly growing city in the third world countries. Dhaka city's current population is 1.48 crore. With its growth, Dhaka has been a showcase for almost every urban problem imaginable (Demographia, 2014). The quantitative and qualitative inadequacies of existing urban infrastructures and the inefficient urban and environment management systems that generally exist in the country are leading to severe environmental pollution and a degradation of standard of livings, health and well being (Sultana, 2009). The urbanisation is growing fast in the country creating various forms of environment problems. So, urban environmental information is required to take right policies and action plans to mitigate the urban environmental challenges.

## 2.2 Environmental Information

Environmental information is relatively a broader term, which includes all components and aspects that affects the overall environment in a particular area. Environmental information includes the information related to air, water, soil, land, flora and fauna, energy, noise, waste and

emissions. It also includes information about decisions, policies and activities that affects environment (Wikipedia, 2014).

The Environmental Information Regulations 2004 (EIR) have directly incorporated the definition of environmental information from the European Directive 2003/4/EC on public access to environmental information (Scottish Information Commissioner, 2012).

According to the EIR, environmental information would be any information that are written, visual, aural, electronic or any other material form on –

a) the state of the elements of the environment, such as air and atmosphere, water, soil, land, landscape and natural sites, including wetlands, coastal and marine areas, biological diversity and its components including genetically modified organisms, and the interaction among these elements;

(b) factors, such as substances, energy, noise, radiation or waste, including radioactive waste, emissions, discharges and other releases into the environment, affecting or likely to affect the elements of the environment referred to in (a);

(c) measures (including administrative measures), such as policies, legislation, plans, programmes, environmental agreements, and activities affecting or likely to affect the elements and factors as well as measures or activities designed to protect those elements;

(d) reports on the implementation of environmental legislation; cost-benefit and other economic analyses and assumptions used within the framework of the measures and activities.

e) the state of human health and safety, including the contamination of the food chain, where relevant, conditions of human life, cultural sites and built structures inasmuch as they are or may be affected by the state of the elements of the environment (Scottish Information Commissioner, 2012).

The environmental information is defined by Stephen and Anthea (2012) as it needed to:

• Better target public investment at the programme and project level

• Measure and understand the impacts and effectiveness of policies and investments

• Better identify and manage risks

• Enable the productive and sustainable use of natural resources

• Create markets for environmental goods and services, and foster linkages with carbon markets for wider environmental outcomes

• Provide an evidence base for decision-making

• Guide environmental planning, including through environmental impact assessments or influencing urban and regional development

• Drive more productive and sustainable practices in primary industries

• Enable integrated analysis to better capture synergies and understand tradeoffs between economic, social and environmental objectives

• Meet reporting requirements and international obligations.

Analysing the environmental information definition, the information related to the state of the elements of urban environment like air, water, soil, land, landscape, wetlands, coastal and marine areas, biological diversity and its components, urban socioeconomic components and the policy and action taken to deal with urban development and challenges could be defined as the urban environmental information.

## 2.3 Why Environmental Information

Urban environmental information is very crucial in taking effective polices for urban development and cope with the environmental challenges during any emergency period. Dhaka city experiences show that the authorities concerned face multiple challenges as they have no any integrated urban environmental information system. The comprehensive, trusted and timely environmental information can help the governments formulate right policies and take programmes based on evidence. Decisions with an environmental component – either impacting the environment or dealing with an impact of the environment on society or the economy – are made daily by individuals, businesses and all levels of government (Stephen and Anthea, 2012).

The systematic collection and dissemination of environmental information, such as chemical use data, have been useful to businesses, government and the general public. The information help the authorities stimulate pollution prevention, support emergency preparedness and enable meaningful community engagement in environmental decision-making (McKeown, 2006).

A case of Toronto shows that over the years, citizen access to urban environmental information help them advocate for safer and cleaner industries, encouraged companies to adopt environmental programmes and enabled governments to identify risks and explore solutions – all of which contribute to the health of communities. Access to the urban information can benefit the human health and quality of life by supporting emergency planning and preparedness and improving understanding of health and environmental risks (McKeown, 2006).

Urban information is also crucial to emergency preparedness about the storage and management of hazardous substances in the commercial and industrial areas. This information makes citizens aware of the toxic substances and enables them to assess potential risks to the environment and surrounding community. If the environmental information will make public, it may offer those communities surrounding the industries of hazardous substances give more opportunities to take better plan in addressing any emergency (McKeown, 2006).

Urban environmental information has been playing the roles of a key ingredient in developing and implementing a comprehensive policy that is sensitive to economic, social, cultural and environmental factors. High quality information that is accurate, timely, relevant and unbiased has facilitated effective networking and action for urban environmental management (Srinivas, 2009).

Considering the necessity of information, the members of the United Nations Economic Commission for Europe (UN/ECE) signed the Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters - the Aarhus Convention (UN/ECE 1998) calling the governments and public authorities to open up access to environmental information as a means to improve public participation in environmental decision-making and awareness of environmental issues (Mordechay, 2001).

## 2.4 Urban Environment in Dhaka

The concept of environment is different meanings to different people. Generally, the biotic and abiotic components and socioeconomic scenario of a certain location are considered as its environment. The term environment may be associated with restoring the vitality of tropical rain forests, maintaining biodiversity and arresting desertification, healthy and sustainable development, and agricultural and industrial issues. The issues such as ecology, biodiversity, climate change, desertification, global warming are included in the broader umbrella of environment. The urban environment is illustrated by the fact that most of today's global environmental problems can be traced back, directly or indirectly, to urban areas and urban lifestyles which have become the preferred choice for a majority of humanity (Srinivas, 2009).

### 2.4.1 Natural Environment

The urban natural environment encompasses all living and non-living things occurring naturally in an urbanised area. It is an environment that includes the interaction of all living species. A geographical area is regarded as a natural environment. The natural environment includes ecology, air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity (Wikipedia, 2014). In Dhaka, the natural environment has been deteriorating due to unplanned urbanisation.

#### 2.4.1.1 Air

Air is one of the key components of urban environment, but air quality of Dhaka city has deteriorated over the years. It is caused by a huge number of motorised vehicles on roads, lack of proper traffic management, improper land use planning, industrial growth, construction activities, re-suspension of dusts, and open burning (Karim, 2001).

The main pollutants of concern in Dhaka are the particulate matter (PM) and the motor vehicles are major contributors to PM pollution. Most of the vehicular PM pollution (> 80%) comes from the diesel-run vehicles in Dhaka. Thus major policy decisions in respect of diesel-run vehicle pollution control are imperative. The gasoline vehicles also contribute more to air pollution here (DoF, 2005).

**Plate: 1** Dust and smog clogged Dhaka's air is a reminder of the increasing pollution level in the country. Photo: clickittefaq.com (13 March 2016)

Road dust has also become the biggest source of pollution in the capital, especially during the dry season, for various unplanned construction works, posing a severe health threat to the city dwellers. The air pollution originating from construction work-related processes like concrete crushing, cement batching and road stone plants, is destroying the environment and clean air, depriving the city dwellers of breathing in fresh air (The Independent, 2016). But the Department of Environment (DoE) is yet to formulate any guideline to check dust pollution.

**Plate: 1** Unusual fog triggered by air pollution occurred in Dhaka city during a spring morning on March 5, 2016. Photo: Author

### 2.4.1.2 Water

Dhaka city is facing acute water challenges in recent years due to unchecked pollution of surface water and rampant withdrawal of ground water. The water quality of all the five rivers around Dhaka, including Buriganga, Balu, Turag and Shitalakhya, is deteriorating rapidly due to pollution from industrial and municipal sources, and the situation turns at alarming level during the dry season (Parliamentary Standing Committee on Ministry of Environment and Forests, 2010).

Due to highly contamination of surface water, almost all sections of the rivers and canals in the capital city and its surrounding areas are biologically dead, particularly during the dry season. Water of the rivers is unfit for human use even as well as irrigation (World Bank, 2007). Apart from the river and cannel water, the wetland water of the city is being contaminated day by day. A study (Razzak, Muntasir and Chowdhury, 2012) showed that Ramna Lake water is polluted by visitors' activity as the people pollute water by bathing and washing clothes on the lake while unplanned growth and development as well as poor infrastructures and systems, including sewer

and storm drains, and solid waste collection and disposal directly contribute to the water-logging problem in Dhanmondi lakeside area and pollute lake water.

**Plate: 3** Indiscriminate waste disposal highly contributes to water contamination in Hatirjheel Lake in the capital**.** Photo Credit: Daily New Nation (27 October 2014)

The lake water is also contaminated by heavy metal in Dhaka. A study (Mokaddes, Nahar, and Baten, 2013) revealed that the lakes of Dhaka city contained acceptable amount of As, Zn, Pb, Cd where Mn and Lead (Pb) exceeded the recommended limit for drinking water, irrigation water and for aquaculture giving an indication that the city lake water is hazardous for health, crops and aquaculture.

The capital city has also seen the highest depletion of ground water in last a decade. A study of BADC in 2011 revealed that the underground vacuum of Dhaka city was recharged by the water flowing from the North from the aquifer of Gazipur district and its adjuring areas. But, at present, these areas are suffering from severe depletion of groundwater level. The groundwater level in Dhaka city (Daily Star, 25 October 2011) has dropped by six metres in last seven years

due to excessive withdrawal of groundwater and inadequate recharging of underground vacuum. If the trend continues, the city will face a severe water crisis in the future.

**Plate: 4** Untreated industrial wastes contribute to water pollution of Buriganga River. Photo Credit: Fahad Kaiser

**2.4.1.3 Soil**

Unplanned industrialisation and over concentration of people are contributing to soil degradation in Dhaka city. The soil of city is being contaminated due to unchecked discharge of toxic industrial waste while the city faces a severe soil contamination in the industrial areas, especially in Hazaribagh and Tejgaon areas (DoF, 2005). Several studies found that soil of Tejgaon and Hazaribagh industrial areas brings to light severe contamination with heavy metals exceeding the environmental quality standards. A study of the Austrian Research Centre found the soil of Tejgaon is acidic with pH 5.7. Moreover, improper solid waste management also causes soil pollution through formation of leachate (DoF, 2005). Uddin, Parvin, Sultana and Hossain (2014) in a study showed the highest levels of metal concentrations like Cu, Pb, Zn, Cr and Cd were found in the samples collected from roadside of heavy traffic congestion. Another study (Ahmed

and Gani, 2010) revealed that concentrations of Cu, Zn, Pb, Cr, Cd, Fe, and Ni were observed in arable soils of Dhaka city.

#### 2.4.1.4 Climate

The Dhaka city experiences a hot, wet and humid tropical climate. According to the Köppen climate classification, the city has a tropical wet and dry climate. The average temperature in Dhaka is 78.9° F (26.1°C). The warmest month, on average, is June with an average temperature of 84.4°F (29.1°C) while the coolest month is January, with an average temperature of 66.3°F (19.1°C) (wealtherbase, 2014).

The highest temperature in Dhaka is 103.0°F (39.4°C) recorded in June while the lowest temperature is 49.0°F (9.4°C) was recorded in January. Approximately 87 percent of the annual average rainfall of 2,123 millimeters (83.5 in) occurs between May and October (Wikipedia, 2014). The city has seen the most rainfall in July with 14.7" (373.4 mm) of precipitation. The month with the least precipitation on average is January with an average of 0.3" (7.6 mm) (wealtherbase, 2014).

### 2.4.2 Built Environment in Dhaka

The built environment refers to the human-made surroundings that provide settings for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply, or energy networks. Broadly defined, the built environment is the human-made space in which people live, work, and recreate on a day-to-day basis. It includes the buildings and spaces. It can extend overhead in the form of electric transmission lines and underground in the form of landfills (Roof and Oleru, 2008).

The built environment comprises urban design, land use, and the transportation system, and encompasses patterns of human activity within the physical environment. But the area of the built environment is constantly changing in countless ways while some changes are fast and some are slow (Handy, Boarnet, Ewing, and Killingsworth, 2002). If all the aspects of city's built environment are considered, a worse scenario will be depicted.

### 2.4.2.1 Open Space

Open spaces make a city or town livable for people. In cities of developing countries, green open spaces are a must to ensure the environmental and ecological balance of a city. Once, Dhaka was called the Venice of the Orient because of its large open space with the lushness of nature. During the British period, Dhaka experienced a northward expansion while the peripheral green areas were incorporated within the city boundary. The Ramna Park was established in 1908 and the Sohrawardy Uddyan in 1972 with huge plantation (Khan, 2014).

Most of open spaces are decreasing in Dhaka gradually due to rapid urbanisation. In these days, it is suggested keeping 25 percent of land of an ideal city as open space. But, there is only 5 percent land of green and open in old Dhaka while 12 percent of land is green and open in new Dhaka. However, Dhaka Structure Plan urges to have 20 percent of open spaces in Dhaka for its future generation (Khan, 2014). The open spaces in the city are used by the middle income group for recreational purpose. The major open places in the city are Suhrawardy Udyan, Ramna Park, North and South Plaza of National Assembly Building, Chandrima Udyan and National Parade. Lack of consciousness and initiatives from both public and private sectors towards ecology, environment and sociological factors have triggered the rapid decline of open spaces and water-bodies and increasing loss of accessibility to the open spaces.

**Plate: 5** While open spaces in Dhaka city are shrinking rapidly everywhere, Shikkatuli Park in Nazirabazar is giving a breathing space for children and the elders.

Source: The Daily Star, 16 July 2015

### 2.4.2.2 Physical Infrastructures

Dhaka has experienced a high economic growth guided by the rapid growth of urbanisation. Physical infrastructures of the city are growing day by day keeping pace with the rapid urbanisation. But, most of the physical infrastructures i.e. buildings of Dhaka city did not follow the characteristics of sustainability resulting significant threats to well beings (Bahauddin et al. 2014). Several studies have indicated that buildings of the city are designed without giving due importance to the parameters that are responsible for enabling thermal comfort without much dependence on energy use. Bahauddin et al. show that Bangladesh is one of the very few countries that do not have any energy codes for the buildings even though the cities are highly dense.

**Plate: 6** Indiscriminate constructions of buildings in Dhaka city contributes to rapid and unplanned urbanisation. Photo Credit: Fahad Kaizer

The government of Bangladesh is setting up mega structures like flyover to cut traffic congestion in the city. The first flyover of Bangladesh is the 1.12-km Mohakhali flyover commissioned on October 4, 2004, followed by Khilgaon flyover, Mirpur-Airport Road Flyover and most recent Jatrabari-Gulistan flyover.

**Plate: 7** Construction work of Moghbazar-Malibagh Flyover Project is going on in the capital. Photo credit: Author

The Local Government Engineering Department (LGED) under the Ministry of Local Government and Rural Development (LGRD) and Cooperatives is now implementing the Moghbazar-Mouchak Flyover Project involving around Tk 7.73 billion (unbconnect, 2014). Taleb and Majumder in their study in 2012 showed that such flyover did not cut tariff congestion in the city whereas traffic congestion increased on the surrounding areas of the flyovers.

### 2.4.2.3 Road Network

The Transport system, particularly road network, is very important for a city, which affects smooth and efficient movement of people and commodities. A well-articulated road network system usually occupies 20 to 40 percent of urban area depending upon the size, function and character of the city, but only 9 percent of the total city area is road space (Mahmud, Hoque and Qazi, 2008).

**Plate: 8** Two pedestrians watch their steps before they walk past a broken covering of a sewerage line on a narrow road in the capital's Lalbagh area. Photo: Dhaka Tribune (28 March 2014)

A study conducted by Madmud and others found that the pavement space of the road is only 6 percent in the city corporation area of the 1,286 km of road, comprising 61 km primary, 108 km secondary, 221 km connector, 573 km local and rest narrow road. It is found that there are only

107 kilometers road which width more than 24 metres in all over the city of Dhaka city among the total 1,286 km road. Indeed, there are only 45 km of road, which pavement width more than 24 metres. Among the total road of the Dhaka City Corporation area, 821.61 (64%) km road width is more or equal to 4.75 metre. The study is also found that there are only 2.15 km of road is available for 10,000 of population and pavement space available only 0.015 square km. The availability of major roads in terms of either km per thousand people or km per square kilometer of area is too low as compared to the other cities of developing countries. The existing road in the entire city road network is not quite enough and is the one-forth of the minimum requirement of a modern city (Mahmud et al., 2008).

**Plate: 9** Gigantic traffic congestion takes place on city streets, accelerating suffering to city dwellers in urban life.

Photo Credit: Author

A huge number of pedestrians use footpaths to go for their a safe and hassle-free walk to go their destination in the capital every day, but almost all the footpaths in the capital are illegally occupied by hawkers and others. Two city corporations – Dhaka South City Corporation (DSCC) and Dhaka North City Corporation (DNCC) – are responsible for maintaining about 163 km of footpath across the city, of which about 108 kilometers are now under illegal occupation, creating obstacles to free pedestrian movement (The Independent, 2015).


**Plate: 10** Vendors installed makeshifts occupying footpaths of Dhaka city, which creates obstacles to free movement of pedestrians. Photo: Author

### 2.4.3 Socioeconomic Environment

Dhaka is one of the fastest growing mega cities in the world, with slum population seemingly outpacing the growth of other urban areas. Still, the country has no comprehensive policy on urbanisation or urban poverty reduction. It was widely believed that people migrated to the cities for work putting pressure on the mega city. The migrants initially choose to settle slums with the lowest levels of services, including predominantly poor housing, high population density and room crowding (more than 1,000 persons per acre), very poor environmental services, low socioeconomic status, permanent threat of eviction and poor governance (Unicef, 2010).

### 2.4.3.1 Urban Poverty

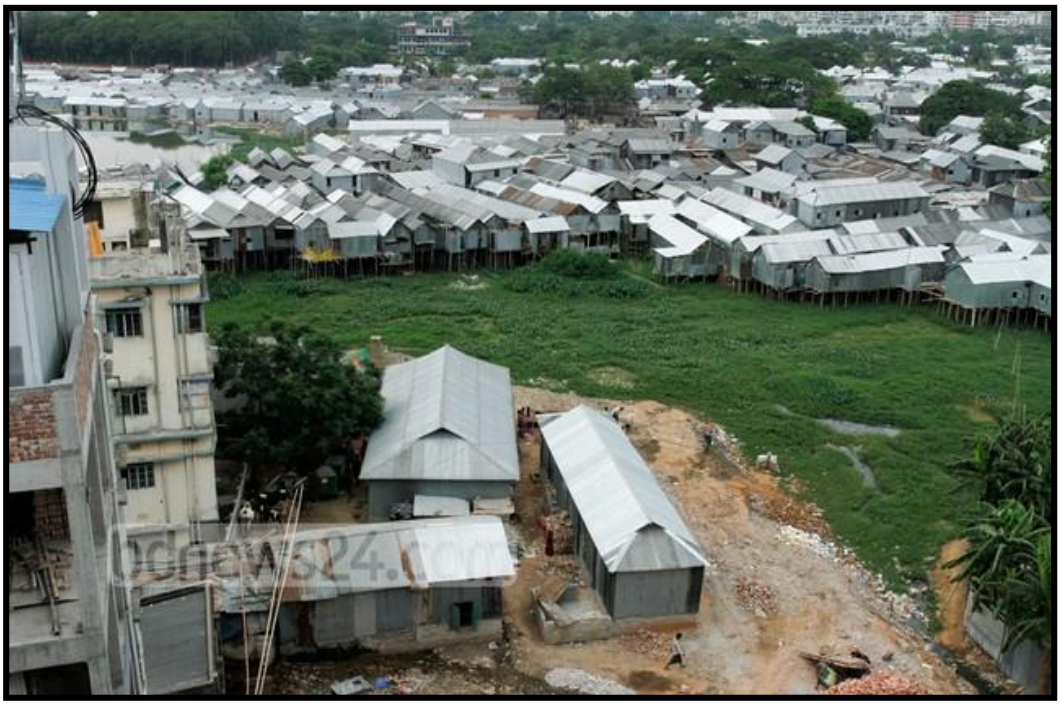
The phenomenon of slums and squatters in Dhaka is as old as the city itself. But the city has experience a growth of slums and squatters since the independence of the country in 1971. Only 10 slums existed with population of 10,000 by the end of 1976. The number increased to 2,156 settlements with population of 718,143 in 1993 while 3007 settlements with 1.1 million people in 1996. About 90 percent of informal settlements were built in the city in the last three decades (Hossain, 2008). According to the 2005 Census of Urban Slums, the total slum population in the six largest cities of Bangladesh was 5.4 million compared to a total urban population of roughly 15.6 million. The population of slums is about 5 percent of the total population or about 7 million people in 2010 (Unicef, 2010). A study carried out by Hossain in 2008 found that the slum population in Dhaka city faces extreme poverty due to its low level of earnings and the majority of them are living below the poverty line in terms of caloric intake and cost of the basic needs.

**Plate: 11** Two mothers along with their children are sitting on makeshifts in an urban slum in the capital Dhaka. Photo: Online

### 2.4.3.2 Housing

Housing is a physical commodity, which includes various utility facilities and services such as water supply, electricity and sanitation and access provision apart from dwellings. By housing it is meant not only a mere form of shelter but also it includes those qualities of comfort, convenience and amenities, which are essential for social well being of families (Hasan, 2002). Housing is the total living environment, including dwelling units, land, the neighborhood services and utilities needed for the well being of its inhabitants.

**Plate: 12** Karial Slum is the biggest slum of capital Dhaka, where urban poor live without civic amenities.




Source: bdnews24.com (29 June 2015)

As population is growing in the mega city, the rapid urbanisation is pushing threat to the housing sector (Nasrin, 2011). Nasrin in her study has shown that only 13 percent of DMP area is required to accommodate 30 percent of affordable people using a density of 350 people per acre whereas the supply is almost double (24 percent) than demand. It will be impossible to accommodate the total population of DMP area if the trend is practiced as 95 percent of city area will require to accommodate its total population by 2025 (Nasrin, 2011). Ensuring housing

facility for city dwellers is very significant to attain sustainable urban development as Dhaka is one of the largest growing mega cities in the world. Growing population of the city is creating excessive pressure on land and posing an adverse impact on house rent. The high rental price of housing in the city pushes the city dwellers in trouble, especially lower and middle income groups (Jahan and Kalam, 2012).

Jahan and Kalam in their study (2012) also revealed that the middle income group of Dhaka lives in an unaffordable housing condition making compromises in other essential expenses. About 24.17 percent households live in affordable housing of the city, among them 1.67 percent is lower-middle income households, 7.50 percent is middle-middle income households and 15 percent is upper-middle income group households. The lower-middle income group of the city suffers the housing problem more. The study also showed that over 50 percent of middle-income group people of Dhaka city pay from 31-40 percent house rent of their monthly income which is unaffordable for every individual household. As a big proportion of the income of middle income group has to pay as house rent, they suffer from for lack of other urban amenities and human needs.

#### 2.4.3.3 Education

Despite a huge facility of education, the slum dwellers are the most deprived group in the city as they have limited access to the existing educational opportunities. Although official statistic shows that enrolment in primary level is higher in urban areas than rural, the enrolment is very low in slums (Hossain, 2008). While the national average for net attendance in secondary education is 49 percent (48 percent in rural areas and 53 percent in urban areas), it is only 18 percent in slums (Unicef, 2010).

**Plate: 13** A street child is taking food from garbage. Like him, thousands of street children are still deprived of education and other basic rights. Photo: Daily Star (October 18, 2015)

### 2.4.3.4 Land tenure

Slum dwellers in the Dhaka city are extremely vulnerable to in terms of their access to land as they have mostly settled temporally on public or private land and are often evicted (Hossain, 2008). The poor communities have no access to urban land and the most have been forced to settle on vacant land on the periphery of the city, where they have been relocated because of increasing demand for land and its increasing value (Hossain, 2013).


**Plate: 14** The Housing and Public Works Ministry conducted an eviction drive at a slum in Dhaka's Kallyanpur on January 21, 2016. Photo: bdnews24.com

### 2.4.3.5 Environmental Hazards

Pollution always affects the poor more live in the urban periphery where there is a poor environmental protection. The low income group lives in the environmental sensitive sites such as flood plains, near solid waste dumps and open drains. The poorest people thus suffer the most from the floods, landslides or other disasters that increasingly batter the cities of developing countries (Ichimura, 2003). The daily paid workers are more vulnerable to flooding. Generally, the lower socioeconomic groups and new migrants face greater difficulties with income insecurity and face trouble more coping with any disruption to their income during time it takes for industries to resume production after flooding (Bhat et al. 2013). The poor quality of construction materials makes their houses vulnerable to urban flooding. The poor living in the urban peripheries is the worst victims of environmental hazards as they have poor capacity to deal with the environmental shocks (Hossain, 2013).

### 2.4.3.6 Healthcare

As slum dwellers living in poor environment suffer from different diseases while infant and children are the most affected group in the urban slums. Hossain (2013) shows that despite vulnerability and prevalence of diseases, they have limited access to available healthcare services. Access to health clinics is limited for the poor while only 7.3 percent of slums have a public health clinic (Unicef, 2010).

### 2.4.3.7 Civic Facilities

The slum dwellers have limited access to urban services like safe water, electricity, gas, toilet facilities and garbage disposal. Hossain in his study (2008) showed that most of the slum dwellers have access to safe water for drinking purpose only, but use unsafe water for washing, bathing and other purposes. The study reveals that only 20 percent have access to sanitary latrines, 72 percent have no access to gas and most of the households (88 percent) have no access to underground drainage system.

**Plate: 15** Slum dwellers in Dhaka use unsafe water for their household purpose putting them at risk. Photo: ViewsWeek (16 November 2015)

### 2.4.3.8 Land Use Pattern

Land use pattern in Dhaka city and its outskirts has rapidly changed due to unplanned urbanisation. A Rajuk study in 2014 showed that agricultural land in and around Dhaka was reduced by about 12 percent while water-bodies by 2 percent during 2006-2013. The residential areas increased to 9 percent during the period. According to the Detailed Area Plan (DAP) Survey 2006 of Rajuk, land in and around the capital was 54.8 percent agricultural land, 28.16 percent residential areas ,9.57 percent water-bodies and 1.82 percent circulation networks. But, the figures stood at 42.49 percent for agriculture, 7.84 percent water-bodies, 2.44 percent circulation networks and 37.36 percent for residential areas in 2013 (Rajuk, 2014).


**Plate: 16** A land developer sets up a signboard on an arable piece of land on the Balu River at Moynartek advertising its housing project. The paddy field and the spot for the ad belong to the river. Photo: Daily Star (August 2, 2011)

Agricultural land and wetlands are desperately being occupied to build residents or other structures in the city. But, conversion of agricultural land and forest as well as reclaiming of wetlands for urban uses and infrastructure, are associated with widespread removal of vegetation

to support urban ecosystem and put additional pressure on nearby areas that may be even more ecologically sensitive (Ichimura, 2003). Although transformation of land use is a common phenomenon in Dhaka city, land use changes put unprecedented challenges and problems on infrastructure provision, community facilities; and historical and environmental preservation. However, this situation is most acute in the residential areas developed by private sector compared with the areas developed by public sector (Nahrin, 2008). If the unusual change of land use could not be stopped, many socio-environmental hazards will bring out in city in the coming days.

#### 2.4.3.9 Waste Scenario

The waste generation has become an increasingly important issue over the last two decades due to a marked increase in waste production in Dhaka City. Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) are facing challenges to manage the waste with its limited resources and a poor management plan (Asaduzzaman, Islam and Chowdhury, 2014). Asaduzzaman (et al. 2014) in a study shows that solid waste production in Dhaka City is more than 4,000 metric tonnes per day.

**Plate: 17** Women are collecting solid waste materials from open garbage in Dhaka city amid high health risk. Photo: Fahad Kaiser

There are many sources of waste production, but the wastes are generated from three potential sources – households, industries and hospitals.

***Household waste***

Household waste is a major source of solid waste. About 1,718 tonnes of household waste is generated in the capital per day with a percentage of 49.08 percent of total wastes (Tania, 2014). Dhaka city produces 3,000 tonnes of solid waste each day (Chowdhury and Rownok, 2006).

**Plate: 18** Refuse tricycles collect domestic waste and deposit it in the community bin. Photo: Author

***Industrial waste***

The industries located at the city surrounding rivers are discharging untreated waste into the rivers destroying the environment of Dhaka city. The industrial waste is more dangerous as huge chimerical are used by different industries like sulfuric acid, chromium, ammonium sulfate, ammonium chloride, and calcium oxide. According to a report of the Poribesh Bachao Andolon (Poba), about 21,000 cubic metres of untreated toxic waste from tanneries in the city's Hazaribagh is released into Buriganga River per day (Daily Star, 2014). Another study conducted by Tania in 2014 reveals that there are about 149 tanneries in Hazaribagh area in Dhaka and they are producing 18,000 litres of liquid wastes and 115 tonnes of solid wastes.

**Plate: 19** A tannery of the city's Hazaribagh is discharging untreated chemical wastes into Buriganga River, polluting its water. Photo: theguardian (23 October 2015)

***Medical waste***

There are more than 500 clinics and hospitals in Dhaka City, and all hospitals and clinics are producing a huge amount of waste every day. It is estimated that 20 percent of the whole hospital wastes (255 tonnes, 7.29 percent of total solid waste generated per day) generated in the city is infectious and dangerous (Tania, 2014). Of total the solid wastes, about 200 metric tonnes of hospital and clinical waste is a mixture of toxic chemicals, radioactive elements and pathological substances, which are highly dangerous for human lives (Asaduzzaman, et al. 2014).

## 2.5 Urban Environmental Quality in Dhaka

Dhaka city is located in the central part of Bangladesh, which situated on the northern bank of the Buriganga River. The city is bounded by the Balu River in the East, Tongi Khal in the North and Turag River in the west (Islam et al. 2010). The city lies on the lower reaches of the Ganges

Delta and covers a total area of 360 square kilometres (140 sq mi). Dhaka District has an area of 1,463.60 square kilometres (565 sq mi) with a population of 18,305,671 in 2012; and is bounded by the districts of Gazipur, Tangail, Munshiganj, Rajbari, Narayanganj, Manikganj. It has tropical vegetation and moist soils characterized land, which is flat and close to sea level. This leaves Dhaka susceptible to flooding during the monsoon seasons owing to heavy rainfall and cyclones (JICA, 1991).

Despite having a beautiful geographical setting, Dhaka is one of the most polluted cities in the world. Due to rapid growth of unplanned urbanisation and high concentration of people, air and water pollution originating from traffic congestion and industrial wastes are serious problems in the capital, affecting public health and posing threat to the biodiversity. Three pollutants- Suspended Particulate Matter (SPM), Sulfur dioxide (S02), and air-borne-lead pose significant air pollution problems, and have major public health impacts. Among the pollutants, SPM whose levels are 5 to 6 times higher than Bangladesh Standard in the heavily polluted districts in Dhaka is the most harmful one (Azad, Sultana and Jahan, 2003). The air of Dhaka city is regularly being polluted by motor vehicle emissions, small industries, dumping of solid waste, brick burning and tanneries. As per the guidelines of the World Health Organization (WHO), the maximum allowable airborne particulate matter is 150 microgram per cubic meter. But, according to the Department of Environment (DoE), the density of airborne particulate matter reaches 463 microgram per cubic meter during dry season in Dhaka (Kabir, 2012). Studies reveals city air pollution causes a heavy loss in terms of money as well as casualties. A study (Azad et al. 2003) showed that the number of excess deaths per annum is 10,350 due to PM 10 pollution in Dhaka. For PM 10 pollution, this study predicts about 74 thousand cases of chronic bronchitis, about 70 million cases of restricted activity days, about 14 thousand cases of respiratory hospital diseases, about 2.8 million cases of asthma attacks and over 220 million respiratory symptom days. About the economic loss of air pollution, the study assessed the country has to bear a total of Taka 124 billion as cost of air pollution induced diseases, which 3-4 percent of the national Gross Domestic Product (GDP).

Apart from air pollution, unchecked water pollution has brought heavy toll on the city environment as the rivers surrounding the city and water-bodies in Dhaka are highly contaminated. A survey conducted in 2014 by a group of experts under Poribesh Bachao

Andolon (Poba) at different spots on the Buriganga River -- from Sadarghat to Pagla -- showed inadequate presence of dissolved oxygen (DO) in the water to support the existence of fish and other living organisms. The presence of intoxicants in its water is higher than the level suitable for living organisms. The DO levels were between 0.21 milligram per litre and 0.55 milligram per litre (unbconnect, 2014). So, no organism can survive in the highly contaminated waters posing serious threat to city environment.

## 2.6 Dhaka's Environmental Challenges

Dhaka is facing multidimensional challenges over the years due to rapid growth of urbanisation and its excessive population. The city frequently experiences environmental hazard each year. The man-made disasters like fire are on the rise in the capital for lack of fire safety in buildings. More than 100 people were killed and hundreds injured in a devastating fire at Nimtoli in the Old Dhaka on June 3, 2010 (BBC, 2010). On 24 November 2012, Some 117 people were confirmed dead and some 200 were injured in another fire at the Tazreen Fashion factory in the Ashulia, the outskirts of Dhaka, making it the deadliest factory fire in the nation's history (Wikipedia, 2012). At least seven female workers were killed and 14 others injured in another fire broke out at a readymade garment factory in the city's Mohammadpur area on January 26 in 2013 (bdnews24.com, 2013). The man-made environmental hazards are on the rise in absence of coordination of the government bodies responsible to manage city environment.

**Plate: 20** Water-logging is a common phenomenon of Dhaka city, which its faces during monsoon every year. Photo: Author

On the other hand, urban flooding is a common phenomenon in the capital. Every year, the city suffers from flooding as torrential rain inundates many parts of the capital during monsoon accelerating the sufferings of city dwellers. About the vulnerability to flooding, the Coastal City Flood Vulnerability Index (CCFVI) developed by the researchers of the Netherlands and the University of Leeds (Balica et al. 2012) shows that Dhaka is the second most vulnerable city to flooding among nine coastal cities around the world. The city is vulnerable to flooding particularly during monsoon (June to October). This vulnerability to flooding occurs due to swelling of surrounding rivers and intensive rainfall that generates runoff, which is beyond the capacity of the existing drainage facilities. The capital has experienced a number of floods in each decade. Nearly 50 percent of the people in the city live in low-lying areas where water-logging and drainage congestion due to river floods and excessive rainfall cause serious miseries (Yahya et al. 2010).

Although the city once was called as the Venice of the East or the City of Channels, it has been suffering from many environmental problems, including flooding, water-logging and other

related problems losing its natural water channels (Dani, 1962). The wetlands of Dhaka has been are changing very rapidly. Once there were numerous lowlands, khals and cannels within and around Dhaka that would drain the city efficiently (JICA, 1991). Cannels of the city are used to be the connecting channels of the rivers surrounded by the greater Dhaka. But, nowadays the situation is completely different as the city has spread over the years in all directions and such expansion has caused shrinkage of the natural drainage and wetlands. In 1960, the total area of water-bodies and lowlands were 29,52.02 ha and 13,527.58 ha, respectively. In 1988, the total area of the same decreased to 2103.62 ha and 12717.73 ha, respectively. This deteriorated further, occupying an area of 1990.71 ha in 2008 which indicates that the lowlands continued to decrease. The water bodies and lowlands decreased by 32.57 percent and 52.58 percent, respectively during 1960 and 2008 (Islam et al. 2010). The shrinking trend of wetlands makes the drainage system of Dhaka city is posing threat to water-logging problems. Land filling and encroachment were recognised to be the main reasons for changing wetlands in the city. Ecologically wetland has a great importance and the loss of wetlands in an area can create a large number of environmental problems. However, it is widely believed that wetlands are crucial for Dhaka to keep the city ecological balance and free from water-logging during heavy shower.

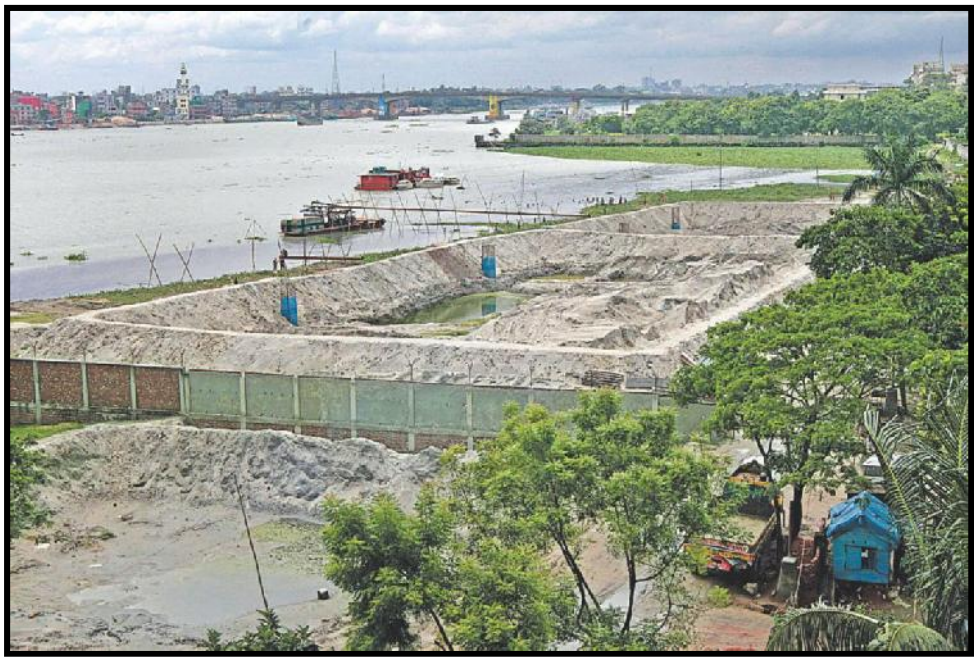


**Plate: 21** Illegal encroachment upon the Buriganga riverbank, which aggravates urban flooding in the capital**.**

Source: The Daily Star, January 01, 2016

Along with surface environmental problems, Dhaka is also located on the jaw of geological environmental hazards. Although the city has not experienced any major earthquake in last 100

years, it is one of the world's 20 cities, which are most vulnerable to earthquakes. Due to rapid growth of urbanisation and its geological location, Dhaka is the most vulnerable to earthquake. A study conducted by the Comprehensive Disaster Management Programme (CDMP) in 2010 depicts the vulnerability of the city. The study predicts that some 78,323 buildings will be destroyed completely if a 6-magnitude earthquake shakes Dhaka, causing havoc throughout the densely populated capital city (MoDMR, 2010). In case of a 7.5-magnitude earthquake from Madhupur Fault, some 72,316 buildings will be damaged totally - while an estimated 53,166 will be partially destroyed. If an 8.5-magnitude tremor from the plate boundary of Fault-2 hits the region, some 238,164 buildings will be destroyed completely across the country. There will be an economic loss of about US$ 1.1 billion resulting from only structural damage in case of a 7.5-magnitude earthquake from the Madhupur Fault. Economic loss due to damage of structures will be US$ 650 million and US$ 1.07 billion respectively in case of an 8-magnitude earthquake from the plate boundary-2 and in case of a 6-magnitude earthquake from under Dhaka city, the CDMP study says.

**Plate: 22** A century old buildings in Old Dhaka, which speak of history, has archeological values but highly vulnerable to earthquake. Photo: Daily Star (March 08, 2015)

About 30 million tonnes of debris, equal to 2,880,000 truckloads (25 tonnes per truck), will be generated if a 6-magnitude earthquake jolts the city from beneath it. A 7.5-magnitude earthquake from the Madhupur Fault will generate a total of 30 million tonnes of debris, killing some 131,029 people instantly and injuring 32,948 others. The CDMP study says at least 10 major hospitals, 90 schools in the capital will be destroyed completely and another 241 hospitals and clinics, 30 police stations and four fire stations partially in case of a 7.5-magnitude quake.

## 2.7 Conclusion

This chapter has reviewed the urban environment of Dhaka city in developing would perspective and identified some environmental themes that are relevant to urban environmental information. As Dhaka city will face more challenges in the days to come, city dwellers will experience severe environmental problems. Dhaka city has already been facing many environmental challenges. The water bodies and lowlands decreased by 32.57 percent and 52.58 percent respectively during 1960 and 2008, accelerating water-logging here (Islam et al. 2010). Land use pattern and its outskirts have rapidly changed here due to unplanned urbanisation. Agricultural land in and around Dhaka was reduced by about 12 percent while water-bodies by 2 percent during 2006-2013 (Rajuk, 2014). Hence, understanding the nature, causes and consequences of urban environmental problems will help the government, policymakers and public representatives take right policy to make urban environmental available for all.

# Chapter: 3
# Patterns and Processes of Urban Environmental Information in Dhaka

## 3.1 Introduction

Urban environmental information plays a crucial role for development of a city. It helps city dwellers be aware of city environment and policymakers take right policies. But there is no proper dissemination system of urban environmental information in Dhaka, which makes lives of city dwellers miserable for lack of information. So, understanding the patterns and processes of urban environment is a key to develop an urban environmental system for the capital aiming to make information available to city dwellers.

## 3.2 Characteristics of the Respondents

The household survey has given a perception about the characteristics of the respondents of the study. Data was collected from the different age groups of the respondent (male and female) during the survey to know various characteristics of the respondents, including their residential status, marital status, educational status and family status and migration trends as well.

### 3.2.1 Age

The respondents have divided into four age groups – bellow 20, 20-30, 31-40 and above 40. Relatively young people had participated in the survey and showed more enthusiastic to respond. Young people aged 20-40 came up with positively respond to the survey because they are more aware of the city environment. Some under-20 respondents willingly participated in the survey in absence of their parents while respondents aged above 40 years showed lack of interest to participate the survey as they are not aware of urban environment. Survey data shows that about 37.7 percent of respondents' age is in between 20-30 years followed by 31 percent in 31-40 years and 28 percent about 40 years. About 3.3 percent respondents' age was bellow 20 years. More

interesting thing is that participants of lower income group from all ages were more interested to respond the survey than other middle income and higher class groups.

**Table: 3** Age of the respondents

| Age groups | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Below 20 | 10 | 3.3 |
| 20-30 | 113 | 37.7 |
| 31-40 | 93 | 31.0 |
| Above 40 | 84 | 28.0 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

### 3.2.2 Gender

Most of the respondents of the survey were males who actively participated in the survey. The female respondents showed comparatively less interest to respond the survey when their male-heads were present at home. In contrast, female were more enthusiastic to respond in absence of their family heads. The household survey shows that majority (76.3 percent) respondents are male while only 23.7 percent is female.

### 3.2.3 Residential Status

Most of the respondents are doing jobs or services or business and permanently living the capital. About the residential status of the respondents, the survey reveals that majority (90.3 percent) live in the capital permanently while only 9.7 percent live here temporarily. The people who live in the city temporality come there as seasonal migrants seeking works and they go back their village homes.

**Table: 4** Residential statuses of the respondents

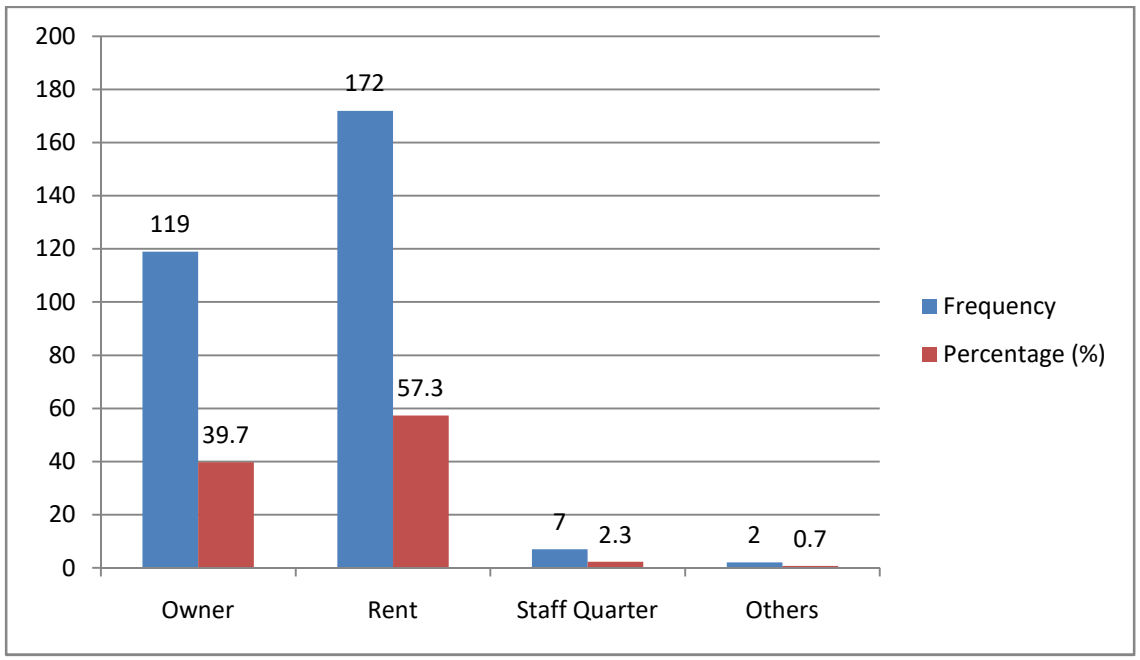
| Residential Status | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Permanent in Dhaka | 271 | 90.3 |
| Temporary in Dhaka | 29 | 9.7 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

***House Tenure***

Majority of the respondents, particularly lower income group and middle income group, live in rented houses in the city because they come in the city due to their work purpose. The survey found that a significant number of respondents were house owners. The result came out because the house owners were more interested to respond the survey than tenants as they play a strong role in their respective communities. Survey data shows that about 57 percent respondents live in rented houses and only 2.7 percent live in staff quarter. In contrast, 37.3 percent live in their own houses in the capital.

**Figure: 1** House tenure status of the respondents

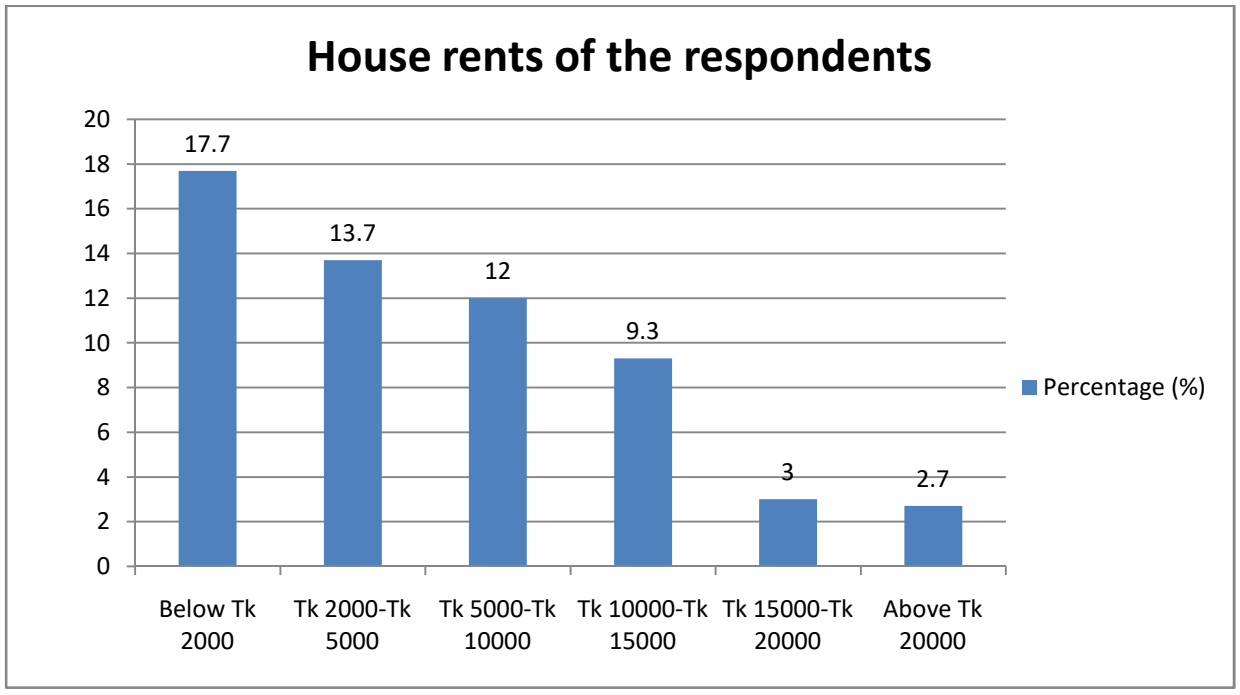



Source: Household Survey, 2015

***House Rent***

About 58.3 percent respondents said that they live in rented houses while 37 percent have own houses. As per amount of house rents, the participants can be divided into the groups – low-paid tenant, middle-paid tenant and high-paid tenant. Low-income people live in low-paid rented house. Most of them live at slums paying below Tk 5,000 monthly. Data shows that about 17.7 percent ultra poor people pay Tk bellow 2,000 monthly while 13.7 percent of poor pay in between over 2000-5,000 as house rent monthly. Middle income group pay monthly house rent from Tk 5,000 to Tk 15,000. Out of 21.3 percent of middle income people, 12 percent pay in between above Tk 5,000 to Tk 10,000 and 9.3 percent within above Tk 10,000 to bellow Tk 15,000. About 5.6 percent of higher income group spends more than Tk 15,000 per month as house rent. Of them, 3 percent pay above Tk 15,000 to Tk 20,000 while 2.6 percent spend above Tk 20,000 per month.

**Figure: 2** House rents of the respondents




Source: Household Survey, 2015

### 3.2.4 Marital Status

As most of respondents covered by the study are adult, they are married (79 percent). Only 3.3 percent of respondents were below 20 years old. Particularly this group with some others did not get married. Survey data shows that 21 percent respondents are yet to get married.

**Table: 5** Marital status of the respondents

| Marital Status | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Married | 237 | 79.0 |
| Unmarried | 63 | 21.0 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

### 3.2.5 Educational Status

Table 6 shows that a significant number of respondents (about 30.3 percent), who come from rural areas seeking works in the city and live in urban slums, are illiterate and some others (14.3 percent) completed primary education only. Also, about 10 percent respondents did not able to pass the Secondary School Certificate (SCC). Those respondents came from lower income group who have also been living at city slums. Most of the respondents who are literate (SSC to graduation) came from middle income group. About 5.3 percent respondents have post graduation and most of them were selected from upper class. Educational status of the respondents in detail is presented in table below:

**Table: 6** Educational status of the respondents

| Educational Status | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Illiterate | 91 | 30.3 |
| Primary | 43 | 14.3 |
| Secondary (bellow SSC) | 29 | 9.7 |
| SSC | 42 | 14.0 |
| HSC | 36 | 12.0 |
| Graduate | 43 | 14.3 |
| Post-graduate | 16 | 5.3 |
| Total | 300 | 100.0 |

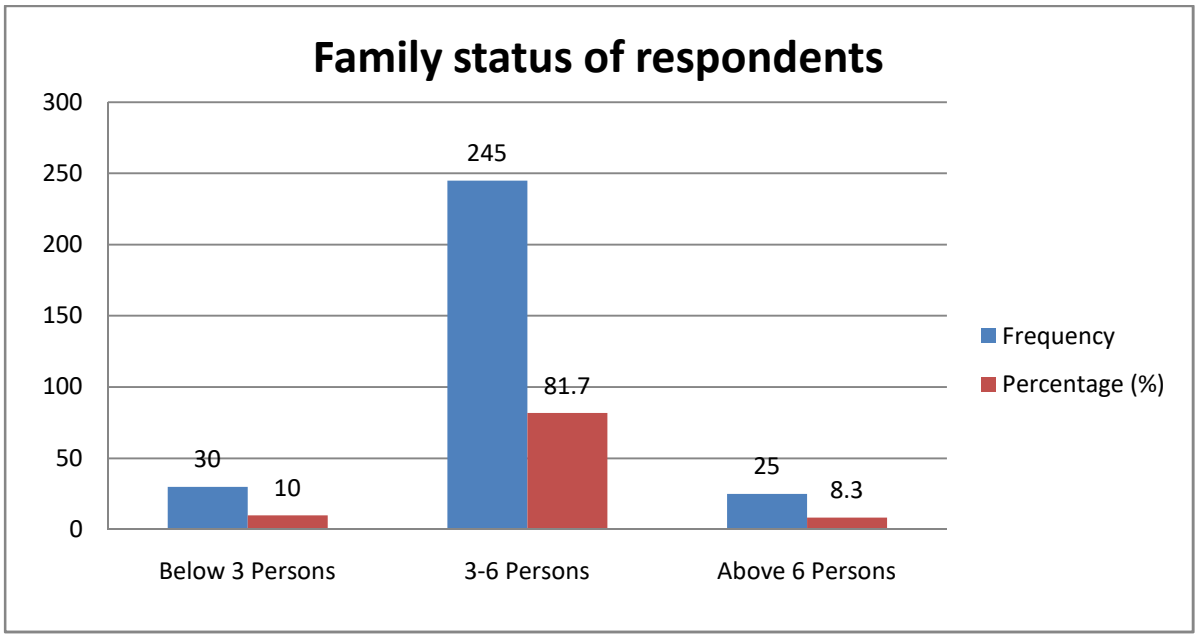
Source: Household Survey, 2015

### 3.2.6 Family Status

***Family Member***

Lower income people and middle income group have relatively larger families than higher income people as they live in join family. Higher-income people usually like to live in nuclear family, so their family size is small. Analysing the survey data, it has been found that nearly 82 percent of the respondents have 3-6 family members and 8 percent have over 6 members. Most of them are either lower income or middle income groups' people. Besides, about 10 percent of respondents (mostly from upper income people) have less than 3 family members.

**Figure: 3** Family members of the respondents




Source: Household Survey, 2015

***Earning Family Members***

Families from lower income group and upper income group have two more family persons. In contrast, most of families of middle income group have one earning person as women have limited scope to contribute to their families due to various limitations. The survey shows that about 55.7 percent households have at least one earning member. About 40 percent households have two earning persons while 10.3 percent households have more than two earning persons.

**Table: 7** Earning family members of the households

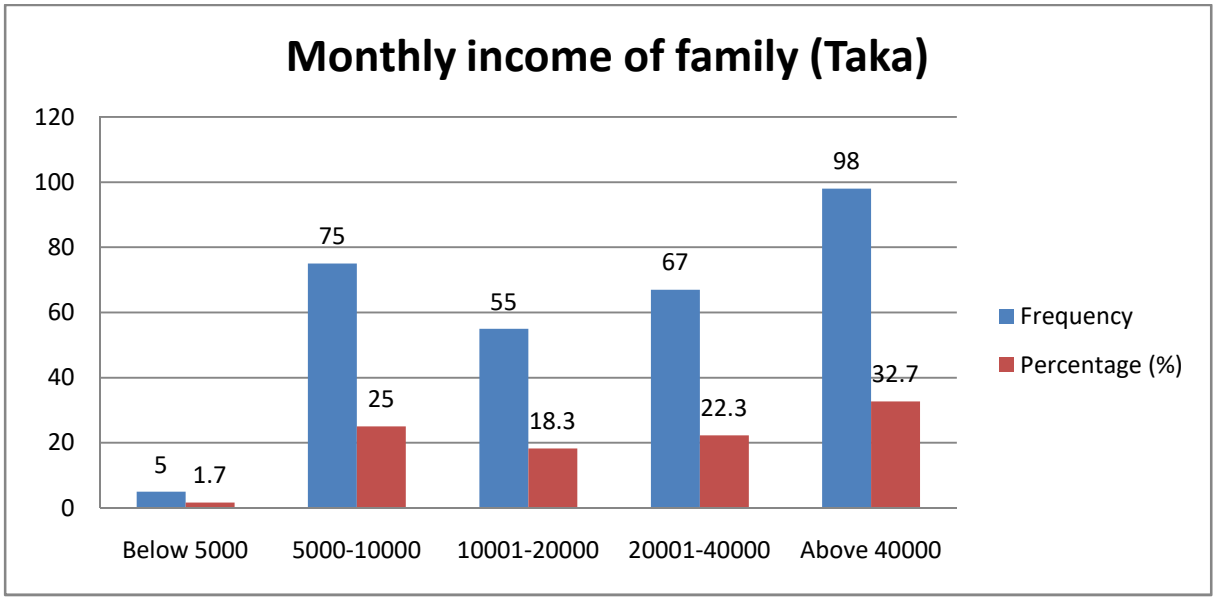
| Earning Family Members | Frequency (n=300) | Percentage (%) |
|---|---|---|
| 1 person | 167 | 55.7 |
| 2 persons | 102 | 34.0 |
| More than 2 persons | 31 | 10.3 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

***Monthly income***

About the income status of the family members, survey shows that 32.7 percent households, which are from upper income group or middle income group, have monthly income of above Tk 40,000. About 22.3 percent of households earn Tk 20,001-Tk 40,000 per month and about 18.3 percent households earn Tk 10,001-20,000, both are middle-income people. The poor households particularly slum dwellers earn less than Tk 10,000 each per month as they have limited access to resources and civic amenities. Of them, about 25 percent of poor households earn Tk 5,000-10,000 while 1.7 percent of ultra poor household below Tk 5,000.

**Figure: 4** Monthly income of households




Source: Household Survey, 2015

***Occupation of household heads***

Most of the household heads of the lower income group work in non-formal sector or work as day-labourer or pull rickshaw. Household heads of both middle class and upper income group do formal jobs or business. About 40 percent of respondents, mostly from middle income group, said they do service. About 47.3 percent responded that they have business and 12.7 percent are involved in other occupations.

**Table: 8** Occupation of household heads

| Occupation of family heads | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Services | 120 | 40.0 |
| Business | 142 | 47.3 |
| Others | 38 | 12.7 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

### 3.2.7 Migration Trend of the Respondents

People are migrating to the Dhaka city from other parts of the country for various reasons. Many people are coming in the city seeking woks. The slum dwellers migrated to Dhaka losing their belongings due riverbank erosion or other climatic extreme events or losing their livelihood options in rural areas. Most of the middle income people came in the city after they got a job in the capital. Higher income group have comparatively been living here for a longer period. Analysing the migration trend of the respondents, it has been observed that they come in the city from different districts of the country. Most of the respondents come from Dhaka, Bhola, Barisal, Comilla, Kishoreganj, Munshiganj and Sherpur districts.

About 26.3 percent respondents said that they have been living in the city since less than 10 years. And most of them are lower income people migrated to the city seeking livelihood options. About 54.7 percent said they have been living in 10-30 years while 19 percent in more than 30 years.

**Table: 9** Living duration of the respondents in Dhaka

| Living duration in Dhaka(years) | Frequency (n=3000 | Percentage (%) |
|---|---|---|
| Below 10 | 79 | 26.3 |
| 10-30 | 164 | 54.7 |
| Above 30 | 57 | 19.0 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

About 44 percent of respondents replied that they frequently change their residents in the city for various reasons. About 41 percent respondents said that they have been living in their current residents in 10-30 years while 14.7 percent in more than 30 years.

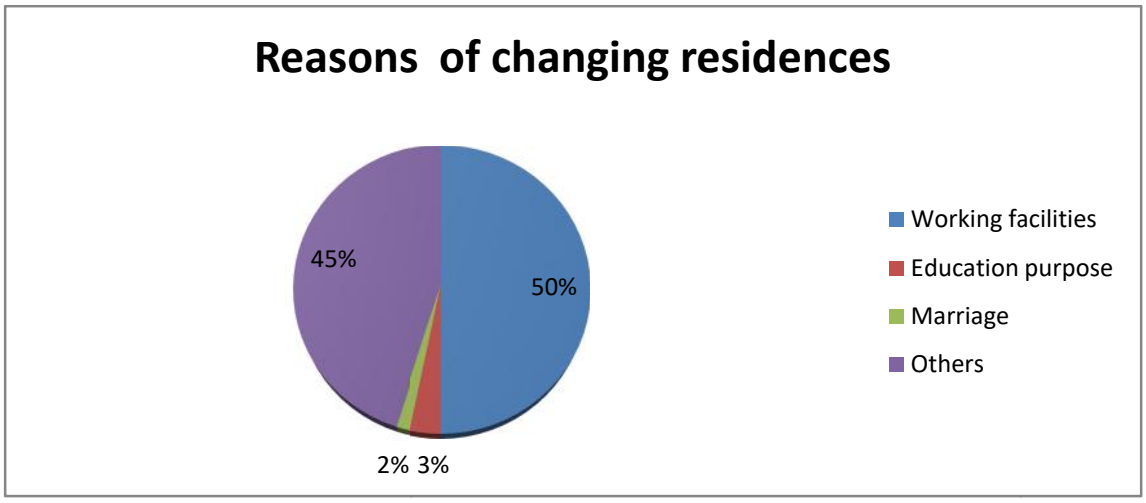
**Table: 10** Staying duration of the respondents in current residence

| Staying duration in current residence (years) | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Below 10 | 132 | 44.0 |
| 10-30 | 124 | 41.3 |
| Above 30 | 44 | 14.7 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

City dwellers change their residents in the capital for various reasons. They change their residents due to working facilities, education purpose and marriage, etc. During the household survey, only 62 respondents, out of 300, replied the question why they change their residents in Dhaka. Of them, about 50 percent of respondents said that they frequently change their residents in the city for their working facilities. About 3.2 percent said they change home for education purpose while 1.6 percent for marriage purpose. But the remaining 45.2 percent could not identify any specific reason in changing their residents in the capital.

**Figure: 5** Reasons of changing residence




Source: Household Survey, 2015

### 3.3 Patterns of Urban Environmental Information

The patterns of urban environmental information indicates a large number of indicators on urban environment, geological, geo-morphological, soil related data, hydrology, climatic and social environmental data. Climatic data include all elements of climate like temperature, rainfall, wind and humidity etc. while social-physical environmental data are pollution – air pollution, water pollution, soil pollution, sound pollution and even visual pollution. Data on wastes management, drainage congestion and water discharge also considered as environmental information.

About the patterns of urban environmental information of the capital, an eminent urban planner said:

> *"Generally, there are some institutions and organisations involved in the management of Dhaka city. Number one is the Dhaka city corporations, which maintains the environmental information. Rajuk is a planning organistion and it prepares urban plan, transportation plan – all these things. It also collects information of all Dhaka's environment. Then Dhaka WASA maintains water, sewage, waste and drainage-related data. Similarly, there are about 54 organisations are involved in the management of Dhaka city. So, they can provide you urban environmental information of Dhaka."*

Since around 54 organisations and bodies, including city corporations, Rajuk (Rajdhani Unnayan Kartripakkha) and Dhaka WASA, are involved in environmental management in Dhaka city, they somehow generate or preserve environmental data.

**Table: 11** Entities involved in urban environmental information

| Government Bodies | Academics/Institutions | Research Organisations |
|---|---|---|
| Dhaka WASA<br>Dhaka South City Corporation (DSCC)<br>Dhaka North City Corporation (DNCC)<br>Rajdhani Unnayan Kartripakkha (Rajuk)<br>Department of Environment (DoE)<br>Urban Development Directorate (UDD)<br>Bangladesh Bureau of Statistic (BBS)<br>Board of Investment (BoI), etc | Department of Geography and Environment<br>Geology Department<br>Soil Science Department<br>Urban and Regional Planning Department of BUET | Centre for Urban Studies (CUS)<br>Bangladesh Centre for Urban Studies (BCAS<br>The Center for Environmental and Geographic Information Services (CEGIS)<br>Bangladesh Meteorological Department<br>Institute of Water Modelling (IWM), etc |

Source: Key Persons Interviews (KPIs), 2015

Both Dhaka South City Corporation (DSCC) and Dhaka North City Corporation (DNCC) collect and generate environmental information. As a planning body, Rajuk prepares urban plan and transportation plan, and it also collects information of all Dhaka's environment. Dhaka WASA maintains water, sewage, waste and drainage-related data. The Urban Development Directorate (UDD), the Department of Transport and the Department of Environment (DoE) are also involved in generating urban environmental information on Dhaka city. Information related to air and water pollution is preserved by the Department of Environment (DoE) and it also collects information of waste generated in the city.

Many non-government and semi-government organisations, academic institutions like the Department of Geography and Environment, the Geology Department, the Soil Science Department, the Urban and Regional Planning Department of universities conduct research on the environment of Dhaka city and generate information. Research organisations like the Centre for Urban Studies (CUS), Bangladesh Centre for Urban Studies (BCAS), the Center for Environmental and Geographic Information Services (CEGIS) and professional bodies like Bangladesh Institute of Planners (BIP) also produce and keep urban environmental information. Social environment related information like poverty and health education are being generated by Bangladesh Bureau of Statistic (BBS) while investment related by the Board of Investment (BoI), and climate and weather data are collected by the Bangladesh Meteorological Department.

It is observed that urban environmental information is different kinds of information that come from different sources and levels. There are some levels of information. Citizen information comes from ward level. Local government and service-oriented agencies provide information on common services. To know service-related data on the city's environment, information should be generated on ward level and intra-ward level, traffic condition, water and rainfall, river water quality and demand-supply.

### 3.4 Processes of Urban Environmental Information

The process of urban environmental information means how the information is collected. There is no integrated process of urban environmental information here. Information is being collected in various ways in Dhaka city. The authorities concerned collect information through primary

survey, from published and printed documents like annual reports, household survey, geological survey and soil survey carried out by different organisations. Urban environmental information is being also collected from national and international media, which focus on Bangladesh's environment in a boarder perspective. Research organisations, professional bodies and other non-government organisations collect primary data from field level to meet their own purposes. But they hardly share their data to each other. So, duplication of data is available here.

### 3.5 State of City Dweller's Access to Media

Media play a strong role in reaching urban environmental information to the doorstep of city dwellers. They frequently collect urban environmental information from media. So, it is very crucial to know how much their access to media and the nature of media access and the purpose of their media use. As media is very vibrant in urban settlements, majority of the city dwellers have access to media like newspaper, television and radio. In contrast, a little number of city dwellers, particularly a section of lower income group, has no access to any form of media. The city dwellers, who have no access to media, are the ultra poor people and live in slums or on city streets. About access to media, about 96 percent of respondents replied that they have access to media. In contrast, only 3.7 percent of respondents said that they have no access to any form of media.

**Table: 12** Respondents' access to media

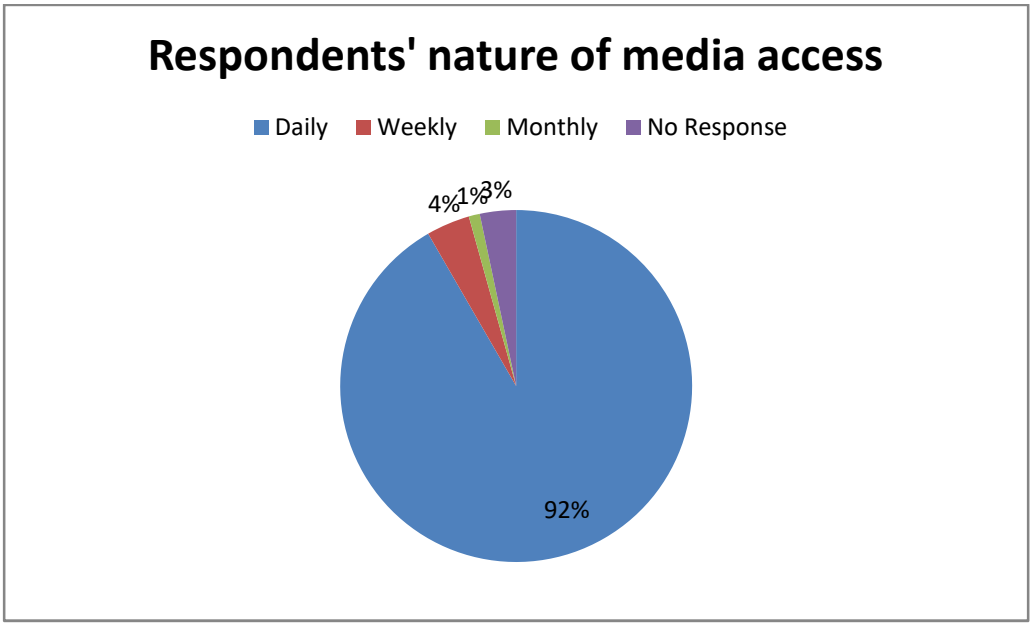
| Respondents' access to media | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 288 | 96.0 |
| No | 11 | 3.70 |
| No response | 1 | 0.30 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

### 3.5.1 Nature of Media Access

As media is available in urban area, majority of city dwellers specially middle income and upper income people have regular access to media. Despite having poverty, a significant number of lower income people have also regular access to media. They use at least one medium every day. Of them who have access to media, about 91.7 percent of respondent replied that they have access to media daily. About 3 percent said they have access to media on weekly basis and one percent has access to media in a month.

**Figure: 6** Respondents' nature of media access



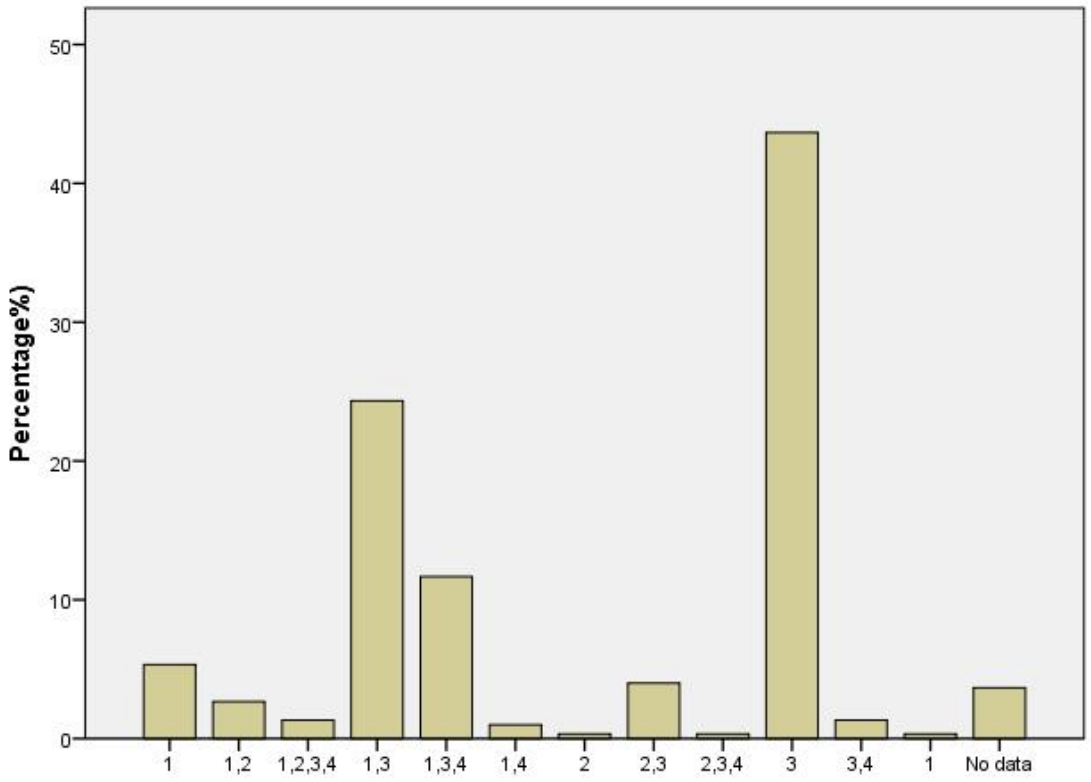

Source: Household Survey, 2015

### 3.5.2 Types of Media Use

City dwellers use different types of media for various purposes. They have access to newspaper, television, radio and online. The educated city dwellers read newspapers and use online apart from watching televisions. But very few city dwellers use radio. The lower income people, who are not well-educated, watch television regularly. About 44 percent respondents, particularly from lower income group, replied that they use television. About 24.7 percent respondents replied that they have access to both newspaper and television. About 11.7 percent of respondents, who are in fact higher income group and middle income people, said they have

access to newspaper, television and online. About 6 percent respondents said they have only access to newspaper. Besides, about 1.3 percent of respondents said they use multiple media (newspaper, radio, television and online).

**Figure: 7** Types of media use by the respondents




Note: 1= Newspaper, 2= Radio, 3= Television and 4= Online

Source: Household Survey, 2015

### 3.5.3 Pattern of Respondents' Media Use

Different groups of city dwellers use different types of media based on their access to it. Higher income people have access to all forms of media but prepare to use newspaper, television and online. On the other hand, middle income people read newspaper, watch television and use radio

sometimes. And the lower income group has access to television and radio, but they mostly use television.

**Table: 13** Pattern of respondents' media use

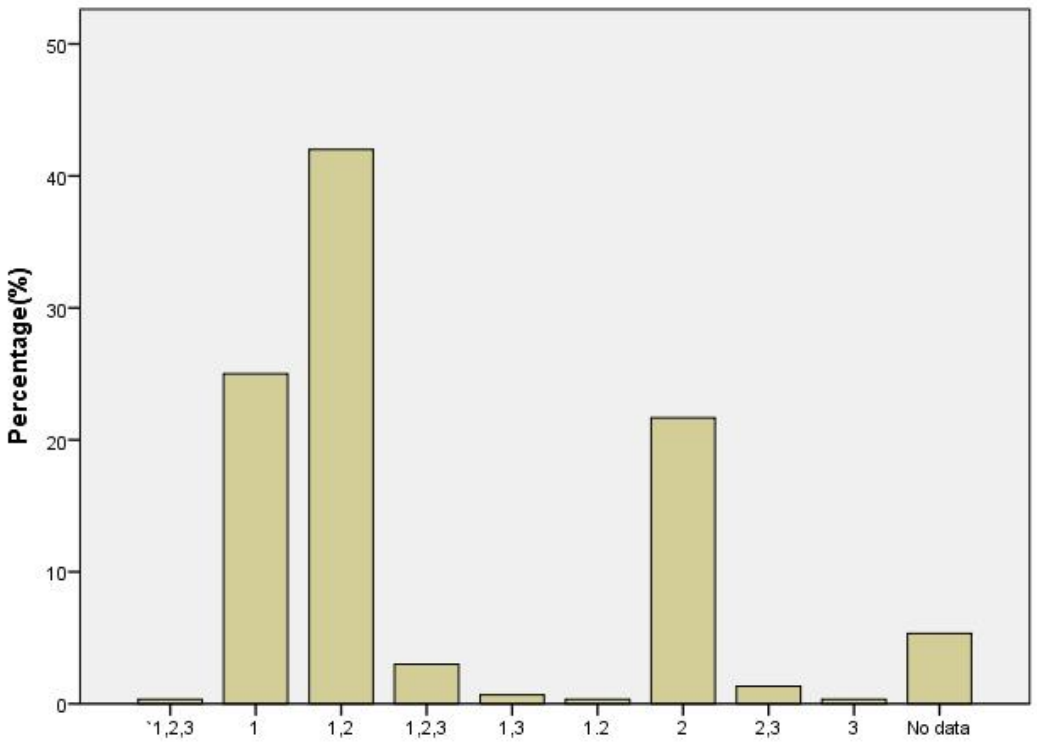
| Groups | Pattern of access to media | Pattern of media use |
|---|---|---|
| Higher income group | Newspaper, Radio, Television and Online | Newspaper, Television and Online |
| Middle income group | Newspaper, Radio and Television (sometimes they have access to online) | Newspaper, Radio and Television |
| Lower income group | Radio and Television | Television |

Source: Household Survey, 2015

### 3.5.4 Purpose of Media Use

City dwellers use media for various reasons like getting information and entertainment and learning. Educated city dwellers use media to get information as they are more aware of socioeconomic and political issues. Middle income people use media to get both information and entertainment as they have limited access to entertainment. In contrast, the lower income group, particularly slum dwellers, watches television as they have no option to get entertainment. The household survey shows that about 25 percent of respondents use media for getting information while 42 percent of the respondents for getting both information and entertainment. About 21.7 percent respondents, generally slum dwellers, replied that they use media to get only entertainment. City dwellers hardly use media to learn from it. Sometimes young generation uses media to learn. So, survey found that only 3 percent respondents use media for getting information and entertainment and learning.

**Figure: 8** Purpose of media use




Note: 1= To get information, 2= To get entertainment and 3= Learning

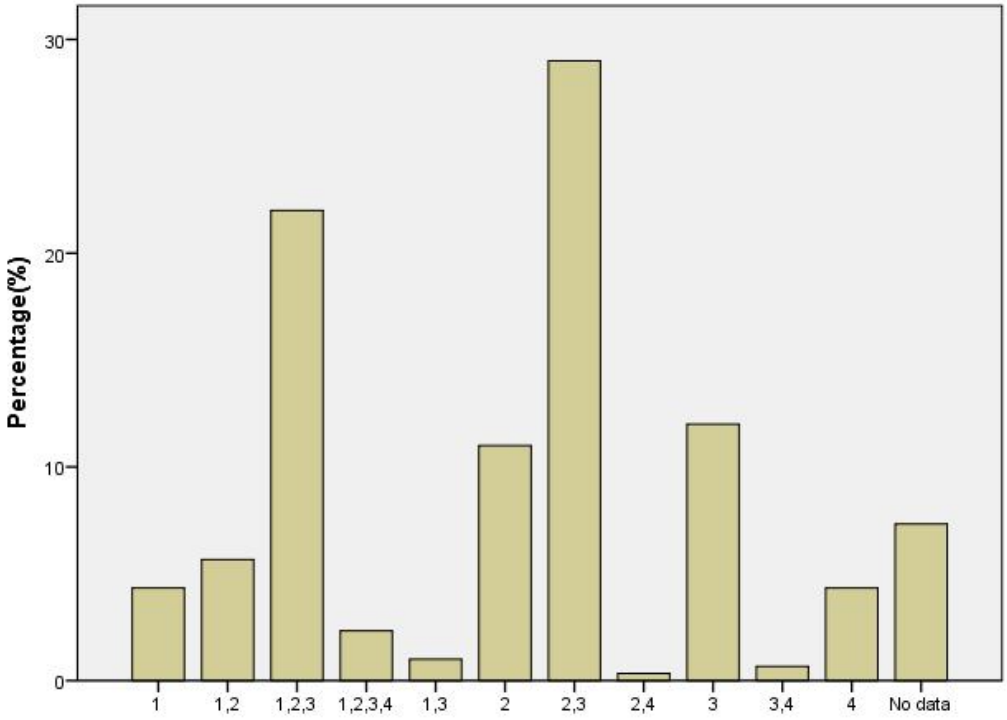
Source: Household Survey, 2015

### 3.5.5 What Kind of Information People Want

Different sections of city dwellers use media to get different kind of information. A section of city dwellers who are really worried about the urban environment uses media to get urban environmental information. As political volatility is a common phenomenon in the country, a significant number of city dwellers are always keen to know political information from media. In contrast, the young generation uses media to know sports related information as sports like cricket and football is very popular in Bangladesh. The household survey also reveals that city dwellers use media to get various kind of information. About 7.3 percent of respondents replied that they use media to only get environmental information while 11 percent to get political

information and 12 percent for sports related information. About 29 percent of the respondents use media to get political and sports related information. Around 22 percent of respondents said they like to get environmental, political and sports related information, and 2.3 percent wants to get environmental, political and sports related- and other information.

**Figure: 9** What kind of information respondents expect from media




Note: 1= Environment, 2= Politics, 3=Sports and 4=Others

Source: Household Survey, 2015

After analysis of the household survey data, it has been revealed that city dwellers want to know environmental data, political and sports-related and other information like entertainment and lifestyle. Both qualitative and quantitative data of the study has given an overview of the information the city dwellers want and their access to these information and its consequences. The higher income group is more interested to know environmental, sports and political information and thus they keep themselves away from environmental hazards while the middle income group is more interested in political information than environmental information. Thus,

they often are unaware of urban environment. On the other hand, the lower income group eagerly wants to get entertainment and political information. They show less interested on environment and hardly use media to get environmental information. This is why they are highly vulnerable to environmental hazards in the capital and they suffer from it.

**Table: 14** Demand of information and its effects

| Groups | City dwellers' major demand of information | Supply of information | Effects |
|---|---|---|---|
| Higher income group | Environment, polities, sports and others | Environment, polities and sports and others | Keep themselves safe from urban environmental hazards |
| Middle income group | Polities, sports and entertainment | Environment, polities, sports, entertainment and others | Frequently suffer environmental hazards |
| Lower income group | Polities and entertainment | Polities, sports, entertainment and others | Highly vulnerable to environmental hazards |

Sources: Combination of the Household Survey, 2015 and the Key Persons Interview (KPI) 2015

### 3.5.6 City Dwellers' Perception on Urban Environment

Urban environmental information plays important to make city dwellers aware of urban disasters and help them address environmental hazards, but most of the city dwellers particularly lower income people and middle income group do not know about urban environment. Despite having access to media to get information, a very few number of city dwellers have proper knowledge on urban environmental information. About 25.3 percent of respondents replied that they know about urban environment. But they have no clear knowledge on it. In contrast, about 74.3 percent of respondents said they do not know about urban environment.

Although 25.3 percent of respondents claimed that they have knowledge about urban environmental information, they did not give any clear idea about it. They have scattered perception on urban environmental information.

According to expert group, urban environment is related to geological, geo-morphological, hydrology, climatic and social environmental data. Climatic data like temperature, rainfall, wind and humidity, social-physical environmental such as air pollution, water pollution, soil pollution, sound pollution and visual pollution and waste scenario are considered in urban environment. But the city dwellers do not have any clear prescription on urban environment. They identify their surrounding environment, infrastructure, road network, air, water, drainage, weather, climate, service related information and social conditions as urban environment. Of them who claimed that they have knowledge on urban environment, about 13 percent of respondents think that their surrounding environment is urban environment while 14.47 percent think urban infrastructure and 13.15 percent indentified road network as urban environment. And about 40 percent indicate drainage, pollution, water-bodies, building, open space, education and transport, etc as urban environment.

**Table: 15** Urban environment what respondents mean

| Urban Environment | Percentage (%) |
|---|---|
| Surrounding environment | 13.15 |
| Urban infrastructure | 14.47 |
| Road network | 13.15 |
| Air, water | 5.3 |
| Weather, climate | 4 |
| Services related information | 4.3 |
| Social and health information | 5.2 |
| Others | 40.43 |

Source: Household Survey, 2015

### 3.6 Conclusion

Chapter three describes the patterns and processes of urban environment of Dhaka city. Many government bodies, civil society organisations, non-government organisations and research organisations are involved in the patterns and process of urban environmental information of

Dhaka. But, a very few number of city dwellers have proper knowledge on urban environmental information. About 74 percent of city dwellers do not know about urban environment. But city dwellers use media to get different types of information like politics, sports and environmental information. Understanding the patterns and processes of urban environmental information is very important to know how the information is generated and who are involved in the processes. Thus, it helps understand how city dwellers get access to urban environmental information, and the processes of its dissemination.

# Chapter: 4

# Urban Environmental Information Dissemination in the City

## 4.1 Introduction

Citizen's access to urban environmental information depends on how it is being disseminated and the methods of information dissemination. Proper dissemination information can only reach it at the doorsteps of city dwellers. If the authorities concerned fail to do so, the people living in a mega city like Dhaka will face many urban environmental problems for lack of information. Proper dissemination of urban environmental information makes the city dwellers aware of and helps them take right decisions in right time to cope with urban environment hazards. But there is no proper official system now to disseminate urban environmental information in the city.

## 4.2 City dwellers' Knowledge on Information Dissemination

Although proper dissemination of urban environmental information brings a positive change for a city and helps city dwellers address environmental problems, most of the city dwellers are not aware of dissemination of urban environmental. They do not have enough knowledge on dissemination of urban environmental information. The illiterate people, particularly lower-income group, and a section of both middle income group and upper income people do not know how environmental information is being disseminated in the city. During the household survey, 60.7 percent of respondents replied that they have no knowledge on urban environmental dissemination. But about 39 percent of respondents form middle income group and higher income people claimed that they have knowledge in this regard. But, they do not give any clear idea about it.

**Table: 16** Respondents' level of knowledge on urban environment information dissemination

| Knowledge on urban environment information dissemination | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 117 | 39.0 |
| No | 182 | 60.7 |
| No response | 1 | .3 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

### 4.3 Urban Environment Information Dissemination

There is no single entity which is responsible to dissemination of urban environmental information, but a number of organisations are involved in dissemination of urban environmental information in Dhaka city. Local government bodies like Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC) and Dhaka WASA and the government agencies, including the Department of Environment (DoE), Urban Development Directorate (UDD) and Rajdhani Unnayan Kartripakkha (Rajuk), distribute unban environmental information. Non-government organisations, research think tanks and media also play an important role in dissemination of urban environmental information in the city.

Although many organisations, including both government and non-government organisations, are involved in dissemination of urban environmental information in Dhaka, most of the city dwellers think that urban environmental information is being disseminated by media. During the household survey, 89.7 percent of respondents found media's involvement in the dissemination process. Of them, about 17 percent said television is playing a stronger role in this regard. According to qualitative data obtained under the study, the government agencies like Dhaka WASA and Rajdhani Unnayan Kartripakkha (Rajuk) have the responsibility of information dissemination. But only 8.5 percent of respondents, particularly lower income group, replied that the government bodies are disseminating urban environmental information. Apart from media, city dwellers also think that urban environmental information is being disseminated through

NGOs (8.5 percent), city corporations (4.3 percent), publication and journal (4.3 percent) and seminar (3.4 percent).

**Table: 17** Entities involved in urban environment information dissemination

| Organisation Name | Percentage (%) |
|---|---|
| Media (Television, Radio and Newspaper, etc) | 89.7 |
| Non-Government Organisations (NGOs) | 8.5 |
| Government agencies (Dhaka WASA and Rajuk, etc) | 8.5 |
| Dhaka City Corporations | 4.3 |
| Seminar | 4.3 |
| Publication and Journal | 3.4 |

Source: Household Survey, 2015 Note: Multiple responses considered

### 4.4 Use of Media in Getting Urban Environment Information

Media always play a vital role in disseminating urban environmental information. And household survey comes up with positive result that about 89.7 percent of respondents said media disseminate urban environmental information. But, majority of the city dwellers do not use media to get it yet, because a huge section of city dwellers from all groups are not aware of urban environmental information. The lower income group use media, especially television, to get entertainment while most of city dwellers from middle income group use it to get political news. About 63 percent of respondents replied that they do not use media in this regard. About 37 percent of respondents, particularly middle and higher income people who are aware of urban environment, use media to get urban environmental information.

**Table: 18** Respondents' use media to get urban environment information

| Use of media | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 111 | 37.0 |
| No | 189 | 63.0 |
| Total | 300 | 100.0 |

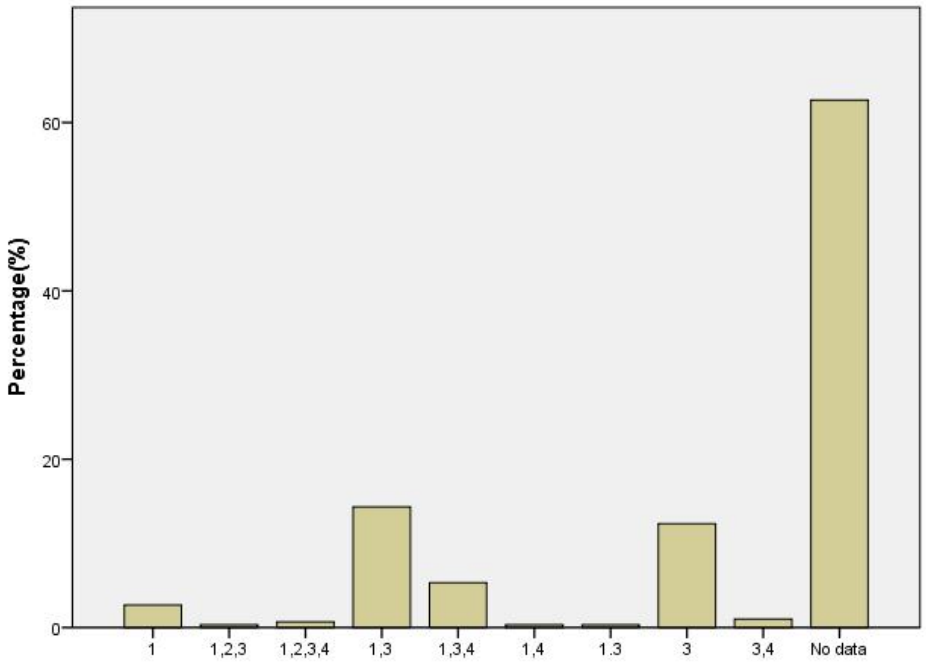
Source: Household Survey, 2015

### 4.4.1 Types of Media the City Dwellers Use to Get Urban Environmental Information

Use of media depends on social classes of city dwellers. Generally, higher income people have access to all forms media, so they use all those media to get urban environmental information. Middle income group uses newspaper and television in this regard. In contrast, lower-income people have no access to all forms of media for resources constant, so they prepare to watch television. As a result, they get urban environmental information from television.

During the survey, it is found that only 37 percent of city dwellers (from all groups) use media to get urban environmental information. Of them, 14.3 percent respondents replied that they use newspapers and television to get urban environmental information. About 12.3 percent of respondents particularly lower income group people said that they watch television only to get urban environmental information. About 5.3 percent said they use newspaper, television and online in this regard. City dwellers hardly use radio to get information while 2.7 percent responded that they read newspapers to get it.

**Figure: 10** Media use of city dwellers




Note: 1= Newspaper, 2= Radio 3= Television and 4= Online

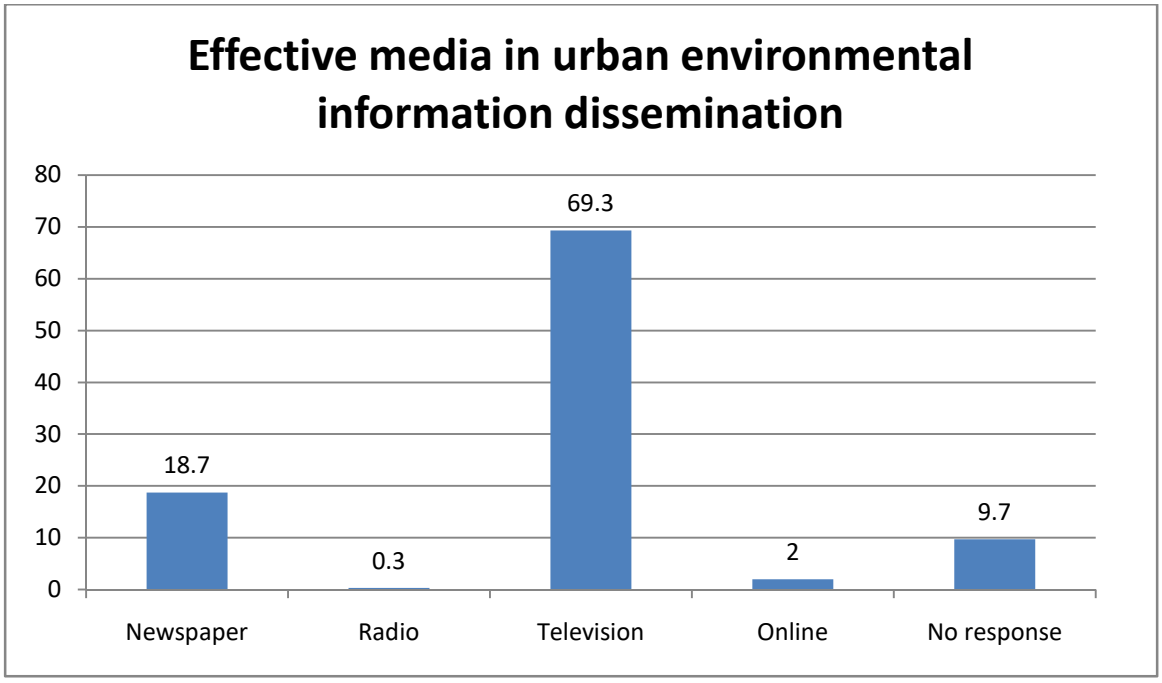
Source: Household Survey, 2015

### 4.4.2 Effective Media in Urban Environmental Information Dissemination

City dwellers' easy access to media is very crucial in information dissemination. Effectiveness of media depends on how many people use it. In this sense, television is the best media in dissemination of urban environment as almost all city dwellers have access to it. Reaching urban environmental information to poor city dwellers, television is effective medium since they are not literate enough to read newspapers or afford to buy newspapers and access to online. As upper income group and a section from middle income group read newspapers regularly, newspaper can play a vital role in this regard. In contrast, radio is losing popularity among city dwellers nowadays.

There is a huge scope for all kind of media to disseminate urban environmental information. But, about 69.3 respondents think that television is most effective medium in this regard, followed by newspaper (18.7 percent), online (2 percent) and radio.

**Figure: 11** Effective media in urban environmental information dissemination




Source: Household Survey, 2015

### 4.4.3 City Dwellers' Expectation to Media

As the responsible agencies are not properly functioning in dissemination of urban environmental information, city dwellers' dependence on media to get urban environmental information is growing day by day. Media is currently playing an important role in disseminating urban environmental information, but a conservationist thinks that media has scope to play better role in this regard as saying:

> *"Both print and electronic media can play strong role to make urban environmental information available to city dwellers. Besides, information could be reached at the doorstep of illiterate people through setting up small units in wards of city corporations."*

The city dwellers think that media should be more proactive in this regard. About 90 percent of respondents replied that media should play better role in this regard. In contrast, about 10 percent did not expect more from media.

**Table: 19** City dwellers' expectation to media

| Expect better role from media | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 268 | 89.3 |
| No | 31 | 10.3 |
| No response | 1 | 0.3 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

### 4.4 Scattered Information, Poor dissemination

Urban environmental information is being disseminated in Dhaka city in scattered way. There is no a central organisation, which collects urban environmental information in the city. So, dissemination is not properly done here. Information is being disseminated at this moment in a haphazard manner, mostly from the story coverage of different mass media. During the KPIs, most of the respondents said that there is no specific guideline to disseminate way the urban environmental information for Dhaka city. An editor of an English Daily said:

> *"I will be satisfied if urban environmental information could effectively be used in citizen life. Urban environmental information like air and water pollution is not disseminated. The authorities disseminate some information on special occasions, but this is not enough."*

Sometimes, the non-government organisations (NGOs) disseminate information related to pollution of the city through holding symposium, seminars and programmes. The government agencies disseminate positive information proactively while they disseminate some information

on special occasions like the World Environmental Day. Dhaka WASA, Dhaka Electric Supply Company Limited (DESCO), city corporations, Rajdhani Unnayan Kartripakkha (Rajuk), the National Housing Authority (NHA) generally distributes service-related information through official websites, booklet, leaflet, annual reports, department channels and advertisement. But, they do not disseminate information related to environmental pollution like air and water pollution. The Department of Environment (DoE) disseminates enforcement-related information like fine or punishment to polluters through email or press release. Research organisations such as the Bangladesh Centre for Advance Studies (BCAS), the Center for Environmental and Geographic Information Services (CEGIS) and the Centre for Urban Studies (CUS) disseminate information by publishing reports, books and articles. Dissemination is also done by publications like oriental geographers, bulletins and journals as there is no information cell of urban bodies like Rajdhani Unnayan Kartripakkha (Rajuk) or city corporations. But, there are some ways to disseminate information to mass people. KIP respondents replied that environmental information could be distributed effectively using the religious structures like mosque and temple and educational institutions like schools and colleges.

**Table: 20** Nature of information dissemination

| Types of Organisations | Names of Organisations | Nature of information dissemination |
|---|---|---|
| Mass Media | Newspaper, Television, Radio and online etc. | News coverage and awareness programmes |
| Government Bodies | Dhaka Electric Supply Company Limited (DESCO), Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Rajdhani Unnayan Kartripakkha (Rajuk), the National Housing Authority (NHA), Department of Environment (DoE), etc. | Official websites, booklet, leaflet, annual reports, and advertisement, etc. |
| NGOs | Unicef, United Nations Development Programme (UNDP), United Nations Environmental Programme (UNEP), Bangladesh Rural Advancement Committee (BRAC), etc | Reports, symposium, seminars and programmes, etc. |
| Research Organisations | Bangladesh Centre for Advance Studies (BCAS), Center for Environmental and Geographic Information Services (CEGIS) and Centre for Urban Studies (CUS), etc | Reports, books and articles, publications, bulletins and journals, etc. |

Source: Key Persons Interviews (KPIs), 2015

### 4.5 Existing Information Dissemination Method

The flow of information is always helpful. But the way the urban environmental information is being disseminated in city is not helpful to city dwellers. KPI respondents replied that the way of urban information dissemination is also not effective and comprehensive at all. A senior government official of the Press and Information Department (PID) observed:

> *"The way urban environmental information is being disseminated in Dhaka city is not helpful to us. The information dissemination system now is not functioning properly. It should be disseminated in proper way with proper devices."*

In the past, authorities concerned did not think about dissemination of information, but nowadays they disseminate some positive information, not all information. In fact, they do not provide information proactively which is helpful to city dwellers. And general people do not have scope to get access to the information published on websites as they have limited access to internet and do not know how to use internet.

People need quality information that is accurate timely, relevant and unbiased. But there is no proper networking among the various stakeholders in urban environmental field, and the networking system has not been particularly facilitated by access to sharing and dissemination of information. Although the patterns and process of information dissemination is not effective here, there is a huge scope to make it a comprehensive one. During the KPIs, experts suggested that a comprehensive dissemination system should be developed so that the information is made available to both the parties, the one who is generating the information and the one who is using this information.

### 4.6 Effective Dissemination Helps Bring Positive Change

If urban environmental information is reached to the thresholds of city dwellers in proper way, a quality change will come in the city and it will be quite possible to establish urban environmental governance. A public representative said:

*"Of course, if urban environmental information is reached to the thresholds of people in proper way, a quality change will come in the city and also help establish good governance here."*

In modern cities, the authorities try their best to make urban environmental information public, because information has been a key ingredient of development and implementation of a comprehensive policy that is sensitive to economic, social, cultural and environmental factor. The KPI respondents said that high quality information, which is accurate, timely, relevant and unbiased, has facilitated effective networking and action for urban environmental management. Urban centres have far reaching and long-term effects not only on its immediate boundaries but also on the entire region in which it is positioned. So, proper dissemination of urban environmental information can bring a positive change for mega city like Dhaka.

## 4.7 Conclusion

Proper dissemination of urban environmental information is a must to make a city environmentally sound and livable for city dwellers. Chapter four describes existing dissemination scenario of urban environmental information in Dhaka. Although proper dissemination of urban environmental information can bring a significant change in a mega city like Dhaka, the authorities concerned is yet to develop any guideline to reach information at the thresholds of city dwellers. A comprehensive dissemination system should be developed involving all relevant stakeholders to make the information available to all to address the emerging environmental challenges and ensure planned urbanisation in Dhaka.

# Chapter: 5

# Governance of Urban Environmental Information

## 5.1 Introduction

Urban governance is a must in establishing a planned and smart city. It makes a city livable and push to authorities concerned to be accountable to city dwellers. But there is poor governance in every areas of Dhaka city making the city dwellers' lives miserable. Governance is also absence in urban environmental information dissemination like other sectors. City dwellers have been facing various environmental problems in their daily life. For example, they are suffering from traffic congestions and being exposed to dust or air pollution everyday due to lack of access to urban environmental information. To build a livable and environment-friendly city, transparency and accountability should be ensured in every area of urban bodies and environmental information needs to be disseminated proactively. The authorities concerned should appoint efficient manpower and increase capacity to preserve environmental data to establish governance in urban bodies.

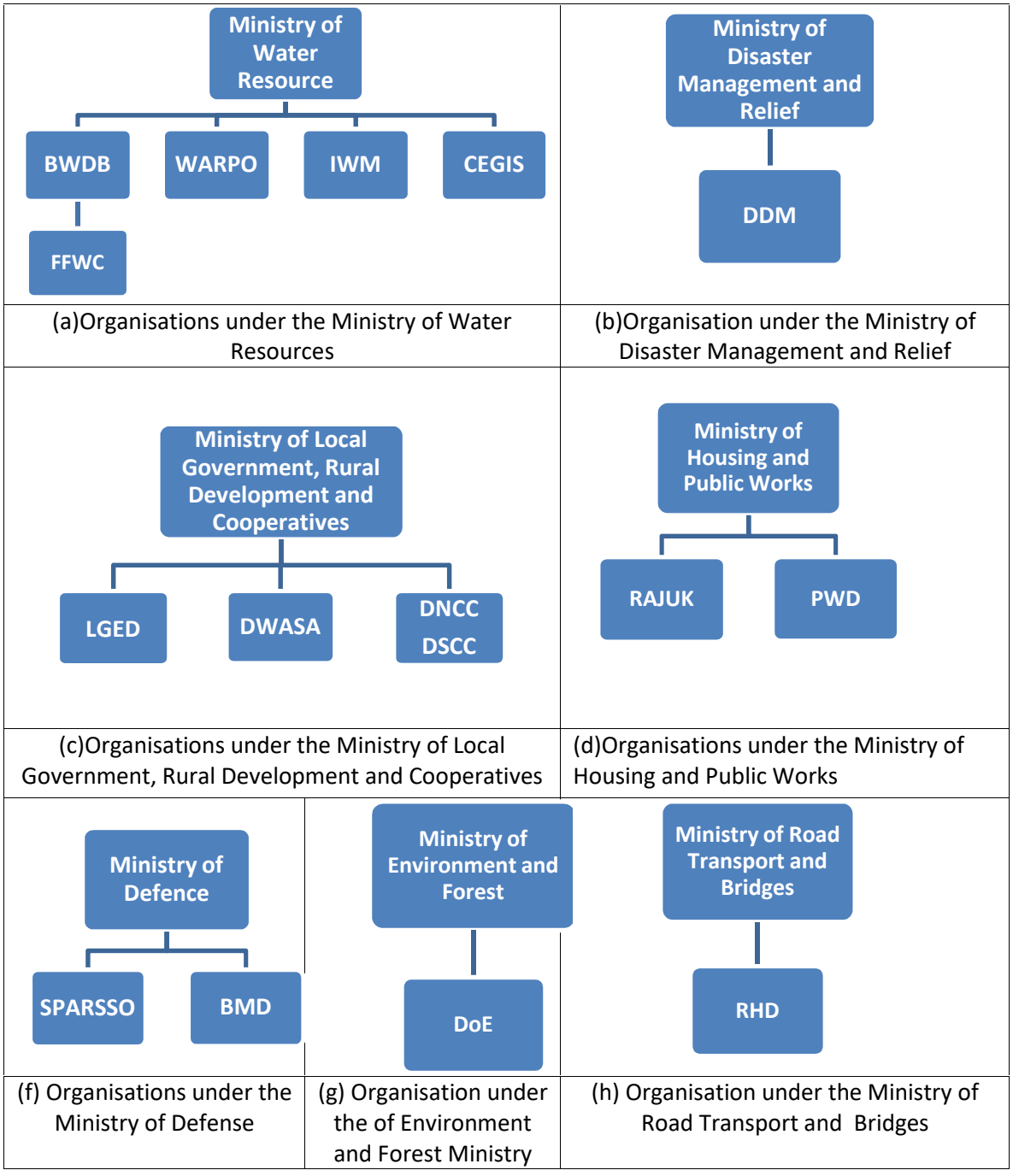
## 5.2 Governance in the Government Bodies

Like other sectors, there is lack of governance in the urban government bodies in Bangladesh. City dwellers often suffer from poor governance in getting urban environmental information. Most of the time they fail to get it. Without establishing governance in urban bodies in the country, it would be hard task to reach urban environmental information at the doorsteps of city dwellers.

### 5.2.1 Urban Bodies Responsible to Environmental Information Dissemination

Urban governance is a quite complex issue while a number of stakeholders are involved. So, many urban bodies and public institutions are responsible to environmental information dissemination.

**Figure: 12** Public agencies involved in environmental governance




Source: CEGIS, 2016

Local government bodies like Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC), government entities including Dhaka WASA and Rajdhani Unnayan

Kartripakkha (Rajuk) and the Department of Environment (DoE), and many non-government organisations (NGOs) are currently disseminating environmental information in Dhaka.

Although urban government is a complex issue, most of city dwellers are aware of the government bodies responsible to urban environmental information in Dhaka city. City dwellers are more aware of what services should be provided by the government bodies. Even, the lower income group living in urban slums knows about their civic rights since many NGOs are working in slums to make them aware of their civic rights. The household survey also finds similar findings. About 83.7 percent of respondents said that they know about the government bodies, which are responsible to environmental information dissemination. In contrast, about 16 percent respondents, particularly illiterate and extreme poor people, said they have no knowledge about the responsible government bodies.

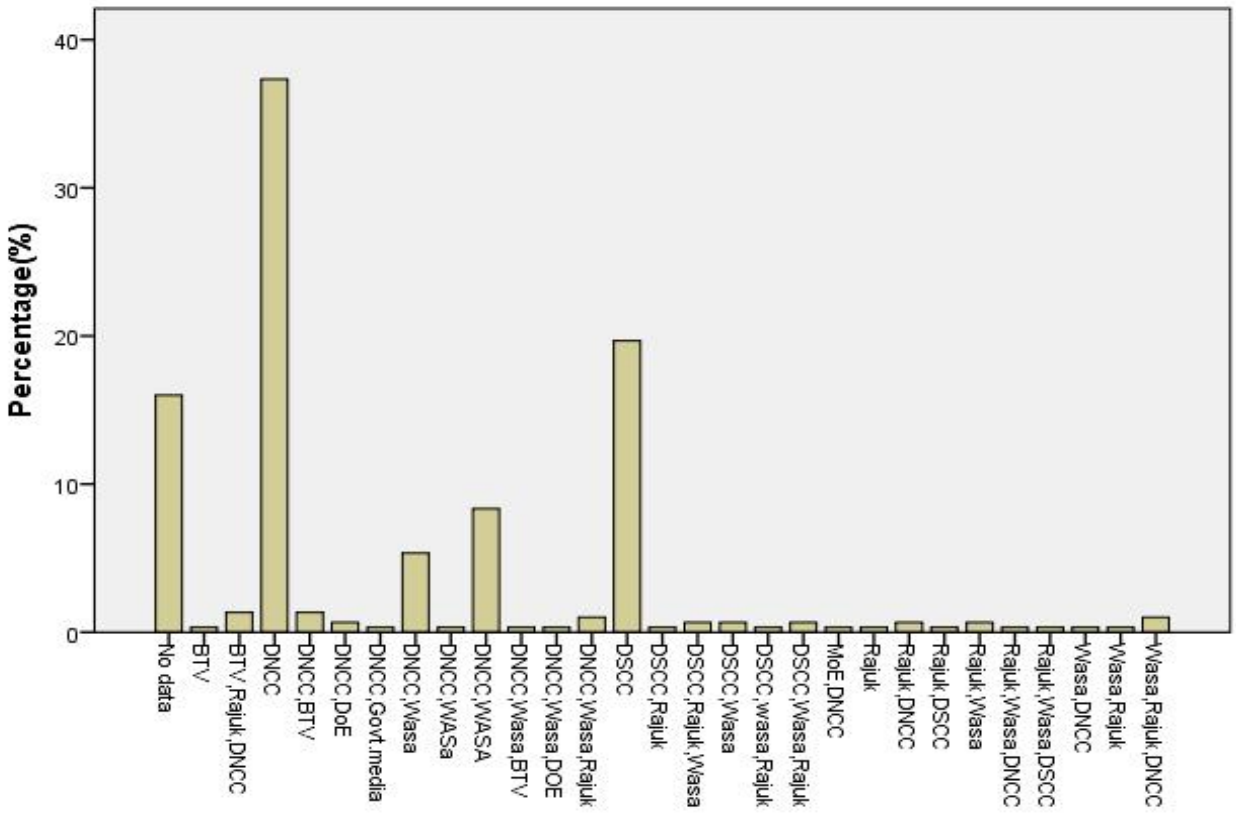
**Table: 21** Respondents' knowledge about the responsible government bodies

| Knowledge about responsible government bodies | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 251 | 83.7 |
| No | 48 | 16.0 |
| No response | 1 | 0.3 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

During the household survey, the respondents, who have knowledge about it, also identified Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Rajdhani Unnayan Kartripakkha (Rajuk), the Department of Environment (DoE), Dhaka WASA, and Bangladesh Television (BTV) and other public media as the responsible government agencies in dissemination of urban environmental information. Most of the respondents replied that both Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) are responsible to dissemination of urban environmental information. They think the city corporations, Dhaka WASA and Rajdhani Unnayan Kartripakkha (Rajuk) have to play better role in this regard.

**Figure: 13** Responsible government agencies in dissemination of urban environmental information




Index:

DNCC= Dhaka North City Corporation, DSCC= Dhaka South City Corporation, WASA= Water and Sewerage Authority (WASA), DoE= Department of Environment, BTV= Bangladesh Television, Rajuk= Rajdhani Unnayan Kartripakkha

Source: Household Survey, 2015

### 5.2.2 Gross Negligence in Information Dissemination

Negligence is found everywhere in dissemination of urban environmental information in Dhaka. The government bodies never proactively release environmental information. If the authorities

concerned be sincere to disseminate information, urban environmental information could be reached to public level in Dhaka city. But, they are far behind in playing their proactive role, sometimes called as due role, in dissemination of environmental information. The KPI respondents said any mechanism is yet to be found to make urban environmental information public. A senior environmental reporter observed:

> *"I don't think relevant authorities are doing the due diligence. Dhaka is known by now a most environmentally polluted city in the world - its water bodies are polluted, air is polluted and noise pollution level is also very high in this city. But there has been no sense of urgency from the authorities."*

The government officials are more conservative in information dissemination. The officials think that if they disseminate information, they have to be more accountable. A director of the Department of Environment (DoE) also agreed that the government officials do not express willingness to disclose urban environmental information. He said:

> *"The government bodies are reluctant to disseminate environmental information because they think if they do it, they will have to more accountable and transparent."*

City dwellers also observe that the government bodies are not playing their due role in dissemination of urban environmental information since they do not get information when require. About 83 percent of respondents replied that the government bodies are not playing their due role in dissemination of urban environmental information. In contrast, about 17 percent said they are playing their respective role in this regard.

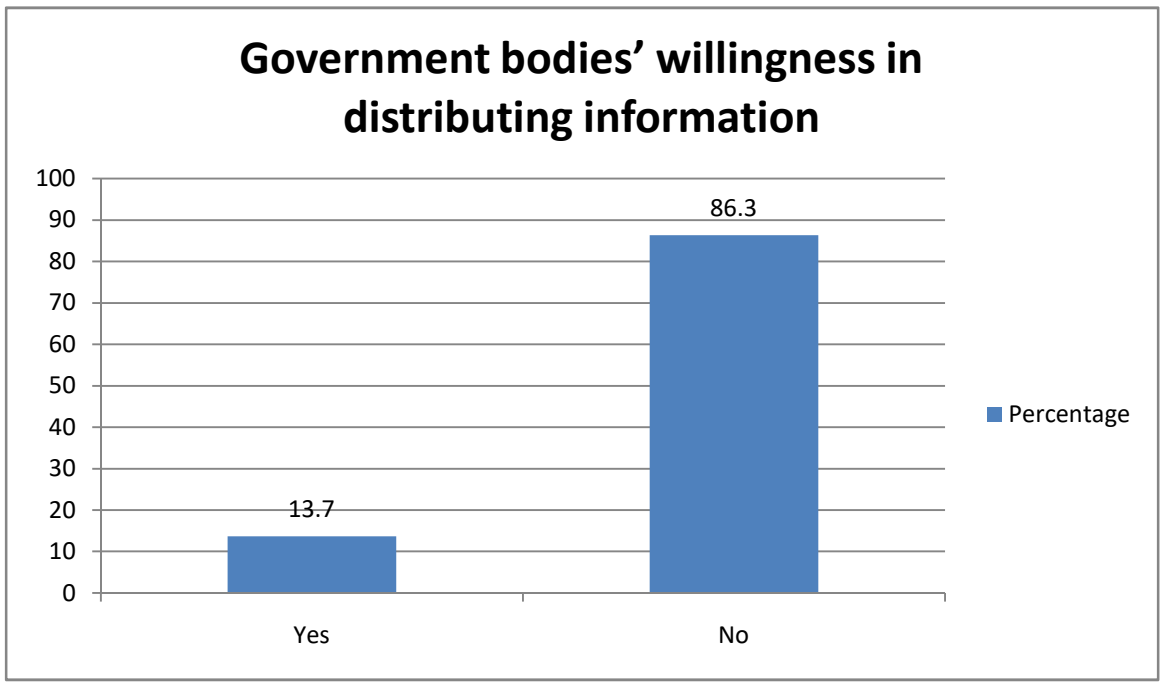
**Table: 22** The role of government bodies in information dissemination

| The government bodies playing due role | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 51 | 17 |
| No | 249 | 83 |
| Total | 300 | 100.0 |

Source: Household Survey, 2015

City dwellers also observe that the government officials are more conservative in information dissemination. During the household survey, about 86.3 percent of respondents replied that the authorities concerned are not interested to disclose information. In contrast, only 13.7 percent of respondents said the authorities are willing to do so. The authority shows reluctant role in information distribution because of their long-time practice and lack of transparency. The KPI respondents said the authorities are also reluctant in dissemination of environmental information since their data preservation system is very poor. To overcoming the situation policies, investments and development plans should be taken by the government. A policy framework along with a system of prioritisation has to be put in place.

**Figure: 14** Government bodies' willingness in distributing information




Source: Household Survey, 2015

### 5.2.3 Authorities Lack Coordination

Lack of coordination among the government bodies is one of the biggest problems that Dhaka city is currently facing. Although a number of government bodies are involved in urban management, there have no coordination among them. They hardly share data or information they have. They have also negligence in dissemination of urban environmental information. One

body does not coordinate with other. If one person seeks urban environmental information, s/he has to go different government bodies to collect different kinds of information as information is not available in a single entity. Besides, they are supposed to be a particular guideline followed for urban development, but due to lack of integration and coordination among different authorities responsible for urban development (i.e Rajuk, Dhaka WASA and Bangladesh Water Development Board, etc) it is not effective. KPI respondents said proper information is not exchanged among these authorities as such the information diverse from one authority to another and is often misleading. Departments which are supposed to disseminate information on environment issues work in isolation, they do not work in unison. A newspaper editor came up with his observation as saying:

> *"I think there is a combination of both - some lack of negligence and lack of coordination. We need an integrated effort involving all stakeholders where the government and nongovernmental organisations will work together to strengthen coordination and remove negligence in this regard. There should also be a constant interaction."*

To overcome the existing situation, they should prepare their course of action to strengthen coordination each others to know how information will be generated and disseminated. An integrated effort involving all stakeholders should be taken to strengthen coordination among the government agencies with constant interactions.

### 5.2.4 Lack of Capacity and Professionalism in Data Preservation

Capability is an important thing in dissemination of environmental information. The government bodies have no enough institutional capacity to store urban environmental information they generated, despite developing technology in the country. Since many senior officials of government are yet to use technology, they are incapable to store information. A policymaker observed:

> *"There may be lack of capacity to preserve adequate environmental information. If the government bodies lack manpower and capacity of storing information, they do not show interest to disseminate information."*

Most of the government bodies have no efficient staff to preserve data. Thus, when people seek information from these bodies, they show reluctant as they have no compiled information. So, lack of capacity of government bodies in storing urban environmental information is one of the key impediments to dissemination of information. The KPI respondents observed that building capacity and appoint efficient manpower in the government institutions to preserve environmental information can ensure proper dissemination of information in the capital.

### 5.3 Challenges of Access to Urban Environmental Information

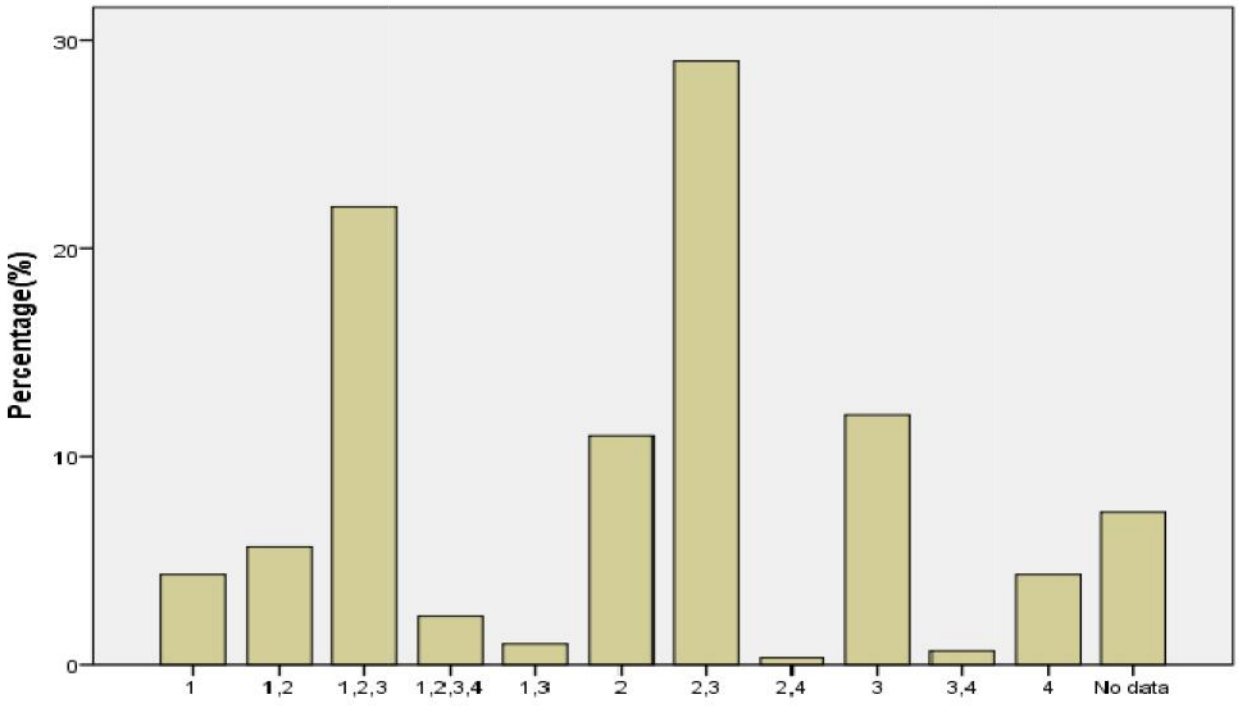
Access to urban environmental information is very crucial in coping with the environmental challenges during any emergency period. Dhaka city experiences show that city dwellers have a little access to urban environmental information system for lack of a proper dissemination system. Every year, the city dwellers face various environmental problems like pollution, traffic congestion and flooding as they have no adequate access to information. Thus, to get urban environmental information, they face multiple challenges.

#### 5.3.1 People Seek Updated, Real-time Data

City dwellers want the information that they need in their daily life. People want more updated and real time information. For example, traffic congestion is a common phenomenon in the capital while they are being trapped in traffic jam every day. If the information related to traffic jam would be disseminated through developing a system, proper app or website, people can save a huge amount of fuel and working time. And it is quite possible to provide traffic update using CCTV on streets. Besides, city dwellers must receive both temporal and spatial urban environmental situation information. The information must also be effective in respect to the environmental factors like air and water quality, soil, solid waste generation, communication system, management and development procedure of the city etc. The city dwellers want real time data like air, water, weather; data related environmental pollution, built environment like roads, infrastructure and park and social environmental like urban poverty, education and health. During the household survey, about five percent respondents replied they seek only real time data from media. About 30 percent of respondents said they want information related to pollution

and built environment. As the city dwellers need various kind of information in urban life, they seek multiple data. About six percent of city dwellers want real time data and pollution related information while about 22 percent real time data and pollution and built environmental information. Only five percent respondents seek social environmental like urban poverty, education and health. Upper income group and middle income people are interested to get various kind of information. Lower income people particularly wanted to know pollution-related and built environment related information.

**Figure: 15** City dwellers seek urban information from media




Note: 1= Real time data like air, water, weather

2 =Environmental pollution

3 = Built environment like roads, infrastructure and park

4 = Social environmental like urban poverty, education and health

Source: Household Survey, 2015

### 5.3.2 People Suffer a Lot for Lack of Information

The city dwellers frequently face various problems for lack of urban environmental information. For an example, a water engineer has to collect data in his or her professional life to prepare plans or designs, but sometimes it consumes a huge time in collecting data as there is no detailed database of utility services. If there is a common data base related to utility services, a lot of time could be saved. An IT specialist expressed his worries saying:

> *"For lack of environmental information, as an IT specialist, I am facing problems. Because the government has no legal jurisdiction in certain areas relevant to urban environmental issues, including radiation and emissions of computer hardware and accessories, condemnation procedure of computer hardware, damping zone and its procedure and recycling process. I do not know the sewage systems of city and where to get pure drinking water, air quality of specific place etc."*

Many face difficulties in getting pure food items or traffic update for lack of information. In absence of available of information, people also are exposed to hazardous electronic wastes, including radiation and emissions of computer hardware and accessories. For example, air pollution reaches at acute level every year during dry season in the capital, but city dwellers are exposed to polluted air for lack of information.

### 5.3.3 Challenges to Collecting Urban Environmental Information

Journalists collect urban environmental information from both government and non-government organisations like Department of Environment (DoE), WASA, the Center for Environmental and Geographic Information Services (CEGIS), city corporations and the UN bodies, district administration. They first study on different issues they want to collect information and then go to field level. The authorities do not want to disseminate the information regarding to pollution, grabbing and scam. And some projects funded by foreign donors (like CASE project of the Department of Environment) do not willing to provide information. So, they often have to face challenges in collecting information, but success depends on their skill, tactics and sources.

Journalists also collect raw information from field level as locals are severely affected by pollution or other environmental problems. And when they go to community level to collect information related to grabbing of industrial pollution, they frequently face challenges in collecting information. Sometimes, they get dead threat and attacked by influential quarters. A senior environmental reporter said:

> *"I collect environmental information from field level to make my report and I frequently face challenges in collecting information. I got a dead threat and was attacked in Dhaka city when I went to collect information of land and river grabbing."*

As there is no uniform information store here, journalists have to spend more time to collect information from different organisations in haphazard way using personal relations, which is time consuming.

### 5.3.4 Journalists Want Ready Information

There are allegations that neither any government agency nor private sector entities disseminate urban environmental information voluntarily. When urban information is sought by newsmen, then authorities give some information while city dwellers hardly get information. Nobody disseminates any effective information which is used to prepare a good report. The government officials fell hesitation to cooperate with journalists because they lack ready information and higher authority impose restriction on them. Journalists want ready information to write their news articles. A senior journalist said:

> *"As a media person, I want to know about the particulate matters of air pollution, level of smokes in air. I want ready information. If people have information, then they can be aware of environmental problems."*

### 5.3.5 Poor Implementation of RTI Act

Journalists dig out information using their own sources after building a good relation with officials. When they fail to collect information, they use the Right to Information Act introduced in 2009. But there is still a little implementation of the law. It is a lengthy process to collect information using the RTI act. As the authorities concerned have no ready information in many times, it is time consuming to collect urban information applying the law. If the government takes proper steps to enforce the RTI act effectively, it will bring a good result.

### 5.3.6 Media Play Strong Role in Information Dissemination

Information dissemination is an important thing and how the information will be disseminated properly is also very important. Both print and electronic media play a strong role to make urban environmental information available to city dwellers. The KPI respondents said that newspaper report is one of main ways of information dissemination. If media get urban environment like climate, disaster and weather, land and wetland grabbing, heat, water level, plantation and wildlife in a compiled way regularly, it can publish the information. Proper dissemination of urban environmental information always helps city dwellers to improve their lifestyles. During household survey, about 89 percent of respondents replied that the urban environmental information the media is being disseminated contributes to ensuring their better urban life.

**Table: 23** Respondents' observation about the role of media for better urban life

| Media should disseminate information for better urban life | Frequency (n=300) | Percentage (%) |
|---|---|---|
| Yes | 266 | 88.7 |
| No | 28 | 9.3 |
| No response | 6 | 2.0 |
| Total | 300 | 100.0 |

Source: Household Survey 2015

Information could also be distributed through new media like mobile phone in the rise of citizen journalism, apart from traditional media. In a sense, environmental information dissemination in Dhaka city is quite easy task as majority of city dwellers use mobile phone. So, mobile phone can be an effective tool to disseminate information. Besides, information could be reached at the doorsteps of illiterate people by setting up small units in every ward of Dhaka city and signboard, distribution of leaflets, launching massive information campaign etc.

### 5.4 Measures Needed to Address Challenges

Amid the existing limitations, it is a very challenging task to reach the urban environmental information to all city dwellers. The authorities concerned must take some proactive steps and bold decisions to do so. Only right policy to make the information pubic can help city dwellers to cope with environmental problems in the city.

#### 5.4.1 Information Play Vital Role in Taking Right Policy

Information is a power. Information is necessary for all time and it must be used effectively in taking policy while the policy is prepared to meet public demands. If the authorities concerned disseminate information proactively and continue it, all citizens as well as government will be benefited. Proper dissemination of urban environmental information will help the government take right policy to coping with urban environmental problems. If proper information is not disseminated, there will be wrong a policy. The dissemination of urban environmental information also helps people put pressure on the authorities concerned to be more accountable.

#### 5.4.2 Political Will is a Must

Political commitment is an urgent to make urban environmental information available to the city dwellers. It is easy to say but difficult to do in Bangladesh. But, if the government comes up its strong commitment to do so, nobody can restrict on information dissemination. It has been seen that many development efforts fall flat in the past only for lack of political will. For example, the

Department of Environment (DoE) prepared air quality index (AQI) many years ago, but the AQI is yet to be announced for lack of political willing. If political actors do not come up with their strong commitment to disseminate urban environmental information in the cities like Dhaka, it will be quite impossible task to make information available to city dwellers despite having proper policies. A policymaker said:

> *"Of course, strong political commitment is a must to make urban environmental information available for dwellers. If the government wants to do it, nobody can restrict information dissemination."*

### 5.4.3 Formulate an Urban environmental Information Policy

Bangladesh has achieved a marked progress in many areas of environmental protection, but it has not announced any publicity policy on urban environmental information dissemination yet. A sound urban environmental policy is a one of the first step in a long process of regaining the vitality and pivotal roles that urban areas play. The policy will give instructions on how urban information will be disseminated through radio, television, billboards and posters etc. The Ministry of Environment and Forests can launch such policy with support from the Information Ministry. On the other hand, the senior government officials say that the existing policy of information dissemination is enough, but there is a scope to improve the policy to make it more effective.

## 5.5 Conclusion

This chapter describes the existing governance scenario of urban environmental information of Dhaka city and provides suggestions to improve the existing state of governance. To ensure urban governance in the city, the long-time practices of the government officials in dissemination of urban environmental information must be removed aiming to establish transparency and accountability in the government institutions. As the authorities show reluctant in dissemination

of environmental information due to poor data preservation, data preservation system must be strengthened. A policy framework along with proper plans and investment should be put in place to make urban environmental information available to all.

# Chapter: 6

# Prospect of Introducing an Urban Environmental System in Dhaka

## 6.1 Introduction

An urban environmental information system is required to build a planned city and ensure sustainable development by preserving its unique biodiversity and landscape patterns. The information systems perform various support functions for urban planning and governance while basic understanding of environment components like soil, water and air is a must in taking ecological planning to build a livable township (Schneider et al, 2007). For lack of access to urban environmental information, city dwellers as well as others have to face various environmental challenges in their urban lives. Considering these aspects, many cities of the developed world like London and Berlin have prepared urban environmental system. This chapter describes the requirement of an urban environmental information system and provides guidelines to introducing a system for Dhaka city.

## 6.2 Causes and Consequences of Citizen's Lack Access to Urban Environmental Information

There is no single reason behind citizen's lack access to urban environmental information in the city while a number of causes are responsible for it. Citizen ignorance on urban environment, lack of capacity of urban agencies, poor accountability and absence of an environmental information system are contributing to the citizen's lack of access to urban environmental information. And all those causes are bringing multiple consequences in urban life.

### 6.2.1 Causes of Citizen's Lack Access to Information

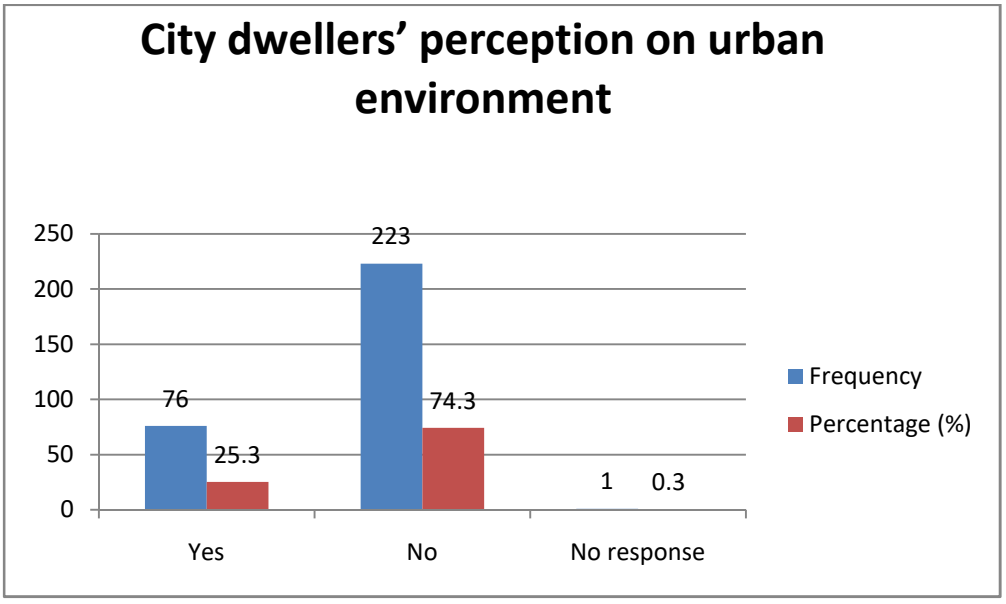
As information is power and it helps people take right steps to advance their socioeconomic status, identification of the causes of citizen's access to urban environmental information is

important to reach the information to the city dwellers and resolve the urban problems the Dhaka city is currently facing.

***City Dwellers' Poor Knowledge on Urban Environment***

In modern era, it is now well-recognised that urban environmental information plays important role to make city dwellers aware of urban environment and help them address environmental challenges, but the household survey reveals that majority of the city dwellers, particularly the lower income people and middle income group, have no proper knowledge on urban environment while a very few number of city dwellers have knowledge on urban environmental information. This is one of the major causes for their lack of access to urban environmental information.

**Figure: 16** City dwellers' perception on urban environment

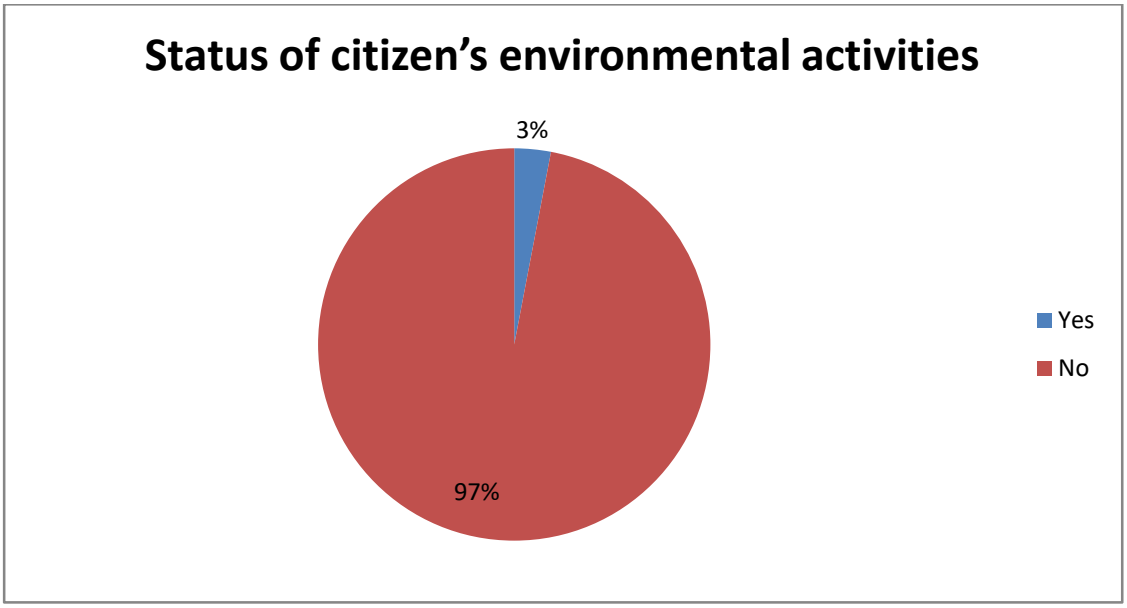



Source: Household Survey, 2015

During the household survey about 74.3 percent of respondents said they do not have proper knowledge on urban environment while about 25.3 percent replied that they know about urban environment, but they did not give any clear idea about it. As majority of the city dwellers have

no proper perception on urban environment, they do not show willingness to participate environmental activities in the capital.

**Figure: 17** Status of citizen's environmental activities




Source: Household Survey, 2015

During the household survey, about 97 percent of respondents said that they do not take part in any environmental activities while only 3 percent replied that they are involved in environmental activities like cleanness and awareness programmes.

***Lack of Capacity of Urban Agencies***

The government agencies have no adequate capacity to collect and manage urban environmental data although technology is advancing in the country. Many senior officials of the government are not capable to use technology. Lack of capability in urban agencies is creating impediment to ensuring citizen's access to urban environmental information. A senior policymaker observed:

> *"There may be lack of capacity to preserve adequate environmental information. If the government bodies lack manpower and capacity of storing information, they do not show interest to disseminate information".*

So, lack of capacity of government bodies is one of the key causes of citizen's lack access to information.

***Lack of Transparency in Urban Institutions***

Transparency is always a vital factor in urban governance, but the government officials in urban agencies are more conservative in information dissemination. Authorities concerned show reluctant role in information dissemination due to their long-time practice and lack of transparency. They think that if they distribute information, they will have to be more accountable and transparent. A public representative said:

> *"Lack of sincerity is the main reason for not distribution of information. If we, all the authorities concerned, be sincere to disseminate information, urban environmental information could be reached to public level."*

***Absence of an Urban Environmental Information System***

An integrated information system must be put in place to reach information to the city dwellers, but there is no urban environmental information system in a mega city like Dhaka where environmental problems are common phenomena. There is no designated organisation or official centre, which collects and disseminates urban environmental information in Dhaka. There is no an official information system to disseminate urban environmental information. But information is being collected on partial, sporadic and ad-hoc basis while citizens have no adequate access to it. So, the city dwellers have no easy access to urban environmental information in absence of an integrated system.

### 6.2.2 Consequences of Citizen's Lack Access to Information

Access to the urban information always help the authorities concerned ensure quality of life by supporting emergency planning and preparedness and improving understanding of health and environmental risks. Information makes citizens aware of the toxic substances and enables them to assess potential risks to the environment and surrounding community. And if the environmental information is disseminated, the city dwellers living in the surrounding the industries of hazardous substances will get opportunities to take better plan in addressing

environmental problems. For lack of information, city dwellers every year suffer from various environmental hazards. For example, Dhaka's air is highly polluted during the dry season and city dwellers are being exposed to air pollution every year due to lake of available data of air pollution. If people get data related to air pollution, they will be able to escape themselves from pollution. Many city dwellers also face difficulties in getting pure food items or traffic update for lack of information. A professional of the government's Press and Information Department (PID) said:

> *"We face various problems in our personal life as environmental information is not available. We face difficulties in getting pure food items or fall in traffic congestion. I don't know the sewage systems of the city and where we should go to get pure drinking water. I also do not know the air quality of specific place."*

People are exposed to hazardous electronic wastes, including radiation and emissions of computer hardware and accessories and condemnation procedure of computer hardware. They also face environmental disasters like flooding, water-logging and fire for lack of urban environmental information.

### 6.3 Dhaka Requires an Integrated Urban environmental Information System

As Dhaka city is growing fast keeping pace with the country's economic growth, an integrated urban environmental information system should be introduced in the city to manage existing and future environmental challenges. But there is no centralised official system in Dhaka city in respect to dissemination of urban environmental information. There is also no designated organisation or official centre, which collects and disseminates urban environmental information in Dhaka. The urban environmental information is being collected on partial, sporadic and ad-hoc basis. Some organisations like Local Government and Engineering Department (LGED) and the Centre for Environmental and Geographical Information System (CEGIS) generate environmental data on need basis, but there is no integrated urban environmental information system here. In absence of an urban environmental information system, an environmental expert said:

> *"I have no idea whether an urban environmental information system exists in Dhaka city or not. Apparently, I think there some lacking on the way a mega city should be developed. If we consider overall social and physical environment of Dhaka city regarding cleanness, pollution, no sectoral information database is created. But it is very much urgent on aspect of management and resource mobilisation and taking future step."*

A number of government agencies are involved in urban environmental information management. But only the Flood Forecasting Centre established under the Bangladesh Water Development Board (BWDB) distributes real-time information. The Department of Environment (DoE) also generates some information. The city corporations have a database system but they do not maintain it.

Although there are disorganised and scattered information on the environment, these need to be compiled and processed by some organisations. The best way to have urban environmental information is entrusted to a particularly organisation – governmental or non-governmental organisation. With the task of collecting urban environmental information, there is no such organisation in place here. But it has to be established. If a system of collecting, coordinating and processing data is established, then it can be disseminated. The city corporations or the Ministry of Environmental and Forests is yet to start any process of information dissemination. There is also scope to involve the Information Ministry in dissemination process of urban environmental information.

**Table: 24** Major agencies involved in urban environmental information management

| No | Name of the Organisations | Information Management of these Organisations |
|---|---|---|
| 1 | Dhaka North City Corporation(DNCC) | Service and waste related data |
| 2 | Dhaka South City Corporation(DNCC) | Service and waste related data |
| 3 | Department of Environment | Environmental and pollution data |
| 4 | Rajdhani UnnayanKartripakkha (Rajuk) | Planning and housing information |
| 5 | Flood Forecasting and Warning Center (FFWC) | Climate, wealthier and rainfall data |
| 6 | Local Government Engineering Department (LGED) | Planning, health and service related data |
| 7 | Dhaka Water and Sewerage Authority (DWASA) | Water and sewerage data |
| 8 | Ministry of Water Resources (MOWR) | Water related data |
| 9 | Ministry of Disaster Management and Relief | Disaster related data |
| 10 | Water Resources Planning Organization (WARPO) | Water related planning and design |
| 11 | Bangladesh Meteorological Department (BMD) | Climate, wealthier and rainfall data |
| 12 | Bangladesh Space Research and Remote Sensing Organization (SPARRSO) | Environment and climate data |
| 13 | Roads and Highways Department (RHD) | Roads and transportation information |
| 14 | Public Works Department (PWD) | Housing data |
| 15 | Bangladesh Water Development Board (BWDB) | Water related data |
| 16 | Institute of Water and Flood Management (IWFM) | Water related data |
| 17 | Center for Environmental and Geographic Information Services (CEGIS) | Environmental information |
| 18 | Institute of Water modeling (IWM) | Water and environmental related data |
| 19 | Urban Development Directorate (UDD) | Urban planning |
| 20 | Department of Public Health Engineering (DPHE) | Water, sanitation and health related data |

Sources: Key Persons Interviews (KPIs) and CEGIS, 2016 (Note: Multiple responses considered)

### 6.4 Establishment of an Information Centre

The government can set up a centralised information cell, a centre or a hub to introduce an urban environmental information system for Dhaka city. The centre will upload information in an active website on regular basis so that people have access to it from anywhere. The information centre could be introduced from public sector, private sector and also from institutions like a university. A senior policymaker said:

> *"A coordinated body should be formed, which collect and generate information, to disseminate it through developing an urban environmental information system for Dhaka city. It will disseminate essential information willingly and create available space for public so that can collect information as per their need."*

The Department of Environment (DoE) under the Environment Ministry or city corporations can launch such a centre. And if the centre is introduced from private sector with support from the government, the Environment Ministry and the city corporations have to play the key role in this regard by giving inputs. But, many say since the Department of Environment (DoE) deals with environment related issues, it can introduce an urban environmental centre involving all the stakeholders. All concerned authorities will send information to the centre and it will upload in website and will also disseminate through proper ways. Coordination must be strengthened between the government organisations and NGOs that work on environment to make the centre a storehouse of information.

**Table: 25** Role of entities in establishing an urban environmental information centre

| Oragnisations | Organisations' scope to play role |
|---|---|
| Dhaka North City Corporation(DNCC) and Dhaka South City Corporation(DNCC) | Can jointly establish an urban environmental information centre. If not, they will provide information to the centre set up by other agency. |
| Department of Environment (DoE) | Can establish an urban environmental information centre. If not, it will provide information to the centre set up by other agencies. |
| Other public agencies | Will send information to the centre regularly |
| Research organisations | Will send information to the centre regularly |
| Non-government organisations (NGOs) | Will send information to the centre regularly |

Sources: Key Persons Interviews (KPIs) Note: Multiple responses considered

### 6.5 Development of an Urban Environmental Information System

During the household survey, cent percent of the respondents say that urban environmental information is helpful to them, so an urban environmental information system should be introduced for Dhaka city. The urban environmental information system could be developed by the government level or a non-government organisation. About development of an environmental information system, an urban planner comes up with his observation:

> *"First you should collect all data and then launch a huge site that will provide service delivery. The information system could be launched by a government agency or a private firm under city corporations. The system should be web portal based on public needs, while all information will be stored and it has to interactive. Information needs to be updated daily."*

As per the present context, many think that the government bodies will not be able to make it functional. If the government gives authorities to a non-government to introduce a system, it will

be more functional. Whatever the Department of Environment (DoE) or the city corporations or a private organisation introduces the urban environmental information in the Dhaka city involving both government agencies and other relevant stakeholders like Rajdhani UnnayanKartripakkha (Rajuk) and media, the Dhaka city corporations have to take responsibility in collecting micro-data from ward or cluster levels. City corporations units should used in collecting information. All units will be regulated by a central authority. Of course, the system should be web-based and modern technology must be used to disseminate information to public level. All the relevant stakeholders will provide data to the information centre while the centre will upload and store information on the web portal based on public needs. It will update information regularly. The urban environmental information system should have an option to use mobile phone or apps to disseminate real time information to people. And information should be disseminated through both Bangla and English languages in SMS service. Information also can be disseminated through television and radio bulletins like the meteorological offices to do so.

To introduce an effective urban environmental information system for Dhaka city, the following design principles need to be followed:

I. It is necessary to keep the information collection process decentralised in nature and proximate to data collectors and users, since it is they who best understand its use and limitations.

II. Collectors of data should be responsible for its accuracy and appropriateness. Data should also have meta-data such as date, origin and conditions for access and responsible organisations.

III. Information should be freely available for all purposes and at all levels. All decision-makers should have access to the same information with highest standards of reliability.

IV. Data should only be collected once, avoiding unnecessary duplication and simplifying reporting requirements, data once collected should be readily and rapidly available to all users.

## 6.6 Models of Environmental Information System

Meanwhile, many developed countries developed separate models of environment information system and introduced in their major cities to manage environmental problems. Before going to develop a model for Dhaka city, the authorities concerned may study on some well-developed models, which are currently using in dissemination of urban environmental information in developed countries.

**The Context of Environmental Information (Picture 1)**

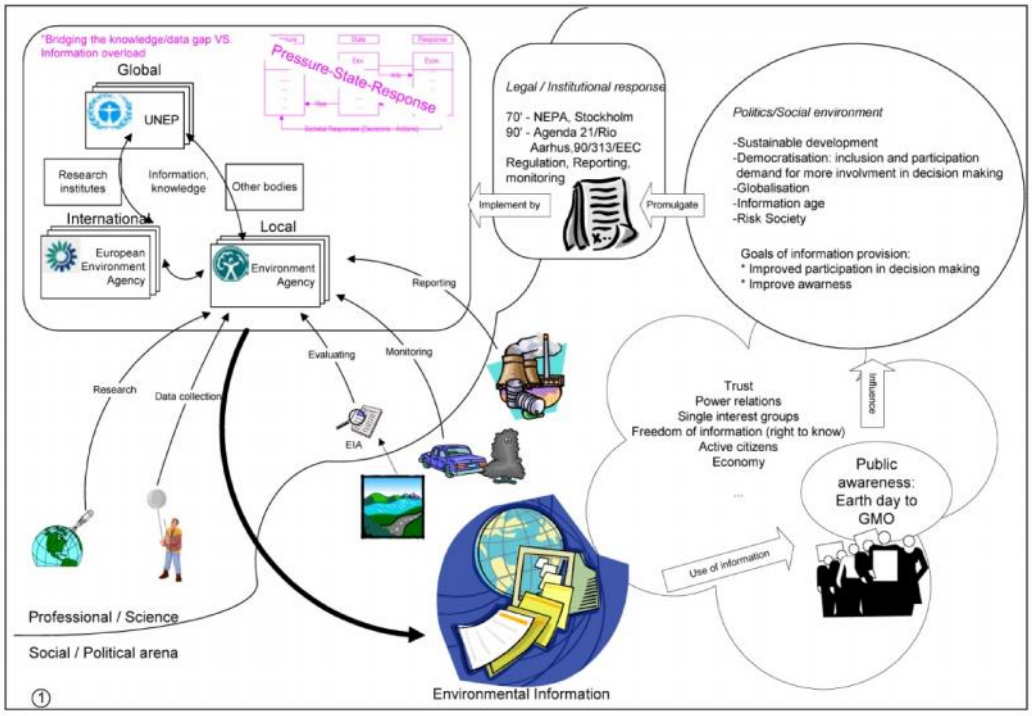



**Plate: 23** The Context of Environmental Information, (McKeown, 2006)

McKeown in 2006 developed a number of model involving probable all stakeholders of a city where public get an easy access to the urban environmental information. In his first model, he covered all local and international environmental agencies, professional research groups and socioeconomic and political environmental groups. The model was developed considering the border perspective to disseminate urban environmental information to city dwellers.

**Environmental Information Systems (Picture 2)**

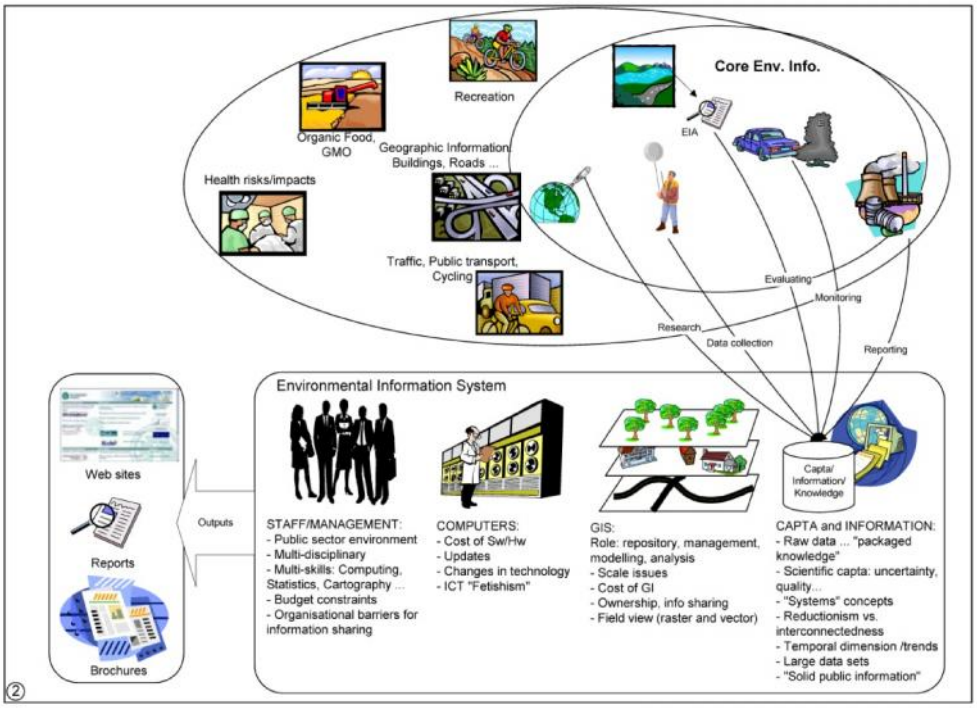



**Plate: 24** Environmental information system, (McKeown, 2006)

In his model two, he suggests a capital information knowledge system containing data of organic food, roads and transport, recreation and pollution, etc. And the data is required to upload in website and prepare report and brochure so that people can get easy access to the information.

**Public Access to Environmental Information (Picture 3)**

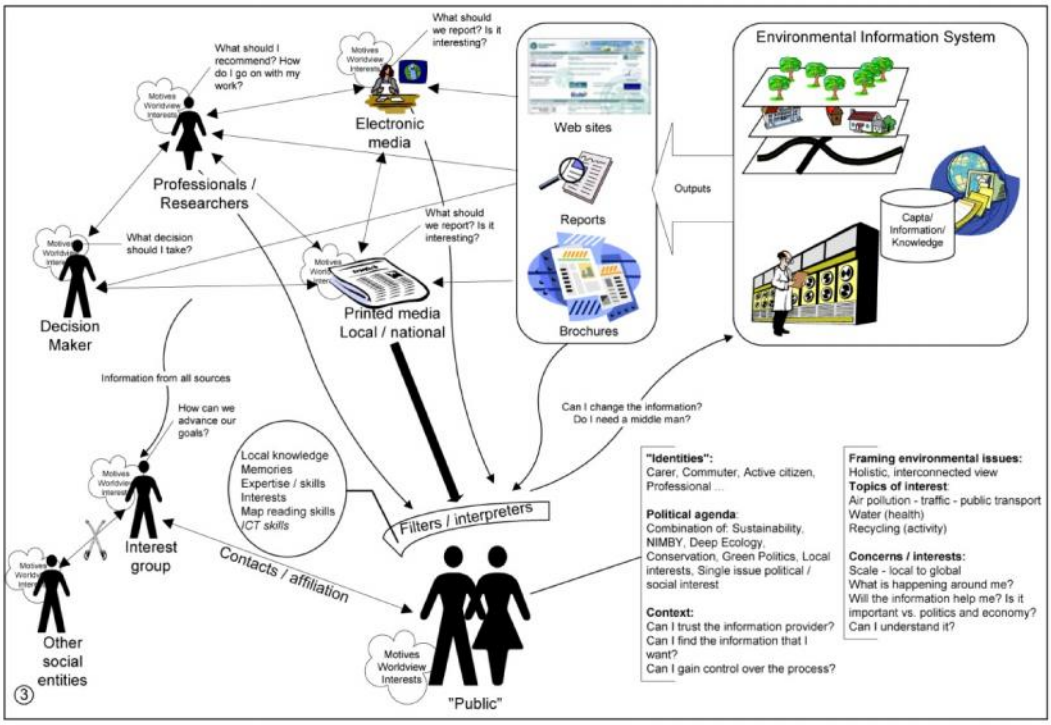
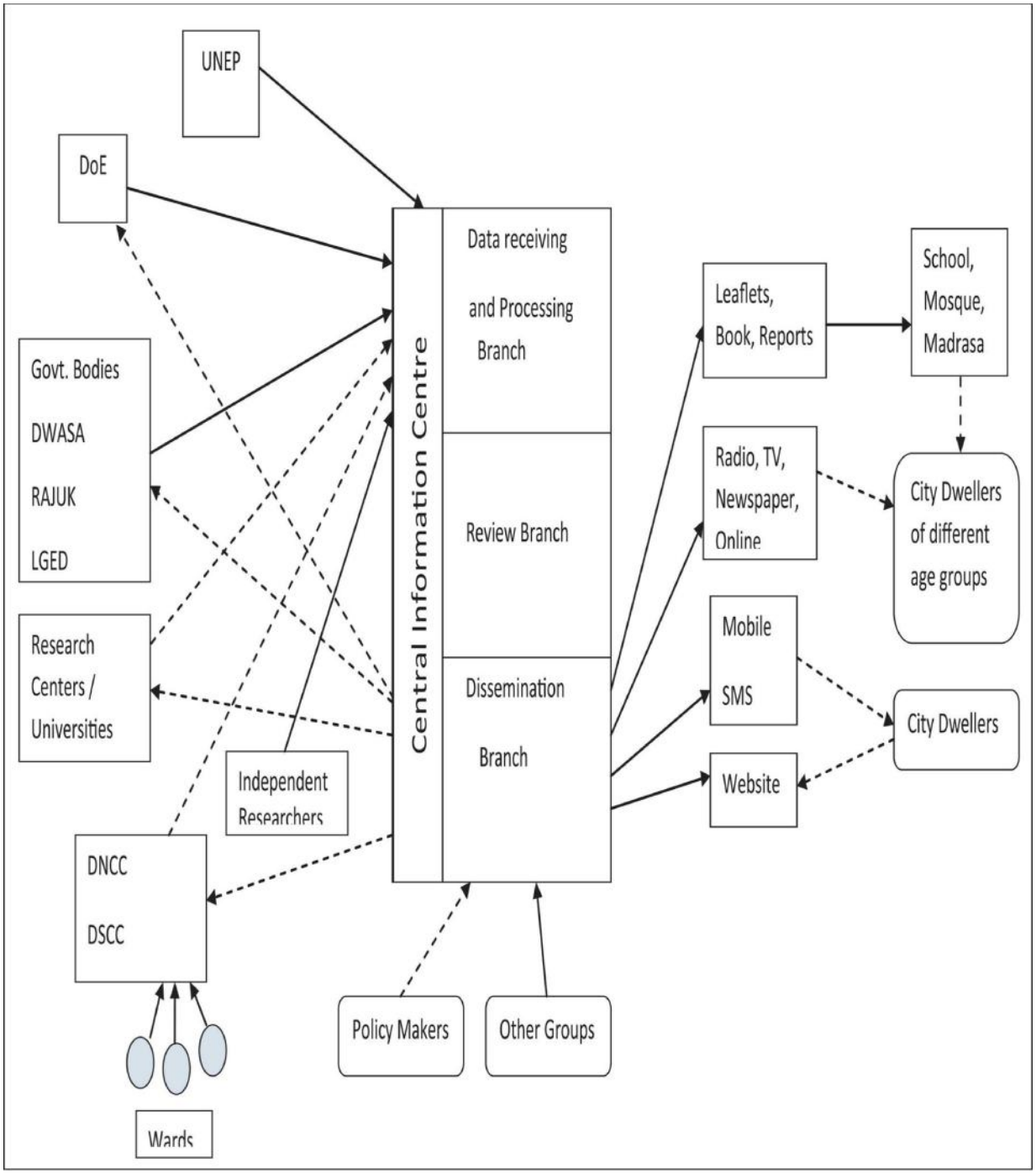



**Plate: 25** Public access to environmental information, (McKeown, 2006)

Another model developed by McKeown in 2006 shows that an information knowledge system uploads information in website and prepares reports and brochures and both print and broadcast media publish or air reports based the information preserved in the information knowledge hub. The researchers, professionals, interest groups and people respond the reports published in media and they send the reports to filter or interpreter. The securitised data will be stored again in the information knowledge hub for further use.

A proposed urban environmental information system for Dhaka city has been developed under the study. As per the system, there will be a central information system comprising three braches – data receiving and processing branch, review branch and dissemination branch. Different stakeholders will provide information to the data procession branch of the centre. The information/data will be processed and reviewed in the centre and then dissemination branch will distribute it to city dwellers through different channels – like website, mobile SMS, media and publishing reports, leaflets, brochures and books.

**Plate: 26** Urban Environmental Information System for Dhaka city




Source: The Urban Environmental Information System is developed by author.

## 6.7 Conclusion

Chapter six describes the prospects and challenges towards introducing an urban environmental information system for Dhaka city. Despite many urban bodies' involvement in urban governance here, the authorities concerned are yet to develop any urban environmental information system that helps policymakers take effective policy to ensure sustainable and environment-friendly development for Dhaka city. This system must be developed involving all local bodies, national institutions, media and ensuring public access to the information preserved on the domain of the system. So, this chapter explores the way how an integrated urban environmental system could be developed suitable to Dhaka city considering its growing environmental challenges. This chapter also gives some policy guidelines to develop an environmental system for the city.

# Chapter: 7

# Summary Findings, Recommendations and Conclusions

## 7.1 Introduction

Dhaka is one of the most densely populated and rapidly growing city in the world with 1.48 crore population. The city has been a showcase for almost every urban problem imaginable (Demographia, 2014). It has been facing various forms of environment problems due to rapid urban growth and pressure of excessive population. The quantitative and qualitative inadequacies of existing urban infrastructures and the inefficient urban and environment management systems that generally exist in the country are leading to severe environmental pollution and a degradation of standard of livings, health and well being (Sultana, 2009). Every component of urban environment is deteriorating in the city day by day. However, this study aims to understand the patterns and process of unban environmental information of Dhaka city.

Air is one of the key components of urban environment, but air quality of Dhaka city has deteriorated over the years. It is caused by a huge number of motorised vehicles on roads, lack of proper traffic management, improper land use planning, industrial growth, construction activities, re-suspension of dusts, and open burning (Karim, 2001). Water problem is also a crucial issue for the Dhaka city. It has faces acute water problem each year due to unchecked pollution of surface water and rampant withdrawal of ground water. The water quality of all the five rivers around Dhaka, including Buriganga, Balu, Turag and Shitalakhya, is deteriorating rapidly due to indiscriminate pollution from industrial and municipal sources, and the situation turns at alarming level during the dry season. The soil quality is also deteriorating rapidly in the city due to uncheck pollution. The soil of city is being contaminated due to unchecked discharge of toxic industrial wastes. The city faces a severe soil contamination in the industrial areas, especially in Hazaribagh and Tejgaon areas. Unplanned industrialisation and over concentration of people are also contributing to soil degradation in the city. The built environment of the city like building, park, green and open spaces, infrastructure, road network, is changing rapidly in countless ways while some changes are fast and some are slow. The waste generation has become an increasingly challenging issue over the last two decades due to a marked increase in

waste production in the city. Both Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) are facing challenges to manage wastes with its limited resources and poor management (Asaduzzaman et al. 2014). Identifying the patterns and process of urban environmental information, proper policy and action plan is a must to mitigate the growing urban environmental challenges in Dhaka. This final chapter summarises the major findings of the study and presents the overall conclusion related to the state of urban environmental information of Dhaka city. Based on these findings, recommendations are made for introducing an urban environmental system for Dhaka city.

## 7.2 Summery Findings

The findings of the study reveal that there is no integrated system in Dhaka city to disseminate urban environment information to the city dwellers. The ineffective in urban environmental information dissemination is restricting the planned urban development and accelerating sufferings of city dwellers. However, the negligence of the authorities concerned is found to be the main underlying cause behind poor dissemination of urban environmental information. This section summarises the major findings on the patterns and processes of urban environmental information of the Dhaka city.

### 7.2.1 Patterns and Processes of Urban Environmental Information

Urban environmental information plays a crucial role for development of a city. It helps city dwellers be aware of city environment and policymakers take right policies. So, understanding the patterns and processes of urban environment is a key to develop an urban environmental system for the Dhaka city aiming to make information available to city dwellers. This section summarises the findings of the processes of urban environmental information.

### 7.2.2 Characteristics of the Respondents

The household survey has given a perception about the characteristics of the respondents of the study. Data was collected from both male and female, who had also different residential status, comprising four age groups – bellow 20, 20-30, 31-40 and above 40. Relatively young people had participated in the survey proactively and were more enthusiastic to respond. About 76.3

percent respondents of the survey were male while only 23.7 percent was female. Most of the respondents (90.3 percent) live in the capital permanently become of their occupation, job or business. Only 9.7 percent who live here temporarily come as seasonal migrants seeking works and they go back their village homes. Majority of the respondents particularly lower income group and middle income people live in rented homes in the city. About 58.3 percent respondents of the survey said that they live in rented houses while 37 percent have own houses. Low-income group lives in low-paid rented house. Most of them live at slums paying below Tk 5,000 monthly. Most of respondents covered by the study are adult and married (79 percent). Both educated and illiterate people were covered under the study while about 30.3 of respondents who live in slums are illiterate. Lower income people and middle income group have relatively larger families than higher income people. Survey data reveals that nearly 82 percent of the respondents have 3-6 family members and most of them are either lower income or middle income people. Families from lower income group and higher income people have two more family persons. In contrast, most of families of middle income have one earning person. The survey shows that about 55.7 percent households have at least one earning member while about 40 percent households have two earning persons. Most of the household heads of lower income group work in non-formal sector or work as day-labourer or pull rickshaw. Household heads of both middle income group and higher income people do formal jobs or business. About 40 percent of respondents, mostly from middle income group, said they do service. About 47.3 percent responded that they have business and 12.7 percent are involved in other occupations. People migrate to Dhaka city from other parts of the country for various reasons. Many people are coming in the city seeking work. The slum dwellers migrated to Dhaka losing their belongings due erosion or other climatic events or losing their livelihood options in rural areas. Most of the middle income people came here after they got a job in the capital.

### 7.2.3 Patterns of Urban Environmental Information

The pattern of urban environmental information indicates a large number of indicators on urban environment, geological, geo-morphological, soil related data, and hydrology, climatic and social environmental data. Climatic data include all elements of climate like temperature, rainfall, wind and humidity etc. while social-physical environmental data are pollution – air pollution, water pollution, soil pollution, sound pollution and even visual pollution. Data on wastes management,

drainage congestion and water discharge also considered as environmental information. There are around 54 organisations and bodies, including city corporations and Dhaka WASA, involved in environmental management in Dhaka, which generate or preserve environmental data. Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) collect and generate environmental information. As a planning body, Rajdhani Unnayan Kartripakkha (Rajuk) prepares urban plan and transportation plan, and it also collects information of all Dhaka's environment. Dhaka WASA maintains water, sewage, waste and drainage-related data. The Urban Development Directorate (UDD), the Department of Transport and the Department of Environment (DoE) are also involved in generating urban environmental information on Dhaka city. Information related to air and water pollution is preserved by the Department of Environment (DoE) and it also collects information of waste generated in the city. Many non-government and semi-government organisations, academic institutions like the Department of Geography and Environment, Geology Department, Soil Science Department, Urban Planning Department of universities conduct research on the environment of Dhaka city and generate information. Research organisations like the Centre for Urban Studies (CUS), the Bangladesh Centre for Advance Studies (BCAS), the Center for Environmental and Geographic Information Services (CEGIS) and professional bodies like Bangladesh Institute of Planners (BIP) also produce and keep urban environmental information. Social environment related information like poverty and health education are being generated by the Bangladesh Bureau of Statistics (BBS) while investment related data by the Board of Investment (BoI), and climate and weather data are collected by the Bangladesh Meteorological Department.

### 7.2.4 Processes of Urban Environmental Information

The process of urban environmental information means how the information is collected. There is no integrated process of urban environmental information here. Information is being collected in various ways in Dhaka city. The authorities concerned collect information through primary survey, from published and printed documents like annual reports, household survey, geological survey and soil survey carried out by different organisations. Urban environmental information is being also collected from national and international media, which focus on Bangladesh's environment in a boarder perspective. Research organisations, professional bodies and other non-

government organisations collect raw data from field level to meet their own purposes. But they hardly share their data to each other. So, duplication of data is available here.

### 7.2.5 State of the City Dwellers Access to Media

Media play a strong role to reach urban environmental information to the doorstep of city dwellers. They frequently collect urban environmental information from media. As media is very vibrant in urban settlements, majority of the city dwellers (96 percent) have access to media like newspaper, television and radio. In contrast, a little number of city dwellers, particularly a section of lower income group, has no access to any form of media. The city dwellers, who have no access to media, are the ultra poor who have monthly income bellow Tk 5,000 while they live in slums or on city streets. As media is available in urban area, majority of city dwellers especially middle income group and upper income people have regular access to media. Despite having poverty, a significant number of lower income people have also regular access to media. They use at least one medium every day. Of them who have access to media, 91.7 percent of respondent replied that they have access to media daily. City dwellers use different types of media - newspaper, television, radio and online - for various purposes. The educated dwellers read newspapers and use online apart from watching televisions. But, they hardly listen radio. The lower income people generally watch television regularly. About 40 percent respondents, particularly from lower income group, replied that they only use television. About 24.7 people have access to both newspaper and television. About 11.7 percent of respondents, who are in fact upper income group and middle income people, have access to newspaper, television and online. About 6 percent respondents have only access to newspaper. Besides, only 1.3 percent of respondents said they use multiple media (newspaper, radio, television and online). City dwellers use media for various reasons like getting information and entertainment and learning. Educated dwellers use media to get information, middle-income people use media to get both information and entertainment and the lower income group, particularly slum dwellers, watches television to get entertainment. The household survey shows that about 25 percent of respondents use media for getting information while 42 percent of the respondents for getting both information and entertainment. The household survey reveals that city dwellers use media to get various kind of information. About 7.3 percent of respondents replied that they use media to only get

environmental information while 11 percent to get political information and 12 percent for sports related information. About 29 percent of the respondents use media to get political and sports-related information. Around 22 percent of respondents said they like to get environmental, political and sports related information, and 2.3 percent wants to get environmental, political and sports related- and other information.

### 7.2.6 City Dwellers' Perception about Urban Environment

Urban environmental information plays important to make city dwellers aware of urban disasters and help them address those environmental hazards, but most of the city dwellers, particularly lower income people and middle income group, have no proper knowledge on urban environment. Despite having access to media to get information, a very few city dwellers have poor knowledge on urban environmental information. About 25.3 percent of respondents replied that they know urban environment. But, they have no clear knowledge on it. In contrast, about 74.3 percent of respondents said they do not know about urban environment. Of them who claimed that they knowledge on urban environment, about 13 percent of respondents think that their surrounding environment is urban environment while 14.47 percent think urban infrastructure and 13.15 percent indentified road network as urban environment.

## 7.3 Urban Environmental Information Dissemination in the City

Citizen's access to urban environmental information depends on how it is being disseminated and the methods of information dissemination. This section will summarises dissemination ways of urban environmental information in Dhaka city. There is single entity which is responsible to dissemination of urban environmental information, but a number of organisations are involved in dissemination of urban environmental information in Dhaka city. A number of government bodies like Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Dhaka WASA, the Department of Environment (DoE) and Urban Development Directorate (UDD) are involved in dissemination of urban environmental information. Non-government organisations, research think tanks and media also play an important role in dissemination of

urban environmental information in the city. But, during the household survey, about 89.7 percent of respondents find media's involvement in the dissemination process.

### 7.3.1 Existing Information Dissemination Method

Urban environmental information is being disseminated in Dhaka city in scattered way. There is no central organisation, which collects urban environmental information in the city. Information is being disseminated at this moment is in a haphazard manner, mostly from the story coverage of different mass media. There is also no specific guideline to disseminate the urban environmental information for Dhaka city. The flow of information is always helpful. But the way the urban environmental information is being disseminated in city is not helpful to city dwellers. In fact, the authorities concerned do not provide information proactively, which is helpful to city dwellers. But, if urban environmental information could be reached to the thresholds of city dwellers in proper way, a quality change will come in the city and it will be quite possible to establish urban environmental governance. High quality information, which is accurate, timely, relevant and unbiased, facilitates effective networking and action for urban environmental management. Although proper dissemination of urban environmental information brings a positive change for a city and helps city dwellers address environmental problems, most of the city dwellers are not aware of dissemination of urban environmental. They do not have enough knowledge on dissemination of urban environmental information. The illiterate people, particularly lower-income group and a section of both middle income group and upper income group do not know how environmental information is being disseminated in the city. Majority of the city dwellers (60.7 percent) have no knowledge on urban environmental dissemination. Household survey found that only 39 percent of respondents have knowledge in this regard. But they do not give any clear idea about it.

### 7.3.2 Role of Media in Dissemination of Urban Environment Information

Media always play a vital role in disseminating urban environmental information and city dwellers know it. During the household survey, about 89.7 percent of respondents replied that media disseminate urban environmental information. But, majority of them do not use media to get it yet, because a huge section of city dwellers from all groups are not aware of urban environmental information. About 63 percent of respondents replied that they do not use media

in this regard. Only 37 percent of respondents (who are aware of urban environment) use media to get urban environmental information. Use of media depends on social classes of city dwellers. Generally, upper income people have access to all of forms media, so they use all those media to get urban environmental information. Middle income group uses newspaper and television in this regard. In contrast, lower income group have no access to all forms of media for resources constant, so they prepare to watch television to get information.

Of the 37 percent of city dwellers who use media to get urban environmental information, about 14.3 percent use newspapers and television to get urban environmental information. About 12.3 percent of respondents particularly lower income people said that they watch television only to get it. About 5.3 percent of city dwellers use newspaper, television and online in this regard. City dwellers hardly use radio to get urban information while 2.7 percent responded that they read newspapers to do so. City dwellers' easy access to media is very crucial in information dissemination. Effectiveness of media depends on how many people use it. In this sense, television is the best media in dissemination of urban environment followed by newspaper as almost all city dwellers have access to it. The people, who are not literate enough to read newspapers or afford to buy newspapers and no access to online, use television. Higher income group and a section of middle income people read newspapers regularly in this regard. In contrast, radio is losing popularity among city dwellers nowadays. Although there are huge scope to use all kind of media to disseminate urban environmental information, about 69.3 respondents think that television is most effective medium in this regard, followed by newspaper (18.7 percent), online (2 percent) and radio. As the responsible authorities are not properly functioning in dissemination of urban environmental information, the city dwellers' dependence on media is growing day by day. About 90 percent of city dwellers think that media should play better role in this regard.

Both print and electronic media can play strong role to make urban environmental information available to city dwellers. If media get urban environment like climate, disaster and weather, land and wetland grabbing, heat, water level, plantation and wildlife in a compiled way regularly, it can publish the information. Proper dissemination of urban environmental information always helps city dwellers improve their lifestyle. During household survey, about 89 percent of respondents replied that the urban environmental information the media is being disseminated

contributes to ensuring their better urban life. Information could also be distributed through new media like mobile phone in the rise of citizen journalism, apart from traditional media. Mobile phone can be an effective tool to disseminate information. Besides, information could be reached at the doorsteps of illiterate people by setting up small units in every ward of Dhaka city and signboard, distribution of leaflets, launching massive information campaign etc.

### 7.4 Governance of Urban Environmental Information

Urban governance is a must in establishing a planned city while it makes a city livable and push to authorities concerned to be accountable to city dwellers. But there is poor governance in every areas of Dhaka city making the city dwellers' lives miserable. There is no visible progress in governance of urban environmental information dissemination. This section highlights the state of urban governance in urban environment and the challenges the city faces.

#### 7.4.1 Governance in the Government Agencies

Urban governance is a quite complex issue while a number of stakeholders are involved. So, many urban bodies and public institutions are responsible to environmental information dissemination. Local government bodies like Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) and government entities like Dhaka WASA and Rajdhani Unnayan Kartripakkha (Rajuk) are currently disseminating environmental information in Dhaka. Although urban government is a complex issue, most of city dwellers are aware of the government bodies responsible to urban environmental information in Dhaka city. About 83.7 percent of city dwellers know about the government bodies, which are responsible to environmental information dissemination. In contrast, about 16 percent respondents, particularly illiterate and extreme poor people, said that they have no knowledge about the responsible government bodies. During the survey, the respondents identified Rajdhani Unnayan Kartripakkha (Rajuk), Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Dhaka WASA, the Department of Environment (DoE) and Bangladesh Television (BTV) and other public media as the responsible government bodies in dissemination of urban environmental information. About governance, the city dwellers think that the city corporations,

Dhaka WASA and Rajdhani Unnayan Kartripakkha (Rajuk) have to play better role in this regard. But, negligence is found everywhere in dissemination of urban environmental information in Dhaka. The government bodies never proactively release environmental information. About 83 percent of respondents replied that the government bodies are not playing their due role in dissemination of urban environmental information. City dwellers observe that the government officials are more conservative in information dissemination as the household survey shows that about 86.3 percent of respondents think the authorities concerned are not interested to disclose information. The authority shows reluctant role in information distribution because of a long-time practice and lack of transparency. Lack of coordination among the government bodies is one of the biggest problems that Dhaka city is currently facing. Although a number of government bodies are involved in urban governance, there have no coordination among them. They hardly share data or information they have. They have also negligence in dissemination of urban environmental information. Proper information is not exchanged among these authorities. Departments which are supposed to disseminate information on environment issues work in isolation, they don't work in unison. Apart from lack of coordination, the government bodies have no enough institutional capacity to store urban environmental information they generated, despite developing technology in the country. Many senior officials of government are yet to use technology and they are incapable to store information. Most of the government bodies have no efficient staff to preserve data. Thus, when people seek information from these bodies, they show reluctant as they have no compiled information. As the government bodies lack manpower and capacity of storing information, they do not show interest to disseminate information. So, lack of capacity of government bodies in storing urban environmental information is one of the key impediments to dissemination of information. The KPI respondents observed that building capacity and appointing efficient manpower in the government institutions to preserve environmental information can ensure proper dissemination of information in the capital.

### 7.4.2 Challenges of Access to Urban Environmental Information

Access to urban environmental information is very crucial in coping with the environmental problems during any emergency period. Dhaka city experiences show that city dwellers have a little access to urban environmental information system for lack of a proper dissemination

system. They face multiple challenges in access to urban environmental information. City dwellers want the information, which they need in their daily life. People want more updated and real time information like air, water, weather; and data related environmental pollution, built environment like roads, infrastructure and park and social environmental like urban poverty, education and health. During the household survey, about five percent respondents replied that they seek only real time data from media. About 30 percent of respondents said they want information related to pollution and built environment. About six percent of city dwellers want real time data and pollution related information while about 22 percent seek real time data and pollution and built environmental information from media. Only five percent respondents seek socio-environmental information like urban poverty, education and health. Higher income people and middle income people are interested to get various kind of information. Lower income group particularly wanted to know pollution-related and built environment related information. But, the city dwellers frequently face various problems for lack of urban environmental information. In absence of available of information, people are exposed to hazardous electronic wastes, air pollution, water-logging and water pollution etc.

Since the authorities concerned do not want to disseminate information related to pollution, grabbing and scam, the city dwellers as well as journalists frequently face challenges in collecting information. Sometimes, journalists get dead threat and being attacked by influential quarters. As there is no uniform information store here, people have to spend more time to collect information from different organisations in haphazard way using personal relations, which is really time consuming. There are allegations that neither any government agency nor private sector entities disseminate urban environmental information voluntarily. When urban information is sought by journalists, then authorities give some information but city dwellers hardly get information. Journalists alleged that nobody disseminates any effective information which is used to prepare a good report. The government officials feel hesitation to cooperate with journalists because they lack ready information. But journalists want ready environmental information like particulate matters (PM) of air pollution, level of smokes and water quality to write their news articles. Bangladesh enacted the Right to Information Act introduced in 2009 to make information available to its citizens, but there is still poor implementation of the law. People can apply to get information through using the law, but it is a lengthy process to collect

information using the Right to Information Act. As the authorities concerned have always no ready information, it is time consuming to collect urban information applying the law. If the government takes proper steps to enforce the Right to Information Act effectively, it will bring a good result.

Amid the existing limitations, it is a very challenging task to reach the urban environmental information to all city dwellers. The authorities concerned must take some proactive steps and bold decisions to make urban environmental information available because proper dissemination of urban environmental information helps the government take right policy to coping with urban environmental problems. The dissemination of the information also helps people put pressure on the authorities concerned to be more accountable. But, political commitment is an urgent to make urban environmental information available to the city dwellers.

### 7.5 Prospect of Introduction of an Urban Environmental System in Dhaka

An urban environmental information system is required to build a planned city and ensure sustainable development by preserving its unique biodiversity and landscape patterns. The information systems perform various support functions for urban planning and governance while basic understanding of environment components like soil, water and air is a must in taking ecological planning to build a livable township (Schneider et al, 2007). This section provides guidelines to introducing a system for Dhaka city.

As Dhaka city is growing fast keeping pace with the country's economic growth, an integrated urban environmental information system should be introduced in the city to manage existing and future environmental challenges. But there is no centralised official system in Dhaka city in respect to dissemination of urban environmental information. There is also no designated organisation or official centre, which collects and disseminates urban environmental information in Dhaka. There are disorganised and scattered information on the environment, which need to be compiled and processed by some organisations. The best way to have urban environmental information is entrusted to a particularly organisation – governmental or non-governmental organisation. If a system of collecting, coordinating and processing data is established, then it

can be disseminated. But the city corporations or the Ministry of Environment and Forests is yet to start any process of information dissemination. To disseminate urban environmental information, the government can set up a centralised information cell or a centre or a hub to introduce an urban environmental information system for Dhaka city. The centre will upload information in an active website on regular basis so that people have access to it from anywhere. The centralised information hub could be introduced from public sector or private sector. The Department of Environment (DoE) under the Ministry of Environment and Forests or city corporations can launch such centre. And if the centre is introduced from private sector with support from the government, the Ministry of Environment and Forests and the city corporations have to play key role in this regard by giving inputs. All the relevant stakeholders will provide data to the information centre while the centre will upload and store information on the web portal based on public needs. It will update information regularly. During the household survey, cent percent of the respondents said that urban environmental information is helpful to them. So, after establishing an information centre, an urban environmental information system should be introduced for Dhaka city. To introduce an effective urban environmental information system for Dhaka city, the following design principles should be followed:

I. It is necessary to keep the information collection process decentralised in nature and proximate to data collectors and users, since it is they who best understand its use and limitations.

II. Collectors of data should be responsible for its accuracy and appropriateness. Data should also have meta-data such as date, origin and conditions for access and responsible organisations.

III. Information should be freely available for all purposes and at all levels. All decision-makers should have access to the same information with highest standards of reliability.

IV. Data should only be collected once, avoiding unnecessary duplication and simplifying reporting requirements, data once collected should be readily and rapidly available to all users.

## 7.6 Policy Recommendations

Based on the findings summarised in the final chapter, policy recommendations are made for improving urban environmental governance and introducing an urban environmental information system in Dhaka city to reach environmental information at the doorstep city dwellers and help them cope with urban environmental problems.

### *a. Involve media in information dissemination*

Media always play a strong role to make urban environmental information available to city dwellers. About 89 percent of city dwellers think that the urban environmental information the media is being disseminated contributes to ensuring a better urban life. Thus, media should be utilised to disseminate urban environmental information.

### *b. Announce a specific guideline*

The urban bodies are disseminating environmental information in haphazard way in absence of a proper guideline in this regard. A specific guideline is required for those urban bodies to disseminate information they generate.

### *c. Use educational and religious institutions*

Environmental information could be distributed effectively using the religious structures like mosque and temple and educational institutions like schools and colleges. So, the authorities concerned should take steps to utlise these institutions in this regard.

***d. Enhance capacity to store data***

The authorities concerned have no enough capacity to preserve data they generated. So, they show reluctant in information dissemination. To overcoming the situation, a proper plan should be taken by the government.

***e. Strengthen coordination among government bodies***

Although about 54 government bodies are involved in urban governance in Dhaka city, they have no coordination to each other at all. Lack of coordination among the government bodies is one of the biggest problems that Dhaka city is currently facing. So, coordination must be strengthened among the government bodies to effectively disseminate urban environmental information.

***f. Ensure strong political commitment***

The proper dissemination of information helps city dwellers be aware of environmental hazards and put pressure on the authorities concerned to be more accountable. So, political commitment is an urgent to make urban environmental information available to the city dwellers.

***g. Formulate an urban environmental information policy***

Bangladesh has already a marked achieved progress in many areas of environmental protection, but there is no policy on urban environmental information dissemination. A sound urban environmental policy is a one of the first step in a long process of regaining the vitality and pivotal roles that urban areas play. Thus, the government should formulate an urban environmental policy.

***h. Enforce the Right to Information Act 2009***

The government announced the Right to Information Act introduced in 2009. But there is still poor implementation of the law. There is a lengthy process to collect information using the Right to Information Act. So, the government should take proper steps to enforce the Right to Information Act 2009 effectively to bring a good result in this regard.

***i. Use new media and mobile phone to disseminate information***

Apart from traditional media, new media like facebook and mobile phone use is becoming very popular in Bangladesh. So, urban environmental information could be distributed through new media and mobile phone.

***j. Establish an urban information centre***

There is no centralised official system in Dhaka city for dissemination of urban environmental information. There is also no designated organisation or official centre, which collects and disseminates urban environmental information here. So, the authorities concerned should set up an urban information centre immediately to dissemination urban environmental information.

***k. Develop urban environmental information system***

The household survey shows that urban environmental information is helpful to city dwellers. So, after establishing an urban environmental information centre, an urban environmental information system should be developed and introduced for Dhaka city.

***l. Launch a mass campaign***

The authorities concerned should also launch extensive campaign to reach urban environmental information at the doorsteps of illiterate people by setting up small units in every ward of Dhaka city and signboards, and distributing leaflets.

## 7.7 Limitations of the Study and Scope for Further Research

This research on the understanding the patterns and processes of urban environmental information in a mega city of a developing country like Bangladesh is not a simple task at all. Despite the rigid effort, this study has some limitations like other studies, especially those on developing countries. The research has time and resources constraints and methodological limitations. The study was dependent only on the questionnaire survey, KPIs and secondary data. The sample size of the study is somewhat limited due to financial constraints, which may affect the validity of findings.

Despite many limitations, the study is the first attempt to understand the patterns and processes of urban environmental information in Dhaka city, which paves a way to conduct an extensive research on this field. Further research could be done to establish a comprehensive system by developing an urban environmental information model, which will be suitable for Dhaka city.

## 7.8 Conclusion

Dhaka city is located in the central part of Bangladesh and situated on the northern bank of the Buriganga River. The city is bounded by the Balu River in the East, Tongi Khal in the North and Turag River in the west. The city lies on the lower reaches of the Ganges Delta covering s a total area of 360 square kilometers. But it has been growing fast with rapid and unplanned urbanisation, creating various kind of environmental chaos. Excessive population is also contributing to rapid deterioration of urban environment in the capital. Access to urban environmental information is crucial in coping with the environmental problems. Every year, the city dwellers face various environmental problems like pollution, traffic congestion and flooding. This study shows that the city dwellers have a little access to urban environmental information system for lack of a proper dissemination system. The state of environmental governance in the urban bodies is very poor in Bangladesh. The authorities concerned often reluctant to disseminate unban environmental information as they lack capacity to preserve environmental data they generated. Although there are many government bodies involved in urban governance, they have no coordination to each other. So, this would be a hard task to reach urban

environmental information at the doorsteps of city dwellers without strengthening coordination among the urban government bodies.

Media always play a crucial vital role in disseminating urban environmental information. Since the government bodies have failed to perform their duty in dissemination of urban environmental information, the city dwellers rely on media to get information. The study shows that about 89 percent of city dwellers think that the urban environmental information the media is being disseminated contributes to enhancing their urban life.

Although Dhaka city is growing fast keeping pace with the country's economic growth, there is no centralised official system here to disseminate urban environmental information. There is also no designated organisation or official centre, which collects and disseminates urban environmental information. For lack of urban environmental information, city dwellers frequently suffer from environmental hazards. Though many urban bodies are involved in city governance, the authorities concerned is yet to develop any urban environmental information system to disseminate information to city dwellers and help policymakers take effective policy to ensure sustainable and environment-friendly development for Dhaka city. This system must be developed involving all local bodies, national institutions, media and ensuring public access to the information preserved on the domain of the system. The study recommends introducing an integrated urban environmental system in Dhaka city considering its growing environmental challenges. This research also gives some policy guidelines to develop the environmental information system for the city.

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APPENDIX

## Appendix I – Questionnaire for Household Survey

### Household Questionnaire Survey

Citizens' Access to Urban Environmental Information in Dhaka: Understanding the Patterns, Processes and Requirements

Department of Geography and Environment

University of Dhaka

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*(Only Research Purpose)*

**General information**

1. The name of interviewee: .....2. Locality name: .....

3. Ward name: .....4. Age: .....5. Gender: .....

6. Are you permanent resident in city? A) Yes B) No

7. Who is owner of the house you like in?

A) I am owner B) Rent C) Staff Quarter D) Others

8. If you take rent, how much you pay per month?

**Socioeconomic information**

1. Marital Status: ..... 2) Educational Qualification: .....

2. Family members: ..... 4. Earning family members: .....

5. Monthly income of your family.....6. Occupation of family's head.....

7. Do you have any involvement in any environmental activity? A) Yes B) No

8. If yes, what kind of activities: .....

**Migration and Environment**

1. Are you a permanent resident of Dhaka? A) Yes B) No

2. Where you came from (which district)? ……..

3. How long you are staying in Dhaka city? ……

4. How long you are living in your current resident of city? ……..

5. Earlier, where you live in the city and why you changed your resident?

……..

**Access to Media**

1. Do you have access to media? A) Yes B) No

2. If yes, how? A) Daily B) weekly C) Monthly

3. Which media you use? A) Newspaper B) Radio C) Television D) Online

4. Why you use media? A) To get information B) To get entertainment C) Learning

5. What kind of information you like to get media?

A) Environmental B) Politics C) Sports D) others

6. Do you think media is playing a strong role to advance your lifestyle or surrounding environment? A) Yes B) No

Environmental Information

1. Do you know what urban environmental information is? A) Yes B) No

If Yes, what do mean.....

2) Do you know how urban environmental information is being disseminated in Dhaka city? A) Yes B) No

If yes, give a brief .....

3. Do you use media to get urban environmental information? A) Yes B) No

4. If yes, which media you use? A) Newspaper B) Radio C) Television D) Online

5. Do you think media should play better role in this regard? A) Yes B) No

6. Which media, you think, is playing best role in dissemination of urban environmental information?

A) Newspaper B) Radio C) Television D) Online

7. Do you think the urban environmental information the media is being disseminated is helpful in your urban life? A) Yes B) No

8. What kind of environmental information you want to know from media?

A) Real time data like air, water, weather B) environmental pollution C) Built environment like roads, infrastructure and park D) Social environmental like urban poverty, education and health

9. Do you regularly get the environmental information you want? A) Yes B) No

State of Environment

1. Do you know government bodies are responsible to dissemination of urban environmental information? A) Yes B) No

2. If Yes, which bodies.....

3. Do you think that the government bodies playing their due role in dissemination of urban environmental information? A) Yes B) No

4. Have they shown willingness to do so? A) Yes B) No

5. Do you think proper dissemination of urban environmental information can bring positive change in city as well as help you improve city life? A) Yes B) No

6. Do you think an urban environmental information system should be introduced for Dhaka city to reach the information to the city dwellers? A) Yes B) No

Any Additional Comments

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Name and Signature of Interviewer:

Starting Time:

Finishing Time:

----------Thanks for your cooperation----------

**Appendix II– Questionnaire for Key Persons Interviews (KPIs)**

This questionnaire survey is for attaining information on the patterns and processes of urban environmental information of Dhaka city to be used for completing an M Phil research. The findings will be used only for academic purpose. The identity of the respondents will not be disclosed in any way.

**Key Person Interview**

Group: 1 Questionnaire for Senior Journalists

Department of Geography and Environment

University of Dhaka

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(Research purpose only)

*This questionnaire intends to explore how the senior journalists like editors and news editors use urban environmental information in their daily work and how much challenges they face in collecting information. It will take 30 minutes or a little bit more to take your interview.*

1. Do you know how the urban environmental information is being disseminated in Dhaka city?

2. Do you think the way the urban environmental information is being disseminated in city is helpful to you as well as city dwellers?

3. Are the authorities concerned playing their due role in dissemination of environmental information in Dhaka city?

4. Do you find any negligence of the authorities concerned or their lack of coordination in dissemination of urban environmental information? If yes, what should be done in this regard?

5. What would be your suggestions to introduce an urban environmental information system for Dhaka city?

*Thanks for your kind cooperation.*

**Key Person Interview**

Group: 2 Academics/Researchers

Department of Geography and Environment

University of Dhaka

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(Research purpose only)

*This questionnaire intends to identify the patterns and processes of urban environmental information for Dhaka city and what requires for introducing an effective urban information system. It will take 30 minutes or a little bit more to take your interview.*

1. Could you give me a brief about the patterns and processes of urban environmental information of Dhaka city?

2. Do you think the way the urban environmental information is being disseminated in Dhaka city is helpful to the dwellers?

3. Are the patterns and processes of urban environmental information followed in the city comprehensive and effective? Are the authorities concerned playing their due role in dissemination of environmental information in Dhaka city?

4. Do you find any negligence of the authorities concerned or their lack of coordination in dissemination of urban environmental information? If yes, what should be done in this regard and how?

5. What is required to make urban environmental information available for city dwellers? How the information could be disseminated effectively?

6. What would be your suggestions to introduce an urban environmental information system for Dhaka city?

*Thanks for your kind cooperation.*

**Key Person Interview**

Group: 3 Professionals

Department of Geography and Environment

University of Dhaka

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(Research purpose only)

*This survey is being carried out to know how the city dwellers and others get urban environmental information and how they are being benefited from it. And what people expect from authorities concerned in this regard. It will take 30 minutes or a little bit more to take your interview.*

1. It is widely believed that proper dissemination of urban environmental information can bring a positive change for a mega city like Dhaka. Do you think so?

2. Do you think the way the urban environmental information is being disseminated in city is helpful to you as well as city dwellers?

3. For lack of information, what kind of problems you face in your professional and personal life?

4. Do you find any negligence of the authorities concerned or their lack of coordination in dissemination of urban environmental information? What is required to overcoming the existing situation?

5. What would be your suggestions to introduce an effective urban environmental information system for Dhaka city?

*Thanks for your kind cooperation.*

**Key Person Interview**

Group: 4 Policymakers

Department of Geography and Environment

University of Dhaka

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(Research purpose only)

*This questionnaire intends to know how much importance the policymakers give on urban environmental information in taking government policies. Does the environmental information help them take proper policies to address urban problems like pollution and disaster? It will take 30 minutes or a little bit more to take your interview.*

1. Could you give me a brief about the patterns and processes of urban environmental information of Dhaka city?

2. Are the patterns and processes of urban environmental information followed in the city comprehensive and effective?

3. There is an allegation that the authorities are reluctant in dissemination of environmental information in Dhaka city. If yes, why?

4. Do you think the existing policy is enough to disseminate the information effectively? If no, why?

5. Do you think proper dissemination of urban environmental information will help the government take right policies coping with urban problems?

6. Do you agree that strong political commitment and proper policy is an urgent to make urban environmental information available for city dwellers?

7. Can the environmental information system play a vital role in making cities resilient from different types of environmental issues/disasters?

8. What would be your suggestions to introduce an urban environmental information system for Dhaka city?

*Thanks for your kind cooperation.*

**Key Person Interview**

Group: 5 Public representatives

Department of Geography and Environment

University of Dhaka

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(Research purpose only)

*This questionnaire intends to know the perception of public representatives on urban environmental information issue. The survey wants to explore how much challenges they face to deal with urban problems for lack of environmental information. It will take 30 minutes or a little bit more to take your interview.*

1. Do you aware of urban environmental information? Do you know how the urban environmental information is being disseminated in Dhaka city?

2. Do you think the way the urban environmental information is being disseminated in city is proper and helpful to city dwellers? If not proper, why the urban bodies and others concerned fail to do this?

3. What kinds of challenges the urban local government faces in its activities for lack of urban environmental information?

4. Do you think that proper dissemination of environmental information will help establish good governance and bring a positive change in Dhaka city?

5. What would be your suggestions to introduce an effective urban environmental information system for Dhaka city?

*Thanks for your kind cooperation.*

**Key Person Interview**

Group: 6 Environmental Reporters

Department of Geography and Environment

University of Dhaka

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(Research purpose only)

*This questionnaire intends to explore how environmental reporters use urban environmental information to prepare reports in their daily work and how much challenges they face in collecting information. Maximum 30 minutes are needed to take your interview.*

1. Do you know how the urban environmental information is being disseminated in Dhaka city?

2. Do you think the way the urban environmental information is being disseminated in city is helpful to you as well as city dwellers?

3. As a reporter, how you collect these information to prepare environmental reports in your daily work and do you face any challenge so far?

4. Do you think proper dissemination of urban environmental information could bring any positive change in the city and help you in your daily work?

5. What would be your suggestions to introduce urban environmental information system for Dhaka city?

*Thanks for your kind cooperation.*