

Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail

PhD Thesis

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Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail

PhD Thesis

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Fulfillment of the Requirements for the Degree of PhD in Geography
and Environment**

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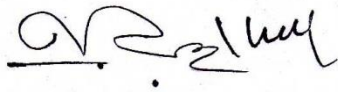
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Certificate from the Supervisor

I, hereby certify that the research titled “**Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail**” by Mahmuda Binte Latif under my direct supervision and guidance. Moreover, I certified that, Ms. Mahmuda’s work is original and I recommend it as suitable for submission as a PhD thesis in the Department of Geography and Environment, University of Dhaka.



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Declaration

I, hereby declare that the research titled “**Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail**” has been prepared by myself which has been done after registration for the degree of PhD as at department of Geography and Environment, University of Dhaka, and has not been previously included in a thesis or dissertation submitted to this or any other institution for a degree, diploma or other qualifications.

Date: May, 2023

Mahmuda Binte Latif

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Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail

Abstract

Governing urban environmental problems is an enormous challenge in the cities of developing countries like Bangladesh. The study titled “**Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail**” investigates the environmental problems and how those environmental problems are governed by the authority, challenges behind the environmental governance and role of NGOs, CSOs and CBOs for environmental governance of the city. Quantitative and qualitative survey were used to fulfill the objectives of the research. Household survey was conducted as quantitative technique for this study to achieve the clear and real scenario of environmental problems linked with environmental governance in Tangail Paurashava. Environmental governance indicators, sub-indicators were selected from relevant literature to assess the environmental governance condition of the city. Household survey showed that many environmental problems were explored such as inadequate water supply, waste management problem, drainage and water logging problem, roads and traffic management problem, noise, air, water pollution, electricity supply problem, open space, field and recreational facilities problem etc. and the governance of these problems were ‘poor’ as perceived by households. Key informant interview (KII) as qualitative survey revealed that governance condition of selected environmental problems in Tangail Paurashava was also ‘poor’. The condition of maximum indicators such as accountability, transparency, responsiveness, peoples’ participation, leadership, rules and regulations, planning were ‘poor’ in governing those identified problems. The Local Government (Paurashava) Act 2009 was not complied properly in governing environmental problems of the Paurashava. There was a little difference between household’s and KI’s perceptions on the governance indicators. Key challenges behind the environmental governance, the role of environmental NGOs, CSOs and CBOs in governing environmental problems in the Paurashava were identified through in depth interview of KIS and household survey.

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Acronyms and Abbreviations

UN	United Nations
CSER	Corporate Social and Environmental Responsibilities
UPPR	Urban Partnerships for Poverty Reduction
GDP	Gross Domestic Product
BBS	Bangladesh Bureau of Statistics
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
IMF	International Monetary Fund
NGO	Non-governmental Organization
DoE	Department of Environment
DoF	Department of Forest
BWDB	Bangladesh Water Development Board
LGED	Local Government Engineering Department
BIWTA	Bangladesh Inland Water Transport Authority
CBO	Community Based Organization
SDG	Sustainable Development Goal
UNITAR	United Nations Institute for Training and Research
WCED	World Commission on Environment and Development
SD	Sustainable Development
MDG	Millennium Development Goal
CSO	Civil Society Organization
WHO	World Health Organization
CUS	Centre for Urban Studies
ICIMOD	International Centre for Integrated Mountain Development
TI	Transparency International
WWDR	World Water Development Report
IUCN	International Union for Conservation of Nature
LDC	Least Developed Country
ADB	Asian Development Bank
DANIDA	Danish International Development Agency
B MDF	Bangladesh Municipal Development Fund
UNGA	United Nations General Assembly
DEO	District Education Officer
TLCC	Town Level Co-ordination Committee
WLCC	Ward Level Co-ordination Committee

CHAPTER ONE

INTRODUCTION

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Introduction

1.1 Background of the Study

Worldwide, rural people are less than the urban people. According to UN, about 54 percent of the total global people lived in urban areas in 2014, in 1950, worldwide urban people was 30 percent and it is expected that 66 percent of the total earth's population to be urban by 2050 (UN, 2014). Population growth is rapidly increasing with more demand of the basic infrastructure and services facilities in the cities of the developing countries, many severe environmental problems are predicted in that cities with many socio-economic impacts on the people of the urban area (Ksenija, 2016). Urban environmental problems mainly occurs seriously in these cities in the sector of water supply provision, wastes and waste water management, energy and natural resources consumption, loss of green and water body, limited open space, urban sprawl development, pollution like water, air, noise and traffic management problem etc (Ksenija, 2016). One billion of the worlds' slum people are threaded to avoidable deaths and illness due to inadequate water supply, mismanagement of wastes and unhygienic condition of households. In terms of worldwide urban air pollution, it is calculated that air pollution in urban areas causes one million early deaths every year which expenses 2% of the total GDP in developed countries and developing countries 5 percent. These environmental problem also occur clash between the short-range economic plan and the protection of the environment (Ksenija, 2016).

In transitional and developing countries, environmental authorities face a lot of challenges, like struggle for limited budget and resources, constrained provision for the policy agenda and conflict of several class of the society. In addition, excessive corruption

in all levels, lack of transparency of governing bodies and low levels of people's involvement can hamper the good results of the environmental efforts and actually that are made (Wingqvist et al. 2012).

The urban population of Bangladesh is about forty million or more than 28 percent of its total population (BBS, 2011). Since 1971, the urban population has been increasing very rapidly. The current national urban population growth rate is about 3% annually (BBS, 2011). It is expected that, by 2030 urban population will increase in 50 million (BBS, 2011). In many developing countries like Bangladesh, the contribution of urban sector to the Gross Domestic Product (GDP) is great and increasing every year than the rural sector and it is now 65% (World Bank 2012 and Ahmed & Ahmed). But unluckily, the urbanization process of these urban areas in Bangladesh are occurring too rapidly in unplanned way and haphazardly which may make imbalance, sick, unhealthy situation and negative impacts to the residents. (Haque, Tsutsumi and Capon, 2014).

The arrangement of urban local governments in Bangladesh has been changed and suffering from many problems and complications with rapidly growing urbanization process. Though the function of Paurashava's have been planned to ensure proper basic services facilities and better management of Municipality, Paurashava are unable to provide quality services facilities to the citizen (Ahmad, 2002).

The urban management situation is defined as to be disastrous in Bangladesh (Islam, 1996 and Rahman, 2008). The cities and towns in the country act upon weakly due to inadequate financial support and most of the financial support come from the central government grants but it is too limited to manage proper access of water, sanitation and sewerage, wastes disposal, road and transport maintenance, drainage and other public

facilities to keep the city healthy (World Bank and BCAS, 1999 and Siddiqui et al.2004).

Lack of suitable planning, insufficient budget and overall institutional weakness always lead to provide poor quality of environmental services facilities in urban areas of Bangladesh. (Jahan et al. 2005). Consequently, the problems of urban areas are remaining unsolved and alive. However, the urban environment whether it is healthy or unhealthy depends on the quality of necessary infrastructure services and its proper governance and management (Islam, et al. 1997). But this urban environment is being interrupted by the extended population and weak urban governance (Hossain, 1995). Effective and efficient urban governance needs in this situation to ensure quality urban life (Jahan et al. 2005).

The issues governance and good governance has been raised at the front position of the worldwide agenda for improvement as some countries were not able to eradicate poverty, social conflict, community people's development and proper provision of amenity services in spite of having plentiful recourse, manpower and institutions etc (Hasan, Sultana and Hasan, 2014). That's why a good number of foreign organizations such as World Bank, UNDP, IMF and several NGO's was started highlighting good governance as a prerequisite for delivering environmental services facilities and finances (Hasan, Sultana and Hasan, 2014). From this perspective, this two concepts has been emphasized to meet the demand of the citizens due to breakdown of public sector, unfavorable environment, leadership crisis and lack of accountability and transparency of administration and so on Bangladesh like other developing countries (Hasan, Sultana and Hasan, 2014).

Following the conference of United Nations on Human Environment (Stockholm Conference 1972), world environmental movement has started and environmental institutions and environmental management related initiatives like United Nations Environment Programme (UNEP) have developed in various countries of the earth to play important role in Global Environmental Governance (GEG) by organizing UN agencies (Najam, 2003 and Islam, 2017). Since then global environmental governance activity has started in many countries and Bangladesh has also participated in global environmental protection activities like propagation of Water Pollution Control Ordinance in 1973, Environmental Pollution Control Ordinance in 1977 (The Daily sun, 24 October, 2017).

Environmental governance, broadly speaking, “refers to the institutions, policies, rules and practices that arbitrate how the international community, nation-states, corporations, and citizens interact with the environment at different levels – global, national, and local to achieve sustainable development and environmental improvement” (SGP, 2019). It has been also defined “the formal and informal institutions, rules, mechanisms and processes of collective decision-making that enable stakeholders to influence and coordinate their interdependent needs and interests and their interactions with the environment at the relevant scales” (Tacconi, 2011). It includes all actors like government, NGOs, private sectors, community groups, civil society and general citizens. When any governance implemented by the appropriate nations policies, rules along with the collaborative support of all actors to meet the needs and interests of the people as well as improve better condition of the situation, the good governance can be achieved.

In Bangladesh there are many problems of environmental governance like lack of enforcement of policies and rules, limited political commitment, unskilled and untrained

human resources, poor institutional capacity. In addition, public officials and political leaders are sometimes less accountable and sometimes decision making process are not transparent. Corruption is another barrier to achieve the good governance in Bangladesh (Ara & Khan, 2006 and Hossen & Anwar, 2011). Though Bangladesh is facing in high population density, employment crisis for the youth people, more demand of agricultural products, impact of climate change, rapid and unplanned urbanization, good environmental governance can ensure sustainable environment through implementing integrated planning with public, private sector and mass people, ensuring better accountability, transparency and decentralization, enhancing capacity of different levels of local governance. (The Daily Star, 12 March, 2015).

It is needed to improve coordination among domestic governance within government institutions, like among DoE, DoF, FD, BWDB, LGED, BIWTA and in the ministries and making fairness and responsibility in all sectors (The Daily Star, 12 March, 2015). Fakier, Stephens, Tholin and Kapelus (2005) expressed that an accountable governance, proper rules and regulations and engagement of stakeholders by integrated methods and coordination are necessary for adapting environmental management. The access of people to environmental information is to be ensured for good quality of environmental governance (Fakier, et.al, 2005).

Though the present arrangement of local government in Bangladesh has developed over many years and some changes were also made in these institutions, the governance system is not yet satisfactory level (Siddiqui, 2005). On the other hand, in Bangladesh, all kind of urban facilities concentrate in large or primate cities but secondary cities do not get required attention to perform better. As a result huge urban problems (housing,

road and transport, waste management, utility services, security, town maintaining finance problems etc) are observed in secondary cities.

The present study has investigated the actual environmental problems linked with environmental governance as well as causes behind that problems and governance condition of Tangail city, Bangladesh as a case.

1.2 Statement of the Research Problem

With the increasing population, the need for different urban amenities facilities is also growing with the rapid rate (Hossain, 1995). Consequently, the situation demands effective urban governance and proper delivery of urban civic facilities (Jahan, et.al. 2005). But, the governance system of these cities faces many challenges.

Various urban development projects and programmes have implemented in different times to resolve infrastructural and environmental problems in Tangail city. Moreover, Master Plan (2013-2033) has already created by LGED which was become gazette in 2021 and implemented in ward level through different projects. Though, environmental problems are prevailing within the city like inadequate piped water supply, poor drainage and sewerage, throwing away of household waste in nearby drains, road side or low lying areas, inappropriate disposal of garbage, open latrine in the slum areas, seasonal flooding and water logging, noise, traffic congestion and water pollution which degraded the prevailing environmental condition Tangail Municipal area (Mia, et.al, 2012).

Moreover, very often municipal authority fails to supply quality services delivery to the citizen. For example, the water supply system in Tangail Paurashava is supported by

pump houses, individual house connections and hand tube wells, only 93.01 km. water supply line remains for supplying drinking water to the people. No water supply facility in the Ward No. 4, 5, 9, 10, 11, 12, 13 and 17 (Tangail Municipality, 2020, Tangail Paurashava Master Plan, 2013). Tons of garbage were dumped at nearby dustbins or vacant places, rivers and canals mainly in the two entrance way (Rabna bypass and baby stand) of the city (Tangail Paurashava Master Plan, 2013).

As a result the inhabitant of Paurashava was facing many problems and urban environment was degrading day by day as well as livability of the city. Citizens were recurrently unhappy with the quality of amenities facilities which were provided by the authority.

Moreover, very little researches were conducted on urban environmental governance condition in the secondary cities of Bangladesh. Consequently, there remain a few literatures on this topics and it is a big gap in the urban research field in Bangladesh. In these circumstances, it is necessary to acquire new and detail knowledge in the field of urban environmental problems and the governance strategies of these problems to make the city livable.

1.3 Aims and Objectives of the Study

The main goal of this research is to explore the environmental problems and causes linked with how these problems are governed in recent time in secondary cities like Tangail.

The specific objectives of the study are:

1. To explore the environmental problems linked with environmental governance in Tangail Paurashava;
2. To investigate the existing condition of governance which is related to environmental problems in the city; and
3. To assess the role of different actors (NGOs, CSOs, CBOs) who are responsible for environmental governance of the city.

1.4 Research Questions

The research is based on these supportive questions:

1. What are the environmental problems in Tangail Paurashava?
2. How environmental governance influences environmental issues in the study area?
3. How are the roles of different actors in environmental governance of the city?

1.5 Justification of the Study

It is getting attention in the urban research field for several reasons. The importance of the study is that in developing countries like Bangladesh where most of the cities and towns are secondary type, their environmental conditions are least understood. In these cities, provision of services facility and management are insufficient that hampers in maintaining the healthy and quality urban life of dwellers. In this respect it is important to know why environmental management is weak in these cities.

In Asia, megacities do not integrate a major portion of urban population though those are large, often powerful and are connected to multifaceted and wide ranging networks of

social and economic activities. In this situation, it is necessary to take into account of the expansion in small and medium sized urban centres which are now more vibrant than in larger cities. These intermediate sized cities and towns play a vital role in structuring rural-urban relations and in supporting access for the rural poor to markets. That's why we should not ignore those thousands of cities and towns which are growing at a very fast and they stand for an opportunity to set a more equitable path for their future development (McCarney and Stren, 2003)

Secondly, a large number of people live in urbanized area. Large cities are highly populated in Bangladesh though secondary cities are also populated too. Urban utility facilities in large cities get more concentration by the authorities than secondary cities. On the other hand, urban local government has to depend on central government bodies in finances and other propose to provide these facilities. So, urban facilities and management are sometimes less concentrated in secondary cities.

Thirdly, In Bangladesh, urbanization process is mainly capital city centered although other large cities are also urbanizing rapidly. Consequently, large cities are growing with over population and full of urban problems. So, all types of urban problems of large cities are focused by the authorities. General thinking is that, environmental problems dominate in big cities, small and medium towns should have no or little environmental problems. But in reality the small and medium towns are also not livable due to lack of awareness of inhabitants, financial crisis of authority, lack of proper planning and management etc. If the problems of secondary cities are focused the balance between urbanization and management will enhance and increase the livability of those cities. So, these cities should be improved and prepared as strong by decentralizing facilities (administrative,

economic, infrastructure and educational improvement) to reduce rural-urban migration towards large cities and mitigate problem of large cities.

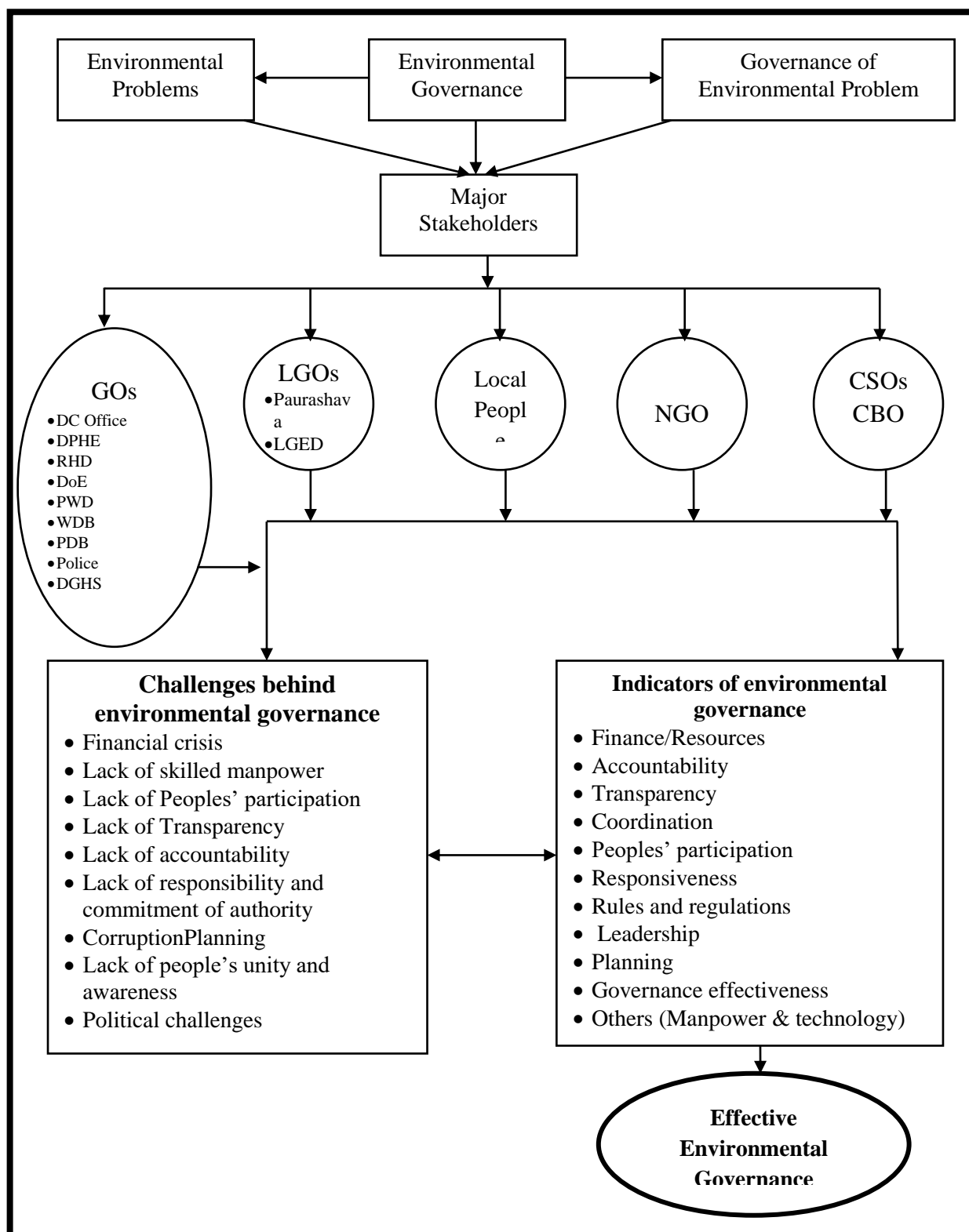
Fourthly, resources distribution or allocation of our country is not equal. The resources of secondary cities are insufficient to make attractive situation for the development of urban environment and meet the needs of their citizens. The gap between needs and resources is greater in secondary cities than in larger ones, which contribute significantly to deteriorating the living standards and social environment. So it is very important to take attempt research about environmental condition and governance of a city.

Finally, sufficient services facility and proper management is one of the major components of livability and productivity of a city. Proper organization of a city is directly depends on proper initiatives and governance system of urban area. More than fifty percent population of the world now live in urban areas and this figure will have increased to 6.5 billion people by 2050 which is two third of all population (UNDP, 2020). If the urban spaces can be build in planned and managed way, sustainable development can be achieved. To achieve the goal of making cities safe and sustainable in Bangladesh, it is needed to invest in sufficient, secure and affordable housing and civic services and upgrading slums and squatters, sustainable public transportation, making green spaces and developing urban planning and management in both participatory and comprehensive which is directly related with urban environmental governance system of a city. Sustainable environmental governance is pre requisite for achieving the Sustainable Development Goals (SDGs).

1.6 Conceptual Framework

The conceptual frame work for this study has developed mainly from theoretical framework of environmental governance, indicators of environmental and good governance. Though, other relevant concepts of the research have been used where suitable.

Figure: 1.1 Conceptual Framework of Environmental Governance



Sources: Adapted and modified from Provan and Kenis, 2007; Beaumont and Dredge, 2010; Erkus-Ozturk and Eraydin, 2010 and Charlie et al. 2012

As illustrated in figure 1.1, according to the literature review, environmental governance is viewed as environmental problems and governance of environmental problems which exists in the study area. Multiple stakeholders such as public or government organizations and local government organizations, citizens or local people, Non-governmental Organizations (NGOs), Community Based Organizations (CBOs) and Civil Society Organizations (CSOs) participate in environmental governance in the Paurashava (Cooper and Hall, 2008 & Farrell and Twining, 2005).

Some indicators of effective environmental governance will be applied to investigate the organizational effectiveness as well as environmental governance condition in the Paurashava. Some challenges and problems were identified from the literature and field survey which may create in the path of achieving effective environmental governance (Beaumont and Dredge, 2010 & Provan and Kenis, 2007).

Moreover, this research has been also developed on a theoretical framework: Sustainability (Grober and Cunningham, 2012; Jenkins, 2009,) and “Sustainable Development” (Brundtland Report, WCED 1987, p.43).

Theories of sustainability attempt to emphasize and combine the social, economic and environmental problems and thus there are three pillars of sustainability; social, economic and environmental (Jenkins, 2009). Sustainability gives attention to the human and social justice, economic health and ecological system as well as logical and durable future at local and global levels (Grober and Cunningham, 2012).

“Sustainable development” (Gro Harlem Brundtland, WCED 1987, Cerin, 2006; Dernbach, 1998; Dernbach, 2003 and Stoddart, 2011) “is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, p. 43). As the Brundtlands definition indicates, sustainability must search for a path to make balance condition between present and future.

The general goal and key principle of this concept is to achieve long term social, economic and environmental stability through proper decision making process (Emas, R 2015; Dernbach, 2003 and Stoddart, 2011).

Based on the knowledge of Millennium Development Goals (MDGs), the United Nation (UN) approved Sustainable Development Goals (SDGs) in 2015 (UN, 2015). There were six elements included in these goals: self-respect, human beings, the earth, prosperity, justice and partnership with 17 goals and 169 sub-goals to guide all countries including developed and developing countries in the next 15 years (Rudra & Kurian, 2018 and Mu. et.al, 2017). The features of SDGs are four types: economy (goals no. 8, 9, 10, and 12), society (goals no. 1, 3, 4, 5, 11, and 16), environment (goals no 2, 6, 7, 13, 14, and 15), and governance (goal no 17) (Lu. et.al, 2015).

This research is directly related with the ‘Sustainable Development Goal no. 11: ‘Make cities inclusive, safe, resilient and sustainable’ in respect of rapid urbanization which resulting a rising figure of slum dwellers, insufficient and overloaded infrastructure and services (such as inadequate road and transport, lack of waste management, insufficient provision of water, sanitation and open space), worsening urban air quality and unplanned urban sprawl.

The ‘sustainability’ theory might also be helpful for the study in analyzing the situation of environmental problems and environmental governance condition of the city. This study takes attempts to explore the following features using this concept –

- The status of urban utility services facilities and environmental problems (water supply, electricity connection, drainage and sewerage, water logging problem, waste management problem, roads and transport problem, pollution problem, open space management problem etc) in Tangail city.
- How environmental problems are governed by the authority in the study area and
- Challenges of implementing effective environmental governance and the role of environmental NGOs, CSOs and CBOs in mitigating environmental problems in this city.

1.7 Limitations of the Study

Limitation of time, Covid-19 situation and resources were the main constraint for the study. Throughout the research, the researcher encountered the following problems that influenced the thesis:

- There were many problems that researcher faced during household survey like some people did not allow to enter their houses due to Covid-19 situation. There was a very problem to move freely and long time conversation with people during second wave of Covid-19 situation (November 2021) in Bangladesh. As a result, the household survey took more time to finish.

- It took many time to conduct survey due to sample size was vast (396 for Questionnaire survey and 40 respondents for KII interview).
- Some respondents of household survey were not serious or unwilling to provide proper information but researcher has to convince or make easy in case of give answer.
- For the fear of disclosure, many service providers, professionals and policy makers of organizations were reluctant to provide some information but they were assure to keep confidence of their answers.
- As the study is based on primary data, there might be some problems in data though it has been tried best in accuracy of data.
- The shortage of time as the submission dead line was fixed. As a result, it was not possible to go through matters in details. Issues of important are only emphasized.

1.8 Structure of the Thesis

The research work on the title of “**Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail City**” has been divided into Nine Chapters. The chapters are as follows:

The Chapter One is general introduction, where described background of the study, statement of the research problem, aims and objective of the study, justification of the study, conceptual framework and limitation of this work has been described.

The Chapter Two describes literature review and theoretical perspective of the research on

environmental problems of the urban area, governance, urban governance, environmental governance, good governance, problems of implementing good governance, problems of governance in Bangladesh, institutional Framework for Environmental Governance in Bangladesh, Environmental Governance for Sustainable Development, Urban Environmental Governance and Sustainable Development etc.

The Chapter Three has described about the Methodology which includes Study approach, study area, methods of data collection, data sources of Qualitative and Quantitative Survey, data analysis technique, instrumental experiment, sources of secondary Data and analytical framework.

The Chapter Four deals with the study area profile which includes origin and history of the study area, area and location of Tangail, climate, river system, regional setting, administrative areas, land use pattern, demographic characteristics of the Paurashava, level of urbanization in Tangail District, infrastructure and services, overview of poor settlement in the town, urban environmental condition of the study area.

The Chapter Five has discussed about the environmental problems linked with environmental governance in the Paurashava, the causes behind the environmental problems. In this chapter, availability of utility facilities in the households, environmental problems of the city such as inadequate water supply, waste collection and management problem, drainage maintenance problem, water logging, problem in road and transport, traffic congestion, problem of electricity supply, noise air and water pollution, open space management problem, mosquito and security problem and the causes of the problems in this city are included in this chapter. Moreover, environmental problems in this city were

analyzed from the household's opinions on the basis of environmental governance indicators (such as finance/resources, accountability, transparency, responsiveness, coordination, peoples' participation, rules and regulation applied, planning, and leadership) and sub-indicators are included in this chapter.

The Chapter Six attempts to describe about environmental governance condition of the city according to Key Informants (KIs) perceptions on the basis of selected environmental governance indicators and sub-indicators. Then, a comparison which was made between the household's and KIs perception on environmental governance are included in this chapter.

The chapter Seven includes challenges behind the environmental governance problem which were identified from household and KII interview such as limited central government grants, high population density, insufficient manpower of the authority, lack of peoples' participation, unskilled and untrained personnel, lack of training, lack of knowledge and awareness of authority and mass people, lack of responsiveness of authority, lack of commitment of public representatives, corruption, lack of accountability and transparency, lack of proper application of laws, Nepotism, unplanned and uncoordinated development work, biased journalism and lack of public unity of the city.

The Chapter Eight describes the role of other actors of governance like environmental NGOs, CBOs and CSOs in the Paurashava.

The Chapter Nine includes findings and conclusions of the research.

Finally, in the last section References and Appendices are added.

CHAPTER TWO

**LITERATURE REVIEW AND THEORITICAL
PERSPECTIVE**

CHAPTER TWO

Literature Review and Theoretical Perspective

2.1 Introduction

Conceptual or theoretical framework of this research has been sketched out in this chapter. So it is necessary to describe Secondary Cities in Bangladesh, Urban Environmental Problems in Bangladesh, Governance, Environmental Governance, Good Governance, Key principles of Good Governance, Why environmental governance is different from governance?, An Overview of Understanding the Problems behind Governance, Environmental Governance Problems in Bangladesh, Institutional Framework for Environmental Governance in Bangladesh, Structure of Tangail Municipality, environmental governance for sustainable development, urban environmental governance and sustainable development which are relevant topics of the study.

2.2 Secondary Cities in Bangladesh

The decision to study what we term secondary cities need to define those urban centres. The definition and characteristics of secondary cities may differ from country to country. BBS has created the classification of urban centres of Bangladesh. This definition was relaxed in 1981, 1991, and 2001 censuses and in these censuses the Paurashava areas included town committee areas, cantonment area, Thana headquarters and peripheral urbanized area adjacent demarcated Paurashava areas specially around the metropolitan city corporation areas have been defined as the urban areas.

Table: 2.1 Growth of Urban Centres in Bangladesh According to Size (1901-2011)

Size Class	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
	1901	1911	1921	1931	1941	1951	1961	1974	1981	1991	2001	2011
Small Town Bellow 25000	46	46	43	49	42	46	55	69	415	402	338	260
Medium Town 25000- 99,999	0	0	5	7	15	15	19	36	64	133	168	203
Large Towns or Secondary City 100,000- 499,999	2	2	2	2	2	2	3	4	10	14	22	39
Metropolis/ SMA 500,000- 4999999	0	0	0	0	0	0	1	2	3	4	3	3
Mega City 5000,000 and above	0	0	0	0	0	0	0	0	0	0	1	1
All Urban Centres	48	48	50	58	59	63	78	108	492	522	532	506

Source: Population Census-2001, National Series, Volume-3, Urban Area Report (BBS, 2008) and Population and Housing Census-2011, National Volume-3, Urban Area Report, Islam, 2018

There were 506 urban centres (BBS, 2011) in Bangladesh which were classified mainly into four categories on the basis of the size of the population. Small towns, having population less than 25 thousands, Medium towns, having population 25,000 - 99,999 and the towns or cities having population 100 thousands to 500 thousands can be termed as Large towns or Secondary cities in Bangladesh. Professor Nazrul Islam has defined the secondary cities in his writing named ‘Urbanization in Bangladesh: Recent Trends and Challenges’ on 23rd October, 2018 in the Daily Sun. He said that the secondary cities or regional cities are smaller than the metropolitan and mega cities having population between 100,000 and 500,000 and he identified 38 secondary cities in Bangladesh. These

cities are mainly old town or cities; some are small industrial base but maximum are administrative, commercial and educational base cities. According to these criteria, total secondary cities of Bangladesh can be identified as 39 in number having population of 100,000-499,999 (BBS, 2011).

2.3 Urban Environment

Urban environment is the irregular term which developed from the social and natural science. It is usually considered by the researcher's purpose of the study. In social sciences, it may be closer to the society, build environment and in natural sciences, it consider air, water, noise, soil, climate vegetation and animal life. Its main field of application is society, social interaction within a space or urban area (Lussault, 2004 & EUE, 2007).

On the other hand, urban environment deals with the natural environment which is affected by the built environment. It is the relational system that consider ecological aspect where give importance the man-made features as well as natural elements in the urban areas (Perlof, 2015). Moreover, according to Royal Commission on Environmental Pollution, 2007, urban environment refers to the two types of environment such as built environment and natural environment (Lawton, 2007).

Actually, a composite relationship of cause and effect exists within human, build and natural environment in urban areas, locally and globally. The changes of one component may affect other components of the environment expectedly or unexpectedly. The cultural activity of urban people who live in the particular social, cultural and build environment may causes harm to the wild life, trees, green space which also create negative effect

indirectly to that people. Moreover, high population density has become the challenge in urban areas to manage pollution and waste (www.gov.uk/government/publications/state-of-the-environment, 2021).

2.4 Urban Environmental Problems in Bangladesh

Bangladesh is facing rapid urbanization which effects worriedly in urban property and resources due to lack of effective governance similar to other developing countries (Rana, 2011 and Siddiqy, 2017). Urban authorities become frequently unsuccessful to manage the real reason of excessive and unmanageable rural-urban migration, standard living of urban lower income people and provision of amenities facilities of the citizen although they are conscious about these problems (Rana, 2011 and Siddiqy, 2017). Rana showed his study that as many cities grew quicker; these cities faced many problems like social, economic and environmental which became major challenges to develop sustainable cities in Bangladesh. Furthermore, with rapid population growth and rapid extension of urban areas, management system of these areas remains inadequate (Islam, 1996). As a result, the environmental condition of the urban areas has failed due to lack of water supply, sewerage, sanitation, drainage, electricity, transportation, housing, traffic jam, water, air, and noise pollution and lack of recreation facilities (Khan, 1994 and Islam, 1996) which causes risk to people's health like injuries, infections disease, ill health, premature death etc (Hardoy et al. 2001 and Rahman, 2008). According to Alam (2004), lack of suitable planning, proper policy and programmes, financial support, problems of local government, weak institutional management are the reasons for degrading urban environment of Bangladesh (Alam, 2004).

A lot of urban environmental problems were identified and listed from many related literatures which represent these environmental problems.

Table: 2.2 Urban Environmental Problems in Bangladesh

SL. No.	Urban Environmental Problems
1.	Inadequate water supply
2.	Poor quality of supplied water
3.	Lack of drainage
4.	Urban flooding or water logging
5.	Lack of sewerage system
6.	Poor sanitation condition in slum areas
7.	Limited gas connection
8.	Inadequate garbage disposal and management
9.	Inadequate electricity connection
10.	Inadequate road network and transport system
11.	Traffic jam
12.	Slum and squatter settlements
13.	Air pollution
14.	Water pollution
15.	Noise pollution
16.	Smell nuisance
17.	Inadequate health care facilities in secondary and small cities
18.	Critical housing condition of slum peoples
19.	Poor health condition of slum peoples
20.	Lack of services facilities in slum and squatter settlements
21.	Limited wetlands, open space and recreational facilities
22.	Inadequate street lighting
23.	Unhygienic environment
24.	Illegal filling of water bodies
25.	Unplanned and illegal structures
26.	Hill cutting
27.	Violence
28.	Insecurity
29.	Mosquito problem

Sources: Islam, 1996; Rahman, 2008; Khan, 1994; Rana, 2011; Siddiqy, 2017; Kawsar, 2012; Quddusi, Kazi 2007; Rahman, 2010; Ahmed and Islam, 2014; Ghulam, 2001; The Daily Star 2011 and 19; Akash, et al 2018; Taheruzzaman, & Janik, 2016; CCC, 2004

Some environmental problems are discussed in below

2.4.1 Flooding and Drainage Problem

Several cities are affected by water logging problem due to insufficient drainage coverage, fast, unplanned and uncontrolled urban development in Bangladesh. This situation is badly experienced by the old and new part of Dhaka city. Secondary and small type of cities also faced this situation (Islam, 1996). Unwise filled up of the water body, canals, and manmade drainage channels has accelerated this situation. In case of Chittagong city, there was no integrated drainage and sewerage system and the destination of going waste water are in the low lands and surface water body like canals, ponds, rivers and sea which crated water pollution and spread water borne diseases within the city (Rahman, 2008 and Amin, 2006). Releasing of wastewater into open roadside drains and annual flooding are common phenomenon in Sylhet city (Ahmed and Islam, 2014). Even medium sized cities like Comilla, Tangail suffered heavily from water logging and poor drainage system after excessive rainfall (Islam, 1996 and Mia et.al, 2012). Small town like Chunarughat Paurashava also suffers from severe drainage problem like clogging, poor maintenance of drain, water stagnation and low coverage of drains etc (Chowdhury and Deb, 2012).

2.4.2 Water Supply Problem

Existing water supply situation in urban areas of Bangladesh is not in satisfactory level. There are many sources of drinking water in households of different urban centres in Bangladesh. The provision of piped water supply is less than one forth of total urban household and the quality of water is very poor in maximum urban areas specially in metropolitan cities (Islam, 1996). UNICEF has stated in a magazine that about half or full portion of water was polluted in some cities in Bangladesh these are Dhaka, Chittagong, Khulna, Rajshahi, Pakshi, Bogra, Chadpur and Rangpur etc (Islam, 1996 and Ahmed,

1989). Rahman 2008 has found in his research that the pipe water supply in higher income residential areas was in better condition than the middle and lower income areas, though more than half of the people of lower income areas had supply water, most of them collected water from standpoints of CWASA in Chittagong City (Rahman, 2008). Secondary cities and small towns also faced piped water supply problem. Only 25% of total households were covered by piped water supply facility in Tangail Paurashava (Tangail Paurashava, 2021). In case of Chunarughat Paurashava, Habiganj, inadequate provision of piped water supply and contaminated water was the severe problem of residents (Chowdhury and Deb, 2012).

2.4.3 Sanitation and Sewerage

A small portion of urban people have access to modern sanitation system and in Dhaka city sewerage line is found at only 15% households (Islam, 1996). Islam has studied in 1996 that in case of other cities, various arrangements like septic tank, pit latrine, bucket latrine etc were found for example 21% of the households used septic tanks in the Upazila towns and poor people had no proper fixed toilets facilities. More than a hundred poor families shared a single latrine on payment in slum areas in Dhaka city (Islam, 1996). Limited sanitation facilities have also seen in slums of Chittagong city. About 30% of lower income households were dissatisfied with their sanitation system and the sanitation system was temporary where residents like more than 10-20 families often shared unsanitary open and communal toilets (Rahman, 2008). In lower income settlements in Sylhet city, many people used unsanitary hanging toilets which created severe environmental harms to the other inhabitants of the city (Ahmed and Islam, 2014). There was no sewerage line and limited public toilet in Tangail Paurashava (Tangail Paurashava Master Plan, 2013). In small town Chunarughat Paurashava faced poor

maintenance of sanitation system and inadequate public toilets (Chowdhury and Deb, 2012).

2.4.4 Energy

The fossil fuel as natural gas is the major component of the power sector in Bangladesh and coal is the prominent source of energy generation in Bangladesh (Taheruzzaman and Janik, 2016 and Energypedia, 2019). In Bangladesh, major portion of (62.9%) electricity produces from natural gas, from diesel, coal, oil produces 10 percent, 5 percent and 3 percent respectively of total energy. Only 3.3 percent energy comes from renewable resources (Taheruzzaman and Janik, 2016 and Energypedia, 2019). Almost all 96.15%, 92.31% and 83.83% urban dwellers of Dhaka city, Chittagong and Khulna city has come to the coverage of electricity connection (HIES, 2010 and Energypedia, 2019) and in other secondary and small towns electricity connection is in satisfactory level. But gas connection is very limited in urban areas in Bangladesh. Most of the households (60-66 percent) in urban Bangladesh use biomass like timber, cow dung, jute sticks or other agricultural wastes for cooking purpose (Energypedia, 2019).

2.4.5 Garbage Disposal

In case of garbage disposal, there is no any proper collection and management of garbage in urban areas of Bangladesh. The collection and disposal management of garbage is very bad in Dhaka city; tons of rotten garbage is seen along the street of the city and neighborhood lanes (Islam, 1996). The collection of garbage from the poor settlement by the authorities is very little and the management of solid wastes has become a serious threat in Dhaka city. There are many limitation of solid waste management in Dhaka city like fast expansion of industries, limited financial support, untrained and unskilled

manpower, improper technology and lack of community's consciousness etc. Similar reasons are prevailing to manage garbage in other cities and it has become very complex for the other municipalities to make sure effective and proper management of wastes due to lack of finance and other institutional capacity (Zahur, 2007).

In Sylhet city, inhabitants dispose their garbage in low lands and nearby drains which creates major environmental trouble for the city dwellers (Ahmed and Islam, 2014). The waste collection and management system of Chittagong is very poor. In Chittagong city, the total generation of waste is 1200 metric tons daily and The Chittagong City Corporation (CCC) could collect average 850 tons garbage of total accumulation and unable to collect 30% of the waste every day (CCC, 2004 and Rhaman, 2008). In secondary cities like Tangail, garbage's of kitchen, markets were dumped at nearby dustbins or vacant places, road side, rivers and canals which contaminated soil and water (Master Plan Tangail Paurashava, 2013). In Savar Paurashava, municipality authority is not efficient in collecting and transporting wastes from household (Masud, 2013). Small town like in Chunarughat Paurashava, throwing away of waste in open space and dirty environment is the most severe problem of inhabitants (Chowdhury and Deb, 2012).

2.4.6 Roads and Transport Problem

Urban development of a country depends mostly on the roads and transportation system. But this vital infrastructure is developed inadequately in urban areas of Bangladesh (Islam, 1996). The roads are not enough wide, sometimes very narrow and limited networks were found in Bangladesh. The public mass transport system like buses and minibuses are enough in the large cities and it is the cheapest form of public transport but

the bus services facilities are extremely insufficient. Although the number of transport and vehicles has increased, the need of the vehicles still remains in scarcity (Islam, 1996). There were many problems of road and transport system in Dhaka and other cities like a big amount of rickshaws and other small power-driven vehicles, inadequate and unplanned road network, weak traffic and road maintenance system, corruption of the authorities in implementing traffic rules, ignorance attitude towards traffic rules of citizens and other factors (Islam, 1996). The other severe environmental problem like air pollution; created by the vehicles and power driven transports. There is no provision of footpath on access road in the cities and Rahman has observed in 2008 that there was no footpath in Chittagong city (Rahman, 2008). A large number of roads were still katcha in character and no notable traffic management system in secondary city like Tangail. Signalize traffic management system was absent in the city (Master Plan Tangail Paurashava, 2013). Similar condition like serious traffic congestion was seen in small town Chunarughat Paurashava. (Chowdhury and Deb, 2012).

2.4.7 Urban Pollution

Pollution in urban areas like air, water and noise pollution are prevailing which degrade the quality of air, water of surroundings. Noise when accede a standard level is also considered as pollution which causes health problem and social hazard. Rotten garbage also causes pollution both as smell irritation, origin and spread of diseases, spread of mosquito in urban areas etc. Defecating and urinating at open spaces is also pollution in urban areas in Bangladesh. All types of pollution are increasing at a remarkable rate in all cities and people have accepted this situation with a sense of vulnerable and indifferences (Islam, 1997). According to World Air Quality Report- 2018, in terms of pollution, Dhaka is in second position (The Daily Star, 6 March, 2019). WHO assessed that among

the top twenty cities in the world, Dhaka is in worst condition (WHO, 2011). River water of Dhaka city has changed from its natural form (appear bad taste, unpleasant odor, dark color) in terms of physical, chemical and microbiological by discharging industrial effluent without treatment, chemicals used in agricultural land, urban waste and sewage water, solid waste dumping, oil spillage and sedimentation etc and missed its fitness for useful purpose (The Daily Star, September 10, 2011).

Rhaman 2008 has studied about indoor noise in Chittagong city. He observed that noise pollution in indoor areas in household levels was become major problem in the city and disturbed sound sleeping, education and attention in work. Limited opportunity of outdoor recreation and lack of safety has made encourage the kids of middle income households to engage in indoor recreations like loudly played songs or others (Rahman, 2008).

Louhajang River is one of the major rivers in Tangail. Some different industrial units have been developed in both side of the river in Mirzapur Upazila. Lauhajong River is becoming polluted by discharging untreated industrial effluent from these industries in to the river (Mia et.al, 2012).

In Chunarughat Paurashava, excessive level of sound, ponds, canals and rivers pollution and extreme level of black smoke has been marked as the most crucial environmental problems (Chowdhury and Deb, 2012).

2.4.8 Health Problem

Urban health system is comparatively better than the rural average as well as national average. But in case of urban poor, they are far from the better health facilities and suffer from various healths related problems (Islam, 1996). The dense and unhygienic environment of slum and squatter settlements with little or no services facilities accelerate the communicable and non communicable diseases like diarrhea, respiratory infections,

scabies, helminthiasis, fever, typhoid, whooping cough and various eye diseases. Most of these diseases are directly related to unhealthy environmental conditions, particularly with polluted water and air (Islam, 1996). The slums and squatter people are unable to get proper treatment facilities due to finance, education, awareness and so on. The health care facilities in medium and small urban areas are very limited in both public and private health care sectors and urban poor get limited access in these facilities, though private facilities have improved in large and secondary cities but these are very costly (Islam, 1996). Moreover, the people of slums and squatters cannot manage appropriate food and suffer from malnutrition.

2.4.9 Housing Conditions

The overall urban residential density and structural condition of houses have some critical condition in Bangladesh. The residential density has increased in high and middle income urban areas. In slum or low income areas of urban, the densities are extremely high and more than 2000 people live in one single storied building per acre while according to Third World standard 300 people can live such building per acre and 500 people can live multistoried building per acre (Islam, 1996). In terms of structural condition or building materials, 31.9% of urban houses of Bangladesh were made of permanent or pucca materials, 32% were of semi- pucca type, 33.5% were of kutcha type houses and 2.6% were simply thatched houses of very temporary and weak materials (BBS, 2011). Most of the houses of poor and low income groups in urban areas are kutcha or thatched type, while a few among them have overcrowded in semi-pucca units with little or no utility services (Islam, 1996).

2.4.10 Slums and Squatters

With rapid urbanization, urban slums and squatters have developed due to immigration of the rural poor, inadequate land for shelter, poor economic condition, expensive housing materials etc in cities of Bangladesh (Islam, 1996). The population of slums and squatter settlements contain one third to half of the large cities population in Bangladesh. The condition is mainly bad in Dhaka city as CUS in 2005 studied that some 4966 slum and squatter settlements in the Dhaka Metropolitan Area is occupied by the total population of 3.4 million in all parts of the city (CUS, 2005). There were 35 cluster of slum settlements remained in Chittagong city (CUS, 2005). Even medium sized towns and small towns have slums which accommodated up to 30 percent of their population and these slums and squatter have developed mostly on public and semi public land in Metropolitan and other cities. The environmental and socio-economic condition of these poor settlements is poor and unhealthy and faces health hazards to those residents and other residents living in outside. The per capita living space is extremely low and overcrowded and has a limited access of sanitation, unpolluted drinking water and other utility facilities in slum settlements. On the other hand the rents are high, even higher (by per unit space of total floor) than for pucca buildings in middle class areas (Islam, 1996).

2.4.11 Open Space, Recreation and Socio-Cultural Political Assembly Space

The condition of urban environment both physically and socially depends on its availability of open space and planned land use for example this proportion may amount of more than 10 percent of a large city. In some cities might have the required percentage of the open space with a big quantity of unoccupied land or unused land of government and organizational ownership but there is no equal distribution of such open space in

cities. In case of Dhaka Metropolitan area, there is required open space is available in certain zones and areas like in recently developed areas and cantonments where the old city is more crowded having no open spaces (Islam, 1996).

There is another need of outside space for community, cultural and political programmes and gathering in urban areas in Bangladesh and the accessibility of this space has become inadequate and limited gradually in Dhaka city and possibly other towns and cities. As a result, many meetings, assemblies held on the road and seriously disrupted the traffic flows within the city, economic and social losses, time waste to the city dwellers (Islam, 1996).

2.5 Governance

The word ‘governance’ has come from the Greek word “Kubernan” meaning of the word is pilot or steer (boats) and first used by the Greek philosopher named Plato by considering a structure and design of rules. Governance is a versatile concept that includes numeral political, social and economic matters which are concerned by the government and administration. It is a continuous-changing issue that the meaning of the concept has changed gradually. “Governance means the manner in which power is exercised in the management of a country’s economic and social resource for development” according to World Bank, 1994. “Governance is the capacity of a country’s institutional matrix (in which individual actors, firms, social groups, civic organizations and policy makers interact with each other to implement and enforce public policies and to improve private sector coordination” (Ahrens, 2003). Another definition was given by Landell-Mills and Serageldein (1991) is “Governance means how people are ruled, how the affairs at the state are administered and regulated; it refers to a nation’s system of politics and how this functions in relation to public administration and law” (Landell-

Mills and Serageldeen, 1991). Beside this, “Governance refers to strategy, tactics, process, procedure or program for controlling, regulating, shaping, mastering or exercising authority over others in a nation, organization or locality” (Rose, 1999 and Hasan, Sultana, & Hasan, 2014).

Governance means two things: first thing, it is an arrangement of government which focused on efficient and liable institutions and in the second thing; it works in democratic way and electoral procedure, representative and responsible arrangement to make strong and reasonable connection between civil society and state (McCaeney, et. al 1995 and Islam & Khan, 1997). In the governance concept the mechanisms such as accountability, transparency, public participation, and responsiveness must be included.

Governance has been considered as an effective and beneficial concept to understand and analyze urban development in third world countries.

From the above definitions it can be seen that governance does represent not only one thing but also can answer several questions. These are;

How people are ruled?

How command is legitimize?

How authority is ensured in giving essential human rights of its inhabitants?

Who are involved in the system?

How authority does practice in using resources on the way of growth of its inhabitants as well as the state?

How does the government make sure safety and security of its inhabitants? (Hasan, Sultana, & Hasan, 2014)

2.6 Urban Governance

Urban governance is known as government (local, regional and national) and stakeholder's decision making in planning, finance and managing urban utility facilities and environmental management of urban areas. It is a continuous process of managing urban areas by using social and financial resources and political power. Moreover, it deeply depends on the political institutions, capacity of government which influences the decision making and management of the urban environment. It also influenced by the social and economic components, institutions and organizations such as labour market, households, public goods and services, infrastructure, land use and public safety and security (Devas, et al., 2004).

Normally, it is observed that, there is a big gap exists between poor and better- off urban residents in aspect of equal access of social, economic and political opportunities, participation in urban phenomena of urban areas.

Furthermore, urban governance plays a vital role in structuring physical and social infrastructure in urban areas and influences the quality and quantity of basic services and efficiency of supplying those services. It establishes the costs and distribution of resources among different group of citizens and ensures the resident's participation in decision making process which makes certain accountability, transparency and responsiveness of local government (Slack and Cote, 2014).

In addition, according to UNESCAP & UN-Habitat, 2010, in urban governance system, a variety of actors and institutions are involved in managing urban areas which establish a good relationship proper coordination among those organizations. In this aspect, a strategic role has to play by the government among the actors or stakeholders in urban management (UNESCAP & UN-Habitat, 2010: 211–12; 2015).

2.7 Environmental Governance

Environmental governance “is the term to describe how human exercise their power over natural resources and natural systems” (WRI, 2002 and Ortolano, 2010). It is the matter of giving importance “how we make environmental decisions and who makes them” (WRI, 2002 and Ortolano, 2010).

Environmental governance is much more than the government. It involves all levels decision makers like government, businessmen, private organization, community people, farmers, and consumers. In fact, it works with the liable authority and their power exercise with relation of environmental components in accountable way (WRI, 2002 and Ortolano, 2010)

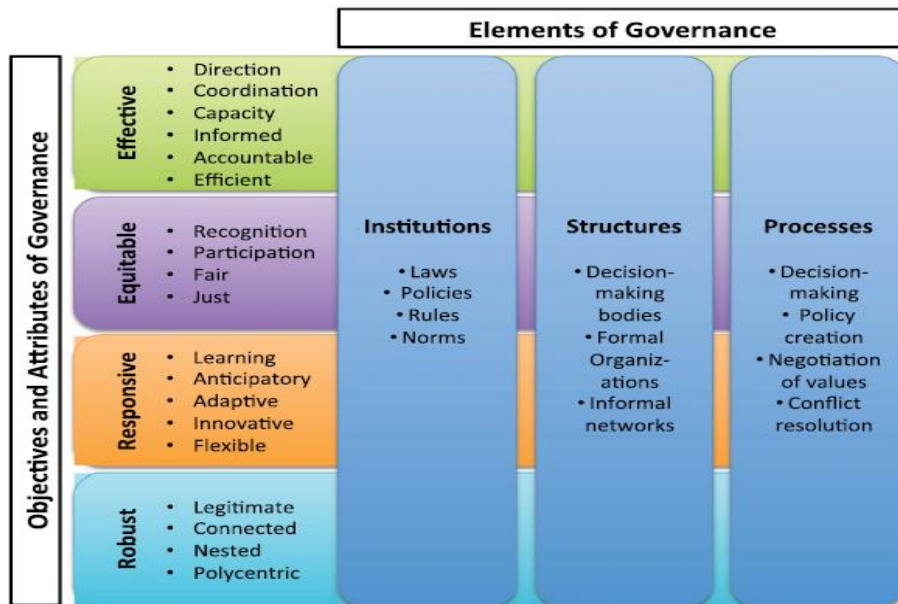
There are some key principles of this concept; there are:

- Considering environmental decision-making and execution in all aspect.
- Understanding socio-economic and political phenomenon as a component of the environment.
- Giving importance the interaction between environment and living people.
- Improving environment by implementing different environment related techniques and strategies with participatory way.

In this concept, environment and ecological resources are considered as worldwide public goods from where everybody can get benefits from it. The main goal of this concept is to control peoples’ behavior and patterns of using ecological commodities and resources with relation of social and policies circumstances (Armitage, et. al 2012, Termeer, Dewulf and Van, Lieshout, 2010 and Bennett and Satterfield, 2018). It is directly related with environmental laws and policies of a country.

The environmental governance focuses and analyses of capability, execution or performance of the institutional, structural and procedural elements of the governance (Bennett & Satterfield 2018) (Figure: 2.1)

Figure: 2.1 The Realistic Structure of Understanding the Objectives, Attributes and Elements of Environmental Governance



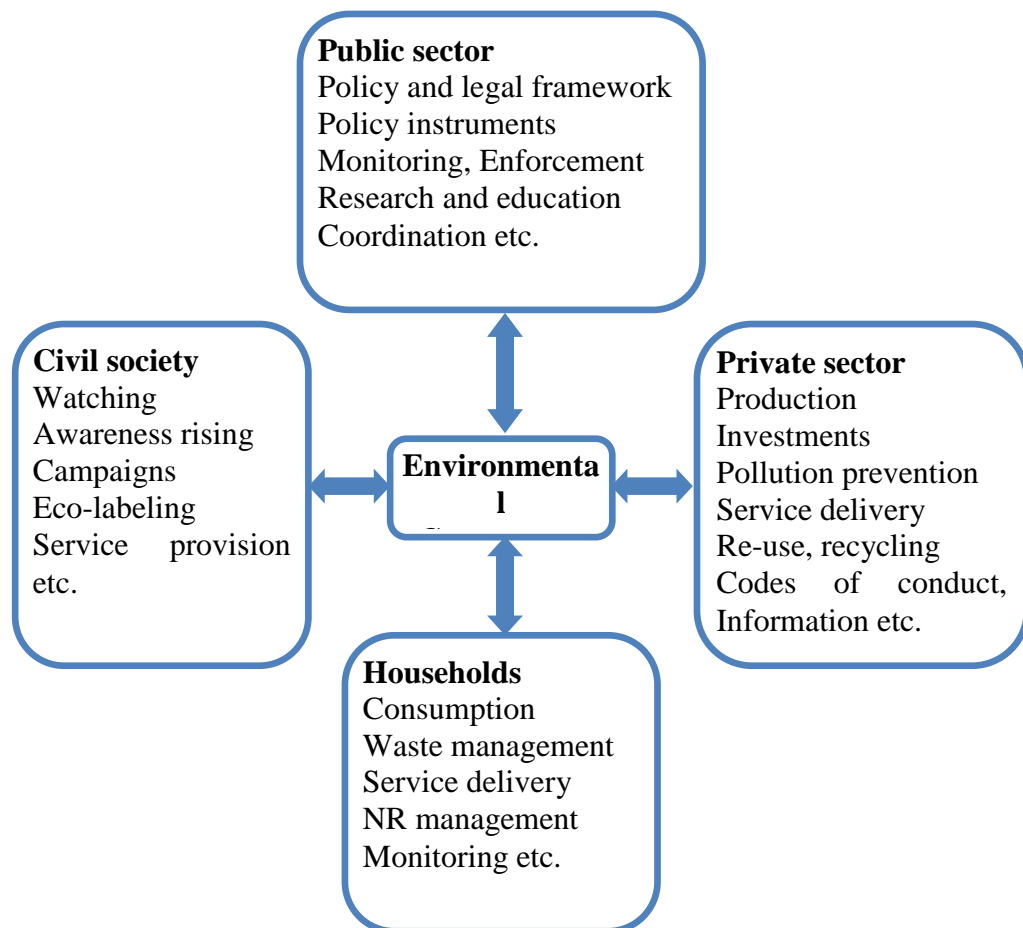
Source: (Bennett and Satterfield, 2018 and Armitage, et. al. 2012, Termeer, Dewulf and Van, Lieshout, 2010)

From this figure it can be expressed in the way that environmental governance emphasizes features that is responsiveness which includes innovation, learning, adaptation and flexibility (Armitage, et.al, 2010 and Boyd, et.al. 2015). Environmental governance has also prioritize of organizational robustness (Cudney, Bueno and Basurto, 2009; Morrison, 2017) and efficiency of practices and process like coordination, capacity building, accountability, informed and efficient process to achieve ecological outcomes (Carcamo, Garay, Fluhmann and Gaymer, 2014, Wyborn, 2015 a).

Some specialist have proposed several objectives in their proposals like have put forward like Adger, et al (2002) suggested four incorporated objectives which can be given consideration in environmental governance related discipline: efficiency, effectiveness, equity and legality. But here not focused on the environment. Other literature by Bennett and Satterfield, 2018 recommended four general and different objectives such as effective, equitable, responsive and robust which are considered in the environmental related procedures (Bennett & Satterfield 2018) (Figure:2.1).

Environmental governance involves multiple actors with complex and integrated way where public, private and civil society organizations are involved in all strategies, decision building process and civil society group acts as a watchdog of that activity and makes the system more accountable and responsive (Wingqvist et al. 2012) (Figure: 2.2).

Figure: 2.2 Environmental Governance Involves Multiple Actors



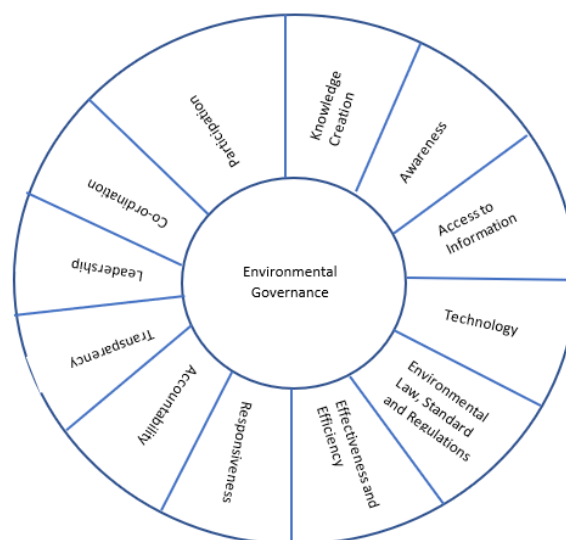
Source: Based on Shmge and Öhmd Wingqvist, 2011

Global Environmental governance can be expressed as the associations, strategic tools, financial system, policy, actions and behavior, which control the procedure of global environmental safety (Najam et al., 2006).

2.8 Components of Environmental Governance

Environmental Governance is based on these parameters which are described in bellow

Figure: 2.3 Components of Environmental Governance



Source: Modified by the Author, 2021, (Molen, 2018, Rahman, 2015, Du et al. 2018, Haque, 2018, Ayadi, 2012, Wingqvist et al. 2012, Mittal et al., 2015, Islam, 2013, UNDP, 2010a; TI, 2009; WWDR, 2006 and UNDP, 1997, Graham et al., 2003; Lockwood et al. 2010 and Bennett and Satterfield, 2018).

2.8.1 Knowledge Creation and Dissemination

The formation and proper dissemination of knowledge are key issues in environmental governance and that may create well-informed governance system (Molen, 2018). If the knowledge is created, shared and managed in proper and effective way, any organization can take proper decision to solve the problems. But in Bangladesh, knowledge creation

and dissemination are irregular and sometimes scattered in nature (The independent Bangladesh, 16 october, 2019).

Similarly, if environmental knowledge is shared in all sectors of society, environmental awareness and public engagement can be ensured in effective way. For this purpose it is necessary to know the public demands and needs (Du et al. 2018). In Bangladesh, local government institutions like Union Parishad, Upazila, City Corporation and Municipalities can take part of effective role in environmental management by developing peoples' awareness (Rahman, 2015).

2.8.2 Access to Information

Developing accountable governance, access to environmental information among mass people is very important component to ensure sustainable management of environment. If people know about their rights, limits, availability of natural resources, they can make their choice and claim to use these resources (d.i.e. 2018). In developing countries, there are many challenges like availability of trained and skilled manpower, financial support to execute environment friendly technology to manage environment (**Tonda & Susan, 2015**).

2.8.3 Environmental Laws, Standard and Regulations

Environmental governance could not be achieved without environmental rules, laws, practices and policies that determined the peoples' behavior with the environment (Haque, 2018). But proper and equal implementation of environmental laws, regulations

and policies is sometimes responsible for environmental problems in Bangladesh (Haque, 2018 and Rahman, 2015).

2.8.4 Effectiveness and Efficiency

Sustainable use of natural resources and protection of the environment should be ensured to maintain effective and efficient governance system. For example, environmental governance in Nepal is not effective due to poor functioning of governance, frequent changes of political government system, less attention of rural and urban problems and lack of enforcement of environmental policy (Ayadi, 2012).

2.8.5 Responsiveness

Environmental Governance also depends on responses of authority, how all stakeholders are served properly to meet demands with changed and new situation (Wingqvist et al. 2012).

2.8.6 Coordination

Proper Co-ordination among several institutions, policies and different stakeholders is very important to achieve effective environmental Governance (Rahman, 2015). In Bangladesh, there is a lack of proper coordination sometimes unclear and overlapping responsibilities among multiple ministries, departments and other authorities' which accelerates ineffective and inefficient urban environmental governance as well as providing inadequate environmental services to the people (Mittal et al., 2015).

2.8.7 Accountability and Transparency

Ensuring accountability and transparency is a vital part of governance mechanisms for better environmental outcomes. The public and private sectors, civil society groups who are involved in decision making should be accountable and transparent in their work (Wingqvist et al. 2012).

2.8.8 Peoples' Participation

Finally, peoples' participation both men and women in decision making, executing the plans and all development activity can ensure accountable and transparent governance (Wingqvist et al. 2012).

2.8.9 Leadership

Creative, dynamic, self motivated, innovative, responsive and honest leadership can create a city more effective and livable. In Bangladesh, City Corporation and Paurashava has lacking of such type of leadership (Islam, 2013).

2.9 Good Governance

In the situation of extensive poverty, unrestricted corruption and other socio-economic problems in the Sub-Saharan countries, the topics of quality governance as good governance has become in limelight in the last decade of twentieth century. Since 1978, World Bank proposed the term of good governance because of absenting poor

management without international standard of many countries in Latin America and Africa (Hossain, 2005). Good governance is such sensitive, administrative, responsive and effective in manner to meet the need of the people and solve raging problems of the public by executing proper laws and policies (Hasan, Sultana, & Hasan, 2014). Some formal definitions are given in below-

“Good governance is epitomized by predictable, open and enlighten policy making, a bureaucracy imbued with a professional ethos; an executive arm of the government accountable for its action; and a strong civil society participating in the public affairs; and all behaving under rule of law” (World Bank Report, 1993).

“Good governance involves the self- organizing and inter organizational networks characterized by interdependence, resource-exchange, rules of the game and significant autonomy from the stat” (Rhodes, 1997).

“Good governance means the effective management of a country’s social and economic resources in a manner that is open, transparent, accountable, equitable” (Bilney, 1994).

This concept is the practice of social, economic, political and managerial authority at all levels to ensure peoples’ legal right, legal obligation through implementing laws, policies and regulations (UNDP Policy Document, 1997 and Hasan, Sultana, & Hasan, 2014).

2.10 Major Principles of Good Governance

Effectiveness and Efficiency – This is the important element that ensures to meet the peoples’ demand of the changing situation through logical utilization of resources.

Responsiveness – This is such a practice that institutions and authorities are bound to respond changes need and demand with new circumstances of all stakeholders.

Coordination, Integration and Coherency– Good governance must improve and encourage coordination, integration and coherency approach within various institutions, several policy and multiple stake holders to achieve same goals (UNDP, 2010a; TI, 2009; WWDR, 2006 and UNDP, 1997).

Rule of Law and Impartiality – In this system, all people, all genders, class, religion, sexuality, age and ethnicity will get similar and equal legal opportunity, provision of services and resources. Legal aspects should be fair and not corrupted, non-discriminatory and equal in manner and all citizens can get equal opportunity to make better their living condition.

Accountability – Government, private sector, civil society organization, community organization should be more responsible to make their decision and be accountable to the people what they do and how they do it.

Transparency – It is important element of good governance. Government or any authority should be ensured to provide all information, process of the work to the related people of society.

Participation – Participation of all men and women should be ensured in all steps of decision making process, development work and implementation of policies as they have individual voice and choice which can make those initiatives sustainable. All national and local governments should follow this inclusive approach (UNDP, 2010a; TI, 2009; WWDR, 2006 and UNDP, 1997).

Integrity – Individual and institutions should maintain moral and ethical principles and standard which may protect from polluting corruption (UNDP, 2010a; TI, 2009; WWDR, 2006 and UNDP, 1997).

2.11 Why Environmental Governance is Different from Governance?

Governance includes the process of leading which are taken by the government of a nation, by a society, by a marketplace and by a system according to norms, rules, policies, regulations and communication system of society (Bevir, 2012). It is the organization and structure which decide or select decision makers, decision takers, decision making procedure and actions of ensuring goals and effects of this (Graham et al; 2003; Lockwood, et al. 2010 and Bennett and Satterfield, 2018). Environmental governance refers to the institutions, rules, regulations, policies and process that acts as a crucial role in communicating of people, communities, inhabitants, nations, corporations with the environment collaborating with public, private, NGOs, civil society, community and mass people to obtain sustainable environment (UNDP, 2012).

Governance is the general and broad concept in politics where as environmental governance is the notion of political ecosystem which encourages environmental rules that supports for sustainable individual behavior. It is based upon environmental principles.

Governance may not be involved in organization and protection of environmental resources and environmental issues but environmental governance is the procedures of

taking plans which engages in the protection and management of the environment and resources.

The main purpose of environmental governance is to achieve environmentally sound society or nation as well as sustainable development (IUCN, 2014) while sometimes governance may not be concerned in environmental issues in a nation.

(<https://en.wikipedia.org/wiki/Governance>)(https://en.wikipedia.org/wiki/Environmental_governance).

Governance framework focuses importantly in some issues like equity, peoples involvement, equality, justice as well as accountability and transparency but sometimes pay little concentration of effectiveness (Graham et. al. 2003; Lockwood, 2010) while environmental governance strongly emphasizes on effectiveness to ensure effective environmental management and conservation.

2.12 An Overview of Understanding the Problems behind Environmental Governance

As the world faces many environmental problems such as climate change, global warming, air, water and noise pollution, soil contamination, deforestation, degradation of biodiversity, environmental hazards and disaster, sea level rise, ground water depletion, green house effect etc, in this situation environmental governance must be implemented in a effective manner. But the proper implication of environmental governance sometimes becomes fail or insufficient due to some problems of the related issues of governance.

2.12.1 Lack of Available Environmental Knowledge and Awareness

Global, national and local government has developed many approaches to environmental governance to solve environmental problems. But there remains a lot of problems to achieve the goal of them lack of environment knowledge and awareness of community people is the barrier of achieving effective environmental governance. In the developing nation of South Pacific like Fiji is continuously facing many challenges to achieve good environmental governance (JEFFERY, 2005). Like Fiji, there are many developing countries whose people have no proper education, knowledge and awareness about environment and governance. Lack of available environmental knowledge and awareness cannot ensure peoples participation, technical expertise, proper planning, and proper uses of resources in decision making process in governance system (JEFFERY, 2005).

2.12.2 Lack of Proper Access of Information, Technology and Provide False and Misleading Environmental Information

Not only environmental knowledge and awareness in decision making but also electronic information technology for all levels of community is very important to the promotion of environmental governance which is the public rights to access proper information and directly related with accountability and justice (JEFFERY, 2005). In some cases, there have lack of proper access of information in some backward region of the country and sometimes provide false and misleading environmental information to the people. In case of Fiji, there is no general right or freedom of access information of mass people and this is the barrier of involving people in any development work and ensure good environmental governance (JEFFERY, 2005).

2.12.3 Difficult to Maintain the Balance between Natural and Cultural Heritage

It is very difficult to maintain the equilibrium between natural and cultural heritage (Jeffery and Craig, 2004). In good environmental governance must consider this factor. For example, Australia has overcome the obstacle and made indigenous co-management schemes and developed relationship with indigenous organizations and public sectors that ensure effective participation of all stakeholders, indigenous communities (Jeffery and Craig, 2004).

2.12.4 Problems of Policy Responses and Institutional Challenges

Wanxin Li (2007) has studied about environmental problems, policy responses and institutional challenges of China. She concluded that China faced many challenges including environmental regulatory renovation, execution and enforcement, improving the organizational capacity of local governments (Wanxin, 2007).

2.12.5 Challenges of Long-term Environmental Governance

Underdal, (2010) has examined about the difficulty of long lasting environmental governance in the aspect of climatic modification and biodiversity degradation in the world. Three criteria have identified in long term environmental governance that made it as challenges of implementing. Firstly, duration of human interaction and environmental effects is so long, frequently extended further than one person's generation. Secondly, it is very complex system which is not well understood. Thirdly, it is difficult to link between global collective goods and broad range activities of people and make various solutions of the problems (Underdal, 2010).

2.12.6 Problems of Environmental Laws, Standards, and Regulations

Executing, maintaining and properly implementing environmental laws, policies, standards and regulations are major challenges in environmental governance system. Yang and Hu studied about early's environmental governance system of China that was fighting with enforcement of environmental policy, especially at the local area. (Yang and Hu. 2008). There were many problems like weak environmental management, detail and clear environmental laws, lack of enforcement of environmental laws, lack of capacity of Environmental protection, poor environmental monitoring system, etc are responsible for environmental damage. But in 2008, in China there was in better condition in implementing environmental laws, standard, and regulations was in better condition in 2008 and adopted many targets to reduce pollutants by ten percent and improving GDP in its Eleventh Five Year Plan, 2006-2010 (Yang and Hu. 2008).

2.12.7 Lack of Transparency

Lack of transparency is another challenges to implement good environmental governance. It is prevailing in many countries especially in third world countries. Matemilola and Elegbede have studied about 'Transparency: A tool for effective environmental governance in Nigeria' in 2017. They identified some problems like corruption on political system and institutions and lack of transparency in the country. Although Nigeria is famous for its huge oil and gas resources, corruption and mismanagement as well as lack of transparency have made the governance system weak (Matemilola and Elegbede, 2017).

2.12.8 Inadequate Hierarchical Control by Public Agencies

Horizontal structure of public and private institutions and agencies may overlaps and gaps in the governance functions that may causes problems in services delivery system (Foo, 2018).

From the urban governance perspective, if the NGOs involves in any public programme, proper delivery of urban environmental services and democratic representation can be ensured by public private partnership (Foo, 2018).

2.12.9 Institutional Factors

There are some institutional factors that improve or degrade the governance system. In Brazil, there are particular institutional factors that create strong society and state, enhance the local environmental policy. There are five factors that work as driving force of taken action: the federal status of the municipalities, addition of the environmental protection programme in federal government, inadequate funding for environmental policy, existence of several rules in environmental rules and, flexible power exercise (Neves, 2016).

2.12.10 Weak management and Development plans

Weak management and development plans are the factors of improper functioning of environmental governance. In case of Thailand's lake basin management, poor performance of governance, weak management and improper development plans, inadequate institutional responses, no consideration of sustainability, overlapping laws and policies, inadequate financial support made the management system of basin unsuccessful (Cookey, et.ai.2016).

2.12.11 Complex Coordination Problems

In the case of where two or more parties, agencies, institutions relation exist in governance system, there are some complex problems arise to implement that system and here need to maintain proper coordination among the parties, agencies or groups. In reality, it is very difficult to coordinate properly among various institutions, agencies, groups sometimes it takes more time (Vatan, 2015).

2.12.12 Lack of Effectiveness, Coherence and Accountability

Effectiveness, coherence and accountability are the crucial components at different government and administration levels of proper functioning of environmental governance. Italy has faced these problems in the field of environmental governance (Morgera, et.al.2016). Still, China is suffering from environmental pollution like air pollution, acid rain etc due to effective and efficient environmental governance condition (Srivastwa, 2017).

2.12.13 Instability of government and Inadequate attention Paid to the Urban and Rural Environmental Problems

Instable government system, poor functioning of governance and inadequate and unequal concentration to the rural and urban problems are responsible for weak governance system of a country. Environmental governance in Nepal is not efficient due to frequent change of government, inadequate attention paid to the rural and urban problems, absence of long term environmental policy and so on (Ayadi, 2012). Bae, 2013 has explored the process of making local political arena through decentralization and changing governance in the field of environmental management in South Korea (Bae, 2013).

2.13 Environmental Governance Problems in Bangladesh

Though Bangladesh is one of the “Least Developed Countries” (LDCs) in the world facing many environmental problems like cyclones, floods, riverbank erosion, various urban environmental problems like, high population density, rapid and unplanned urbanization, inadequate amenity facilities, urban air, water and noise pollution, inadequate drainages and sewages maintenance, improper management of wastes, urban disaster, urban poverty (slum development) and sea level rise and 27 million people are suppose to risk over the next two decades (UNITED NATIONS, 2017 (IPS). Environmental governance condition is poor due to some problems of governing in Bangladesh.

2.13.1 Lack of Enforcement of Environmental Rules, Regulations and Policies

Bangladesh is facing some environmental governance problems due to proper enforcement of rules and regulations. Though the government of Bangladesh has amended some environment related policies, rules and regulation, the environmental problems are remaining in the country due to enforcement of the laws and policies. Sometimes NGOs and Civil society groups act as a pressure group of enforcing policies to control environmental problems. Sometimes judiciary has taken appropriate decisions to solve environmental problems but have not been implemented properly or effectively (Rahman, 2015).

2.13.2 Lack of Political Commitment, Unskilled Human Resources and Weak Institutional Capacity

In Bangladesh, it is hard to ensure proper implementation of environmental laws and policy as well as environmental protection and conservation owing to insufficient political promise, unskilled manpower and weak organizational capacity. All public and private sectors, institutions should be more committed, concerned to the environment and ecosystem and avoid pollution activity. Sometimes some industries, trade and business centres do not follow the environmental laws and regulations (Rahman, 2015).

2.13.3 Challenges of Protection of Environmental Resources and Maintain Sustainable Urban Environment

It is difficult to conserve and protect ecological resources like forests, wetlands, hilly area, rivers, biodiversity and urban environment in Bangladesh. People are cutting down forest and hills, filling the water bodies and destroying biodiversity to build up industries and other infrastructures without planning and they do not think about environmental matters and frequently ignore environmental laws in the country for example, pollution of river Buriganga, Sitalakka and Turag (Rahman, 2015).

2.13.4 Lack of Coordination, Fairness, Responsibility, Responsiveness of Government Agencies

There is lack of coordination among different institutions; lack of fairness and responsiveness of the authorities and lack of transparency are the prominent challenges to implement proper environmental governance system in Bangladesh. Coordination should be improved within many government institutions like DoE, DoF, BWDB, LGED,

BITWA and the ministries. In some cases, governmental institutions are influenced by the political power, discrimination and sometimes absent of transparency are observed. All of the organizations as well as government require fairness, proper responsibility, accountability and transparency which are the major components of governance in all aspects of the country (Rahman, 2015).

2.13.5 Corruption in all Sectors of the Country

Bangladesh is known as a ‘weak state in a strong society’ (Migdal, 1988, White, 1994, 1999 and Hossen & Anwar, 2011) and corruption is the major challenges in the way of good environmental governance for example, on the allegation of corruption, the World Bank has withdrawn and asked to money back 68 million tk from Bangladesh. (Ara & Khan, 2006 and Hossen & Anwar, 2011).

2.13.6 Improper Use of Resources

The natural and other resources are very limited to fulfill the increased demand. The fund for local government is not smooth and not utilize properly, sometimes used in unnecessary activities. So, all people can to get access to use resources and problem of ensuring good governance (Hossen, 2011).

2.13.7 Poor planning strategy

Poor planning strategy effects in peoples’ everyday life. Improper planning and unwise use of resources make scarcity of energy, supplied water and gas supply but efficient actions are not taken yet in Bangladesh (Hossen, 2011).

2.13.8 Lack of Accountability and Transparency

In Bangladesh public-officials and political leaders are sometimes less accountable and there is lack of transparency. Sometimes, it is seen to misuse of power and less practice of rules and laws in some institutions. As a result service delivery system is very poor in quality. Sometimes there is very little accountability of service providers to the users (The Daily Sun, October 24).

2.13.9 Lack of Qualified and Trained Personnel in Service Sector

In Bangladesh, there are limited trained, skilled and qualified personnel in all service sectors. The Department of Environment (DOE) has also lack of qualified and trained personnel. The institutions are sometimes being disabled by the unskilled and untrained manpower and this is the barrier of achieving good environmental outcomes (The Daily Sun, October 24).

2.14 Environmental Governance Problems of Urban Areas in Bangladesh

The urban areas in Bangladesh is rapidly urbanized with high population density, congested and unplanned physical and cultural infrastructure, uncontrolled poor urban settlement, huge wastes, pollution which deteriorating the urban environment (Islam and Khan, 2000 and Kreimer and munasinghe, 1992: 5). In this situation, urban government is unable to manage these problems and provide adequate basic services facilities to the urban people (Islam and Khan, 2000).

In recent years, Bangladesh government has taken some steps to manage environmental problems like formulation of National Environmental Policy (NEP) with logical degree of

participation by many professionals, Flood Action Plan (FAP) and Slum Improvement Programme supported by UNICEF (Islam and Islam 1994).

Some problems of environmental governance are prevailing such as weak enforcement of environmental legislation for pollution abatement, inappropriate institutional and other arrangement in water supply and sanitation, improper management of wastes in urban areas in Bangladesh (Islam and Khan, 2000).

Chowdhury and Deb (2012) have examined urban local government and environmental management of Chunarughat Paurashava, Habigonj. The study found that the Paurashava has many lacking such as infrastructures, technical support, trained manpower and finance, as well as people's engagement to manage garbage, drainage, water supply, public park protection and so on (Chowdhury and Deb, 2012).

Moreover, Fox and Menon (2008), studied that influence of local political structure by the central government, dependency on central government for the fund, limited liability, revenue and expenses problem and poor monitoring condition of providing environmental services delivery have create inefficient of the urban local government in Bangladesh (Fox and Menon, 2008).

Jahan, et. al also thought similar problems of providing services facilities in Paurashava. Consequently, various urban environmental problems are not focused, sometimes remain unsolved and create urban environmental problems in Municipalities of Bangladesh (Jahanet al. 2005). Effective urban governance is needed to solve the problems.

2.15 Institutional Arrangement of Urban Environmental Governance in Bangladesh

There are four types of urban governance in Bangladesh- they are; 1) Municipal government 2) Particular development agencies 3) special functional authority and 4) particular government organization (Chowdhury, 1994: 67-82 and Khan, 1997: 13).

Municipalities or Paurashavas are within Local Government System in Bangladesh. Different local governments can be differentiated according to constitution where different acts were declared for different local governments with the right to collect taxes, fees, rates and tolls according to the acts (LGD, 2018). There are five types of local government in Bangladesh today. These are given in Table 2.3.

Table: 2.3 Local Government System of Bangladesh

Geographical Area	Rural Local Government	Urban Local Government
Division	-	City Corporation
District (Zila)	District (Zila) Parishad	City Corporation (Paurashava)
Upazila	Upazila Parishad	Paurashava
Union	Union Parishad	-

Source: LGD, 2018

There are two urban based local government institutions in Bangladesh; City Corporation and Paurashava. Rural based local government institutions are District (Zila) Parishad, Upazila Parishad and Union Parishad. According to statistics 2018, there are 11 City Corporations, 329 Paurashavas, 3 specialized District Parishads, 61 District (Zila) Parishads, 492 Upazila Parishads and 4571 Union Parishads in the country.

The municipal government comprises all paurashavas or municipalities. Recently, there are 327 municipal government exits in eight divisions of Bangladesh (BBS, 2011). The Mayor, commissioners or councilors and women councilors of reserved seats are elected by the adult vote of the citizens. All the commissioners of municipal corporations are the top functional member of other three development bodies of the government. The national assembly approved various acts to form the Paurashavas and city corporations for facilitating the citizens of small and intermediate type cities and metropolitan areas. There are 15 mandatory and 13 non-compulsory functions in city corporations and Municipalities and these tasks are approximately same (Siddique, 1994 and Rahman, Dhar & Hossain, 2014). But due to limited budget, low and uneven collection of taxes and autonomous and semi-autonomous in nature, these urban local authorities can not apply all the tasks (Siddique, 1994: 146).

City corporations and Paurashavas are bound to do some development and utilities related activities like roads, embankments and culverts construction, waste disposal and management, provide piped water supply, street lighting facilities, birth, death and marriage registration, graveyards and cremation maintenance, mosquitoes abolition; certificates providing; and garden, open space and park conservation (Siddique, 1994; 146-147 and Rahman, Dhar & Hossain, 2014). The Table 2.4 describes the different responsibilities of different organizations of providing urban civic services facilities in Bangladesh.

Table: 2.4 Providing Urban Civic Services by Government Organization in Bangladesh

Name of Agencies	Service (important)	Sources of Finance
City Corporation	Sanitation, solid waste disposal, road building and maintenance, street lighting, traffic signaling, parks, play grounds, poverty alleviation, slum improvement	Property taxes, conservancy, lighting and water rates, fees, rental income, government grants, donor funds
Paurashava (Municipalities)	Sanitation, solid waste disposal, road building and maintenance, street lighting, traffic signaling, parks, play grounds, poverty alleviation, slum improvement, planning, etc.	Property taxes, conservancy, lighting and water rates, fees, fines, rental income, government grants and donor funds
Water and Sewerage Authority (WASA) at Dhaka and Chittagong cities	Drinking water supply and sewerage	Water tariffs, loans, grants from government and donors
Development Authorities: RAJUK, CDA, KDA and RDA	Planning and development of physical infrastructures	From sale of land and government grants
Department of Environment	Environment control	Government budget
Specialized authorities: PWD, NHA, DPHE and LGED	Civil works, housing, physical development	Government budgets and donor grants and aid

Source: Chowdhury, 2008 and Rahman, Dhar & Hossain, 2014

2.16 Role of Different Actors (CSOs, NGOs, CBOs) in Environmental Governance

Civil society can be described as social interaction between households and the state, community cooperation, arrangement of voluntary involvement and networks of public interaction (Bratton, 1994). The civil society can be categorized as persons, institutions and organizations that have the common purpose through ideas, actions and demand on government (Cohen and Arato, 1992). The commission on Sustainable Development (CSD) classified civil society into major groups when implementing Agenda 21 these were-

- women
- children and youth,
- indigenous peoples and communities,
- Non- Governmental Organizations,
- workers and trade unions,
- the specific and technological community,
- business and industry and farmers (Gemmill and Abimbola, 2002)

Efficient environmental governance ensures all actors participation – governments, NGOs, the private sector, civil society and community groups and ordinary citizens in collective efforts towards sustainable environment. Environmental governance comprises to the substitute of conservative top-down governmental policy developing where citizens, civil society organizations, NGOs, community groups can participate in identifying problems, crating solutions and monitoring environment and can involve in policy making that can achieve sustainable development.

Moreover, communities and citizens should have a voice in addressing the environmental issues and policies. On the other hand, the stakeholders who are affected by the unfavorable environment and the policy of sustainable development should be made voice about this and tool part in monitoring system (UNDP, 2016).

Civil Society included different types of actors like individuals, religious, academic institutions and non- profit focused group or non-governmental organizations. NGOs have become dominant actors in environmental government aspect. It involved in environmental governance with some specific mission like environmental protection, poverty alleviation, achieve sustainable development, animals welfare and others (UNDP,

2016 and Gemmill, et al, 2002). They act as a representative of voiceless and public interests that are represented in policy making and made dialogue between civil society and authorities.

Moreover, they also manage technical support in operational activities, execution and management of environmental projects and programmes of Government (UNDP, 2016). Many countries of the world are struggling with environmental, social and economic effects of rapid population growth, sustainable development and limitation of resources. If strong NGOs community with civil society, private sector and public organization go forward with some specific objectives to tackle these issues, problems can minimize successfully (Mubarak and Tanzeed, 2012).

However, NGOs face many challenges in implementing their missions and goals such as lack of understanding their role to the civil society and public, sometimes it seems that only government alone is responsible to solve problems and doing well-being for the citizens (Mubarak and Tanzeed, 2012).

In India, NGOs have become vital actors in urban governance, improving human rights, social justice, peoples' participation, anti-corruption and environmental conservation (Follmann, 2011; Baund and de Wit, 2008:2). It is also successful in challenging urban environmental degradation through awareness campaign and implementation of policies across the country (Veron, 2006). In Bangladesh, Environmental NGOs like Bangladesh Environmental Lawyer's Association (BELA), Human Rights and Peace for Bangladesh (HRPB), Bangladesh Paribesh Andolon (BAPA) act as a crucial role in raising awareness of environmental problems, taking steps to increase people awareness as well as

sustainable development (Leon, et al.2005). These organizations organize many campaigns at locally, nationally overall at all levels to raise awareness about environmental problems among people and recommend changing policies (Siddique, 2014).

For example, Bangladesh Paribesh Andolon (BAPA) played as a pressure group against environmental degradation and trying to do betterment of the environment of Bangladesh. A good number of NGOs remain in Bangladesh who are involved in monitoring of environment, making sure of peoples participation in any environmental policy and programmes, building capacity of people through training or workshops, generating and implementing of environmental policies in Bangladesh (Siddique, 2014).

Community-based organizations (CBOs) have been considered as a third actor, after public and private actors, contributing through many programmes to the respective communities (Hidayat and Randy, 2018 and Salamon, 1987). They work closely with local communities in collaborate way to improve local democracy by executing effective functions of casual governance (Chaskin and Greenberg, 2015, Logan and Rabrenovic, 1990; Yates, 1973) and strengthening sustainable development of the community (Chaskin, 2003; Chen and Webster, 2005). Moreover, CBOs are often known as informal actors like friends in nature (Hidayat and Randy, 2018). It is the nonprofit groups which fulfill community's needs by creating employment opportunities, improving standard of living and conserving environment (Tangui, 2014).

In the aspect of environmental conservation, the CBOs have initiated and improved in forest conservation and protection of river in different parts of the world. In United

Kingdom where vibrant CBOs were existed, have taken initiatives to create global awareness on conservation of environment by advocating on reduction of environmental pollution in various countries especially in developed countries (Tangui, 2014 and Karamanos, 2001). In Samoa, Vaiusu village was the most degraded mangrove forest area and CBOs has played an important role in conserving the environment and protecting and managing that forest area. In Australia, local CBOs have planted three million trees by the year 2010 through the ‘Let’s Go Green’ campaign (Tangui, 2014 and Karamanos, 2001).

2.17 Environmental Governance for Sustainable Development

Sustainable Development Goals (SDGs) has originated by shifting from Millennium Development Goals (MDGs) which is the important landmark in the 21st century (UNGA, 2015, UN, 2019a, 2019b). In considering the relationship between sustainable development and environmental governance is to consider how decision-making process would in practice by incorporating the principles of sustainable development. The definition of this concept according to the Brundtland Report is described in introduction chapter. The aim of the sustainable development is to use natural resource in a logical way not doing exploit or damage (Feris, 2010).

From the environmental governance perspective, people should make decision of using all kind of resources in the present in the way that would be not becomes environmental burden for future generation (Feris, 2010). The strategies of sustainable development and components of governance as well as environmental governance are interrelated to each other in this way that the approach of sustainable development is collaborative type to achieve socio-economic and environmental welfare in a equilibrium and

collective way at the local and nationwide (Clayton and Bass, 2002 and Kardos, 2012).

Environmental governance is the essential element of achieving sustainable development goals (Ahmed, 2019 and Bicknell, 2009). It is the precondition to utilize resources in a balanced way of resources and conservation of the environment. To fulfill the objectives of environmental sustainability it is needed well functioning and developed environmental organizations, strategies, rules, regulations, plans and its proper implementation (Ahmed, 2019).

Some environmental governance principles like transparency, direct people's involvement in all steps of policy making, accountability, access of proper information to achieve equal justice for all must have the executing bodies (Rio Declaration, 1992). Moreover, to achieve sustainable development depend on what kinds of role society play, how they respond and react on it and who are the actors (government, private sector and civil society) for solving economic, social and environmental problems (Kardos, 2012).

2.18 Urban Environmental Governance and Sustainable Development

Owing to problem of implementing sustainable development activities, concept of sustainable cities, Brundtland report gave concentration of cities significance in 1987 (Bulkeley and Betsill, 2005). The cities and towns should be managed through appropriate understanding of the mechanisms in a sustainable manner as cities are growing rapidly (Whitehead, 2003, p.1184 and Guy & Shove, 2000). But adequate focus on social, economic and environmental issues of urban places is not given properly (Marvin & Guy, 1997; Gibbs & Jonas, 2000).

However, local government of cities has perhaps turned into vital group of actors in coordinating, executing of climate change, hazard, risk and resilience on sustainable development arena (Heinrichs, et. al 2013, Pasquini and Shearing, 2014 and Satterthwaite, 2014a).

The city Jakarta, Indonesia was very exposed to climate change related disasters like floods, draught, landslides, high temperature, sea level rises, extreme rainfall and food scarcity (ICCSR, 2010; Measey, 2010; National Action Plan (RAN-GRK) 2014).

Over the past six years, Various stages of government and region were active in making plans and programmes to reduce these problems and a lot of challenges were identified in the way of implementing those plans and cities were struggling to manage it (Heinrich et. al 2013, Bulkely and Kern, 2006; Bulkely, 2009; Koehn, 2009; Carmin et al. 2012 and Brown, et. al. 2012). In this situation, government incorporated non-governmental actors, civil society groups and stakeholders for better suggestions, technological support and capital for investment of taking actions in environmental governance to ensure sustainable outcome from it (Bulkeley 2012; Braun 2014).

2.19 Conclusions

Large, secondary and small cities are facing different environmental problems in Bangladesh. After large cities, secondary cities play a vital role in economic growth in Bangladesh. But these secondary cities are not given concentration as like as large cities. The environmental management of these cities are depends on how these cities are governed. Environmental governance is the multidimensional concept which is more than the government. In this concept it is emphasize that how we make decision by

considering environment or how authority exercise their power over the natural resources. If environmental governance follows some principals like, efficiency, integration, coordination, accountability, transparency, obey rules of law, peoples' participation, good environmental governance of a city can be maintained. But, good environmental governance in the cities of Bangladesh are not applied due to some problems like lack of proper environmental knowledge and awareness, lack of access to information and technology, lack of coordination among different ministries, departments and service sectors, less accountability and transparency, limited political commitment, unskilled manpower, corruption, poor planning and strategies. As a result, urban environmental services problems and other environmental problems are prevailing in the cities especially secondary cities of Bangladesh. Moreover, environmental governance is directly related with sustainable development. If environmental governance can be applied in an effective manner, sustainable environment as well as sustainable development can be obtained and cities will be livable and environmentally healthy.

CHAPTER THREE

METHODOLOGY

CHAPTER THREE

Methodology

3.1 Introduction

The methodology, materials and method which are accepted for the research is included in this chapter. This study required proper way or methods to fulfill the objectives which are included in chapter one. This chapter explains the structure of methodologies of data collection and detail process of surveys conducted.

3.2 Approach of the Study

The study was followed an empirical approach which helped to find the truth and real problems. The empirical process involves conceptualization of the problem, analysis of the key variables, logically explaining the findings and drawing conclusions.

It also supports the ontological assumption which investigates some questions like what is reality? What to know or what should we study? And other philosophical assumption, epistemological also supports the study which asked these questions like how to know? How do we gain knowledge? (Al-Ababneh, 2020). The research is an investigative type and was carried out to explore the environmental problems and how the problems are governed by the authority in Tangail Paurashava.

Table: 3.1 Philosophical Approach of the Study

Philosophy	Critical Realism	Assumptions	Features of the Assumptions	Application of the Assumptions
	<p>Developed by Bhaskar in the 70s and 80s as an alternative to positivism and interpretivism paradigms (Archer et. al. 2013 and Bhaskar, 2013). It believes in the real world independent in people’s perception. It is viewed as philosophy about social structures, human and their interaction for theorizing the interrelated structures of society, culture and agency (Hjørland and Wikgren, 2005). CR gives opportunities to the researchers for exploring or investigating complex organizational phenomenon in a comprehensive way (Easton, 2010).</p>	<p>Ontological: What is reality or actual fact? What to know or what should we study empirically?</p>	<p>Subjective reality and interpretations: Environmental problems in the city; environmental governance condition; experience, observed views and perceptions of real and actual phenomenon of different actors</p>	<p>Preparing the conceptual or theoretical framework;</p>
		<p>Epistemological: How to know? How do we gain knowledge?</p>	<p>Analysis and investigation of the experiences or perception of participants which supported the researcher’s perceptions</p>	<p>Conduct the investigative study e.g. HHs and KIIs survey, KII of the relevant actors</p>
Approach	Case Study		Inductive Approach	
	<p>Comprehensive study, method of exploring and analyzing of a case, based on people’s perception and gives a clear view of a given situation. Tangail Paurashava has taken as a case.</p>		<p>Systematic procedure for qualitative data analysis (Thomas, 2006) Deals with Subjectivity</p>	
Methods	<p>Mixed Method Quantitative Method Conducted Household Survey to know the environmental problems and used satisfaction index and perception index to assess the governance condition of identified environmental problems of the city</p>			

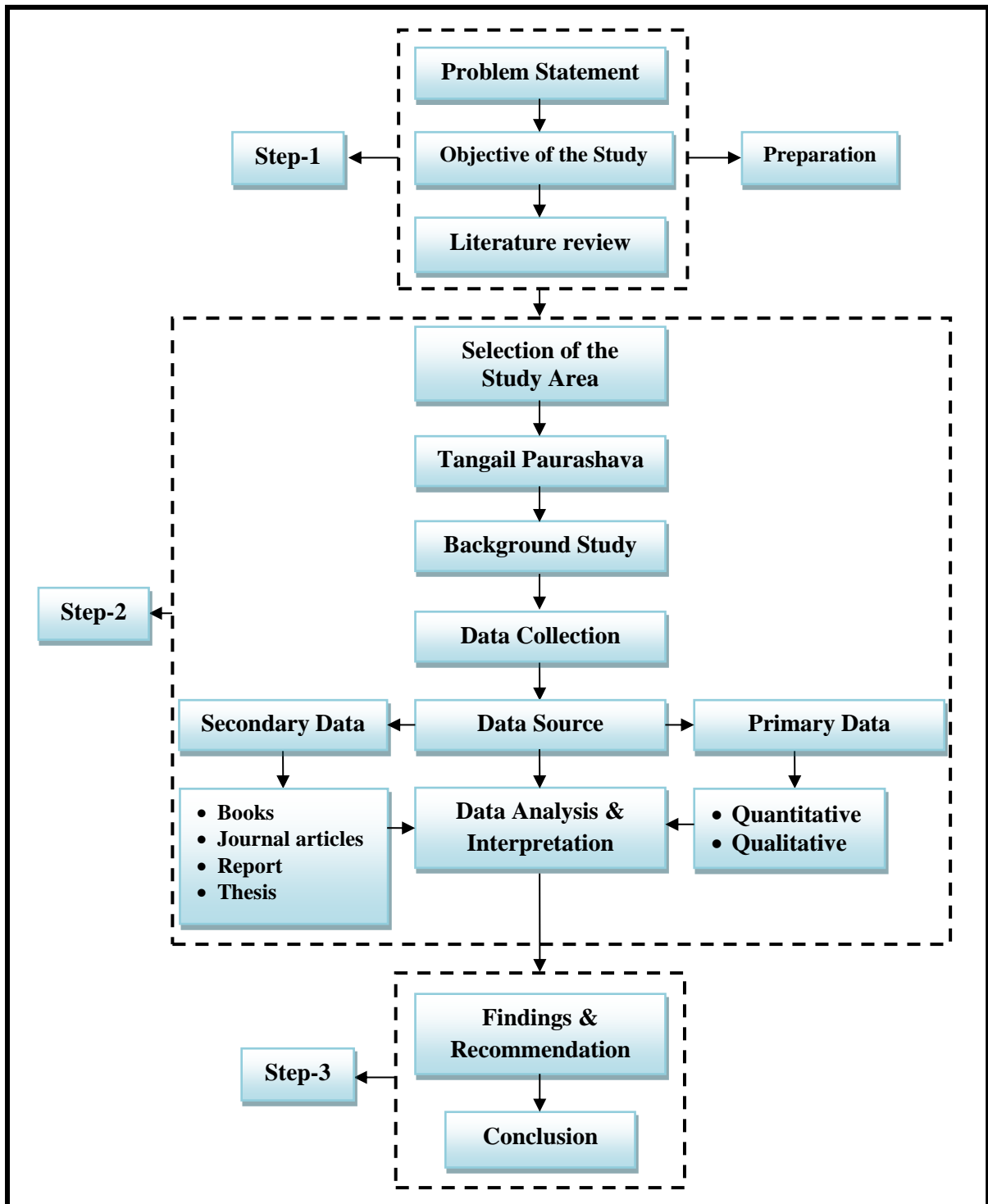
	<p>Qualitative Method Taken KII (by taking in-depth interview) of different groups of responsible people about the governance condition of environmental problems and analyzed in descriptive way.</p>
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Source: Archer, M. et.al 2013; Bhaskar, R. 2013; Easton, G. 2010; Hjørland, B., & Wikgren, M. 2005; Lawani, A. 2020; Yin, R.K., 1984; Zaidah, Z. 2007 and Thomas, D. R. 2006

3.3 Research Design

The research design of this study is divided into three steps. First step included initial step of the research such as identifying the problems, set up objective of the study and literature which are related to the study were reviewed to conceptualize the problem of the research. After that, in second step, study area was selected as Tangail Paurashava. To explore the environmental problems of the Tangail Paurashava, background study was conducted like talked with the citizens, key persons, studying local news papers etc.

Figure: 3.1 Research Design



Source: Prepared by author, 2022

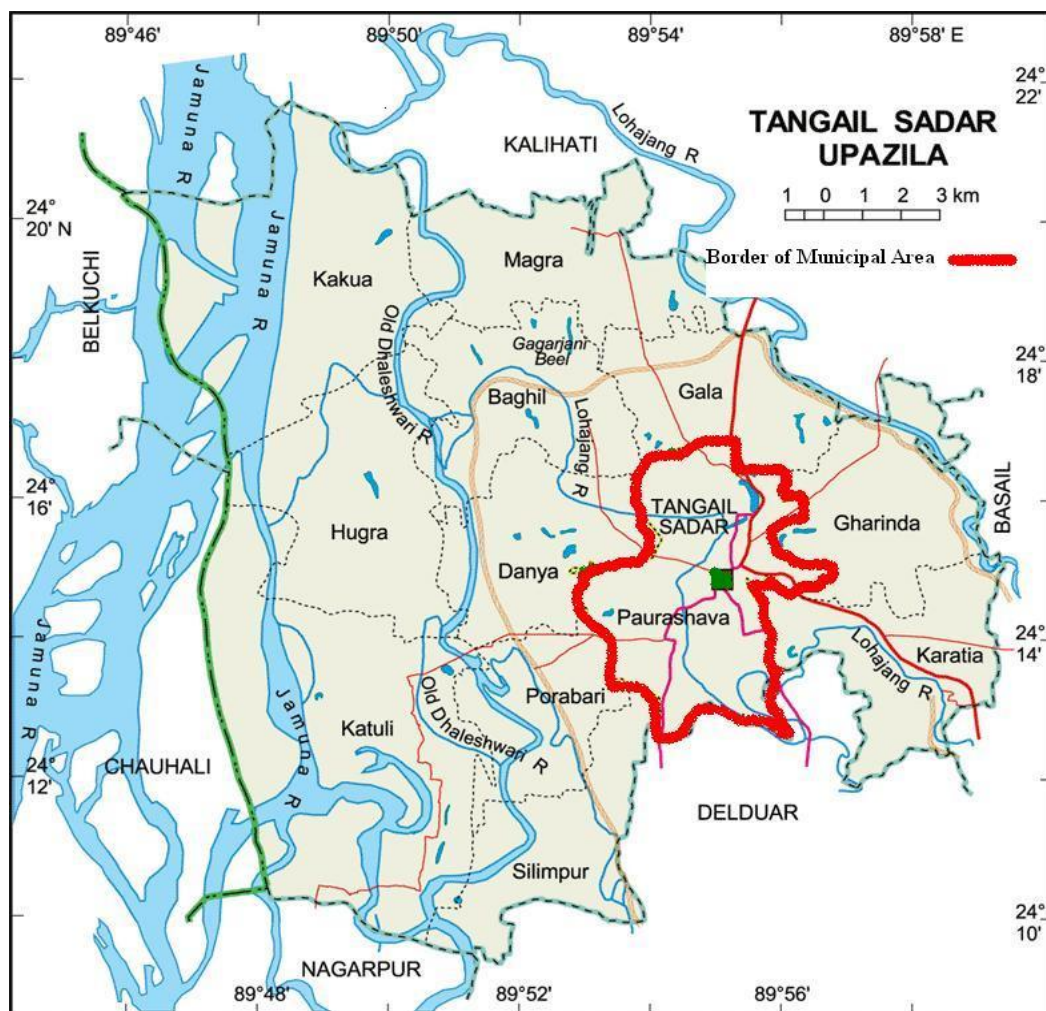
After that, primary and secondary data were used as data sources. Quantitative and qualitative methods were used for collecting primary data and books, journals, articles, thesis papers were used as secondary data source. Then collected data were presented and interpreted as tables, graphs, diagrams etc. Finally, findings, recommendation and conclusions were included which is the step 3 in the research (Figure 3.1).

3.4 Selection of Study Area

It is important part of selecting study area to conduct a research. Tangail paurashava was considered as a case study area which is secondary type city in Bangladesh. In Bangladesh, large cities get priority in the development aspects and implementation of various plans and programmes but secondary and small cities cannot get similar priority in these aspect. There are total 39 secondary cities having population of 100,000-499,999 in Bangladesh. It is not possible to conduct all of the secondary cities that's why Tangail Paurashava (having population of 1,67412) has taken for the study as secondary city (BBS, 2011). Moreover, it is a city in the central region of Bangladesh and very near to Dhaka (distance from Capital 98 km). National and Regional Highways like Dhaka-Rajshahi and Dhaka-Jamalpur passes through the Paurashava and act as a main corridor of North Bengal and a vital media to connect with east and western part of Bangladesh. Bangabandhu Jamuna Multipurpose Bridge acts as a vital role in economic development of north part as well as whole Bangladesh (Banglapedia, 2006 and BBS, 2011). The Paurashava is also close to Pleistocene Upland, Madhupur Tract and is very important for handloom industry (BBS, 2011). So, Tangail paurashava has taken as study area for its regional, economic, cultural and communication value.

Tangail Paurashava was established in 1st July 1887 and now the area is 33.80sq. km. including 18 Wards, 64 mahallas and 34 Mouzas until 2016. It is located between 24'10' and 24'22' north latitudes and in between 88'46' and 89'59' east longitudes. The paurashava is situated on the bank of the river Lauhajang. The city has a total population of 1,67,412 of which 84741 are males and 82671 are females with a density of 4953 person per sq. km. The entire city area is under Paurashava (BBS, 2011).

Map 3.1: Map of Tangail Sadar showing the study area (Tangail Paurashava)



Source: (Banglapedia 2009-10)

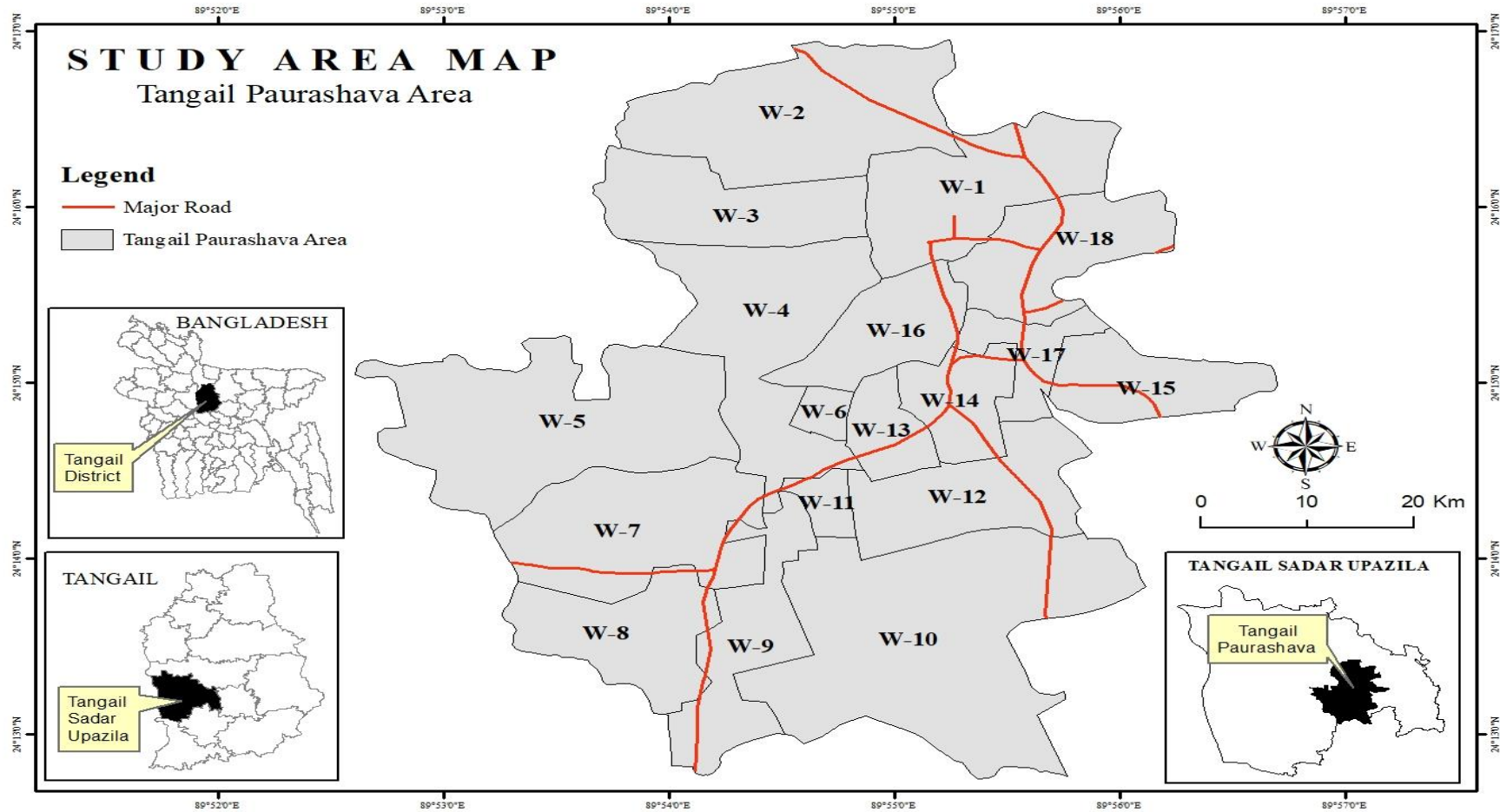
Tangail Paurashava is located in the Tangail Sadar Upazila, at the south-eastern part of Tangail Sadar Thana and has been developed by the side of old Dhaleshwari River. General information of 18 wards is presented in Table 3.2.

Table: 3.2 Name of the Wards, Households and Population showing in the Table

Ward No.	Area	Household	Population
1	Akur Takur Para-north, Dewla, District hq.	2070	10388
2	Enayetpur	2142	8760
3	West Akur Takur Para, North Kagmara, South Kagmara	3205	13903
4	Bepari Para, Fakir Para, Bera Doma, Dighulia, Char Dighulia	2119	9208
5	Kalipur, Lakshimpur, Sarutia, Shakrail	1614	7235
6	College Para, Paradise Para, Par Dighulia part	1569	6712
7	Baluk Kandi, Bagbari, Patuli Bhabani Bagbari, Uttar Santosh part, Sontosh Palpara	1674	7325
8	Aloa Bhabani Pahim, Aloa Pahim, Dakshin Santosh part	1797	8026
9	Aloa Baratia, Aloa Paikasta, Aloa Tarini, Baluk Kandi part, Char Patulia, Purba Aloa, Aloa Bhabani	1888	8575
10	Bajitpur, Berai, Basrakandi, Kazipur, Patal	1458	6189
11	Berabuchna, Kachua Para, Kanda Para	1929	7536
12	Adi Tangail, Bepari Para, Bil Para	1628	7160
13	Tangail Mahallah, Chayani Bazar, Pachani Bazar, Thana Para, Uttar Thana Para	1792	7572
14	Purba Adalat Para, Adalat Para, Biswas Betka part SW corner, Shaha Para	2790	11786
15	Ashekpur, Biswas Betka part,	2745	12118
16	Akur Takur Para Part, Par Dighulia Part	2459	10670
17	Kumudini College Para, Munshi Para, Registry Para, Biswas Betka West	2128	11081
18	Kotalia, Sabalia	2600	13168
.	Tangail City (Paurashava)	37607	167412

Source: Population Census, 2011 Community Census, Tangail, BBS, 2011.

Map 3.2. Tangail Municipal Area (TMA) Bangladesh.



Source: Created by Author, 2022

3.5 Detail Methodological Framework

The Table 3.3 shows the detail methodological framework on the basis of objectives of the study. Here, data collection method, sources of data, tools and technique applied, stakeholder’s type and outcome of the study are included according to objectives of the study separately. Data collection method, data sources, tools and stakeholders types are described in below in detail-

Table: 3.3 Detail Methodological Framework

Objectives of the study	Method of Data collection	Sources of data	Tools and Technique	Stakeholders	Outcome of the study
To explore the environmental problems linked with environmental governance in Tangail Paurashava	Quantitative method	Primary data • Field survey Secondary data Published • Journal articles • Books • Reports (BBS and others) Unpublished • Thesis • Reports etc	• Household’s questionnaire survey (structured and semi-structured) • Likert scale • Photographs • Maps	Household heads	Understanding the environmental problems and how it govern in Tangail Paurashava as perceived by households
To investigate the existing condition of governance and challenges which is related to environmental problems in the city	Quantitative and qualitative method	Primary data • Field survey Secondary data Published • Journal articles • Books • Reports (BBS and others) Unpublished • Thesis • Reports etc	• KI’s questionnaire survey using Likert scale • In depth interview of KIs (KII) • Photographs • Maps	• Public representatives, • Service providers (Key person of LGs, GOs) • Professionals and policy makers, • NGOs, • CBOs key person	Conceptualizing the existing governance condition in detail of study area
To assess the role of different	Qualitative method	Primary data • Field	• In depth interview of KIs (KII)	• NGOs, • CSOs • CBOs key	Knowing the roles of NGOs, CSOs and

actors (NGOs, CSOs, CBOs) who are responsible for environmental governance of the city	survey Secondary data Published <ul style="list-style-type: none"> • Journal articles • Books • Reports (BBS and others) Unpublished <ul style="list-style-type: none"> • Thesis • Reports etc 	person	CBOs responsible for the environmental governance of the city
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Source: author's field work, 2022

3.6 Survey Conducted

Three different categories of surveys were undertaken more than four months from November 10, 2021 to March 10, 2022 to know the situation of environmental problems and governance of the problems. They were: (1) qualitative and quantitative survey of key Informant Interview (KII) of public representatives, service providers, professional and policy makers who were also facing problems and mainly related with environmental governance and management system of the Paurashava (2) broad scale household survey of householders to identify environmental problems and governance condition of these problems who were facing problems and also receiving environmental services provided by the authority and (3) Instrumental Survey to measure Noise Levels as a case on the bases of respondents perception. Tangail Paurashava is rapidly urbanized and densely populated area. In recent time, the citizens are facing sound problem due to availability of more sound crated motorized vehicles, construction activity, processing and manufacturing industries, recreation purpose and advertisement etc.

3.7 Data Collection Methods

There are several methods of collecting data, on the basis of nature and objectives of the study as well as availability of resources (Young, 1984). For these purpose, mixed method; both qualitative and quantitative methods and experimental way was used for getting data to fulfill the selected objectives of the research. The data were collected through questionnaire survey, face to face interview and instrumental survey in this research.

3.8 Data Sources

In this research, both primary and secondary data were used to fulfill the research objectives. For primary data collection, a desirable sample size was adopted through a flexible sampling procedure. Having sample size, an in depth questionnaire (both open-ended and close-ended) survey was carried out at household level to know the environmental problems in their household and neighbourhood levels and the governance condition of those problems and challenges behind the governance of the study area. Moreover, a good number of people of deferent groups such as public representatives, service providers, professionals and policy makers were selected as key informants from the city for questionnaire survey to know their perception about governance and interviewing about various issues related to their households and city and to investigate the governance system and challenges behind the governance of this municipality. Moreover, Key informants of environmental NGOs and CSOs was interviewed in detail about their activity or role they played in proper functioning of environmental governance in this city. Field observation, taking photographs were carried out at the study area in order to get impartial views about the major problems of inhabitants and causes of those problems.

Other types of data such as secondary data were collected from the documents of governmental and non- governmental office, statistics, various books, journals, articles, yearly reports, maps, daily news papers etc.

Table: 3.4 Operationalization of the Study

Types of Data	Key Variables	Respondents Type
Environmental problems, causes and governance related data: Households and neighborhood environmental problems were considered in this study	Environmental problems, causes and governance condition were considered as key variables. Quantitative Data.	Household heads were considered as respondents of the questionnaire survey to know the existing environmental problems, causes of the problems, and governance or institutional responses on this regard. (Quantitative Data)
Environmental Governance related data	A number of people were considered as Key Informants for interviewing and questionnaire survey (for qualitative and quantitative Data) to Investigate the governance conditions, management and implementation of rules and regulations and challenges behind the governance.	Public representative, service providers, officials of Tangail Municipality, various Professionals and policy makers groups, Key person of Community Based Organizations (CBOs), Non-Governmental Organizations (NGOs), Key persons of Civil Society Organizations (CSOs), Professionals of Environment (Qualitative and Quantitative Data)

Source: Created by the Author, 2022

3.9 Quantitative Survey

Two types of respondents were selected for quantitative data collection. The respondents were household heads and Key informants of different service provider organizations, public representatives and professionals and policy makers (See Table 3.4).

3.9.1 Type of Questionnaire

The questionnaire was made into two types; both open ended and close ended for the household survey and divided into two parts (Appendix – 1) Part A and Part B. Demographic, economic, residential and city wide environmental problems, causes and possible way out of these problems were included in part A and governance related questions were included in part B. Environmental problems of Tangail Paurashava like water supply problem, sanitation electricity crisis, solid waste management problem, problem of road and transportation system, drainage and water logging condition, pollution status, mosquito and local security systems related question were included in part A.

In part B, governance related questions were made by using Likert scale (Likert, 1932) to know the household’s perception on governance issues of Tangail Paurashava.

The Likert scale is the measuring tool of respondent’s perceptions in any subject which was introduced by US organizational behavior psychologist Rensis Likert. Likert scales naturally range from 2 to 10 but 5 and 7 points scale is mostly used. Example:

Strongly Agree	Agree	Medium	Disagree	Strongly Disagree

In case of questionnaire of KIs, here two different parts, Part A and Part B were made to collect data (Appendix – 2). Environmental governance related questions by using Likert scale were included in Part A to know the perception of key persons about governance issues of Tangail Parashava and open ended, detail and specific questions of the governance condition was included in part B.

3.9.2 Sampling Technique and Determination of Sample Size for Household Survey

In this study, a simple sampling technique was applied to determine sample size. This survey was carried out at door-to-door level of household. At first, total household numbers and household numbers of each ward (18) were collected from Population Census, community series, Tangail, 2011. Then total sample size was determined by sampling formula from total households of Tangail Paurashava. After that, sample size of each ward was selected proportionately from the total sample size.

The sample size was selected by the Yamane formula:

$$n = \frac{N}{1 + N e^2} \quad (\text{Yamane, 1967})$$

Where, n= corrected sample size, N= population size, and e= Margin of Error (MoE), e= 0.05 based on the research condition at 95% confidence level. Let's, the total households is 37607. At 5% MoE, the sample size would be:

$$\begin{aligned} n &= 37607 / (1 + 37607 * (.05)^2) \\ &= 395.82 \sim 396 \end{aligned}$$

A total of 396 households were governed as sample. Finally, the sample split was selected proportionately in every ward.

Table: 3.5 Sample Size Selection of Quantitative Survey

Ward No.	No. of Households	Sample Size
1	2070	22
2	2142	23
3	3205	34
4	2119	22
5	1614	17
6	1569	16
7	1674	18
8	1797	19
9	1888	20
10	1458	16
11	1929	20
12	1628	17
13	1792	19
14	2790	29
15	2745	29
16	2459	26
17	2128	22
18	2600	27
Total	37607	396

Source: Population Census, 2011 Community Census, Tangail, BBS, 2011.

3.9.3 Respondents Selection and Time Schedule for Household Survey

Finally, the sample split was selected proportionately in every ward. Houses of the every ward were selected by using sampling table. Then the holding numbers of houses were chosen from the respective wards. Household heads were normally taken as the respondent. The women who were the main earning member of the families and at the same time, took all responsibilities of households, in this case women were selected as respondents in absence of the male members. In working days, maximum household heads (male) were not present in their houses then next responsible person, women were considered as respondents. In the situation in presence of both persons, household heads (male members) were selected as respondent. The household survey was governed in day time and two times period of a day, 09.00 am to 2.00 pm and 2.30 pm to 5.00 pm.

3.9.4 Determination of Sample Size and Respondents (KIs) Selection for questionnaire survey and Interview

There were three types of interviewee groups and a sum of 40 respondents were selected (Table: 3.6). From the public representative categories, the honorable Mayor of Tangail Paurashva, two Political Leaders of the ruling and opposite parties, nine Ward Commissioners from eighteen wards (randomly selected, 50%) and two women councilor of reserved seat from six were selected as respondents. Twelve officials were chosen from the autonomous and government organizations of Tangail city. From the twelve, seven interviewee were chosen from Tangail Municipality and others five personnel were selected from Deputy Commissioner's office, Local Government and Engineering Department (LGED), Roads and Highway, Department of Environment (DOE), Department of Public Health and Engineering (DPHE) of Tangail who are directly or indirectly related with the Paurashava authority as service providers. Fourteen respondents were selected from various professional and policymakers groups such as Teachers, Doctors, Engineers, Lawyers, Journalists, Architect-Planner, Civil Society, NGO & CBO Activists and Businesspersons for interview and questionnaire survey.

Table: 3.6 Determination of Sample Size and Respondent Selection of questionnaire survey and interview

Categories	Professions	Persons
Public Representatives	Honorable Mayor	1
	Political Leaders	2
	Ward (Councilor) Commissioners	9
	Women Councilors from Reserved Seat	2
Service Providers	Tax Collector, Executive Engineer (Public Works and Electricity Section), Town Planner, Deputy Assistant Engineer (Electricity section, Municipality), Supervisor/ Assistant Engineer (Water Supply and Sewerage Section, Municipality), Conservancy Inspector (Waste management and Cleaning Section, Municipality), Sanitary Inspector (Health Section, Municipality), District level officer (DC office), LGED officer, Officials of Roads and Highway, Officials of DOE, Officials of DPHE,	12
Professionals and Policymakers	Teacher (University/College/School), Education officer	4
	Doctors	1
	Engineers	1
	Lawyers (General/Environmental)	2
	Journalist	1
	Architect-Planner	1
	Civil Society, NGO & CBO Activists	3
Businessperson	1	
Total		40

Source: Created by the Author, 2022

3.9.5 Survey Procedures

At first, the contact numbers of all elected Mayor, ward commissioners and other officials were collected from the Tangail Municipality. After that, phone calls were made to all selected persons and took schedule from them for interview and survey. Then, The respondents of Municipality office gave time to their office and the questionnaire survey and interview time was about one hour. Others selected personnel of various government and non-governmental departments of the city were interviewed at their office after taking pre schedule from them. Finally, interviewing of all was completed successfully.

3.10 Qualitative Survey

To collect qualitative data, Key Informant Interview (KII) was undertaken of service facilitators, public representatives, professionals and policy makers in Tangail Paurashava. The main objectives of this survey was to serve well and detail explanation of the environmental governance system, challenges and draw backs of governance, and future development of urban environmental improvement plan. Before conducting in depth interview, I introduced myself as a researcher and provided permission letter from my research supervisor to ensure interviewee's participation and genuineness of this study. After that, respondents were agreed to participate in interview and made sure orally that their information and statement must be cared of confidential way. Finally interviews were recorded by their permission. There was flexibility to give answer or change their answer.

3.10.1 Type of Questionnaire for Interview

The open questionnaire was made to conduct the interview survey (Appendix – 2). A number of specific and definite questions for every respondent were included in part B of KIIs according to their professions of each group. Environmental governance related questionnaire was included in Part A which was made by using Likart scale to know the key person's perception about governance issues of Tangail Parashava

The detail questions were more or less similar for all public representatives but different questions were made for the service providers according to their working responsibilities. Moreover, similar questionnaire was made for the professionals and policy makers groups except for the leaders of civil Society, NGOs and Community Based Organizations.

3.10.2 Problems faced in conducting Interview

Various problems were identified in undertaking interview like in case of some interviewee it took more time than expectation as some officials were busy in time of interview. Sometimes, interviewees were very busy to give time on scheduled day and had to conduct interview of that person on alternate day. However, finally interview survey was completed successfully.

3.11 Data Analysis

Data analysis is important part of research methodology. Data analysis converted data into findings (Patton, 2002). Both quantitative and qualitative data analysis method were used. The subsequent actions were taken during the data analysis involving both qualitative and quantitative methods. The data which were collected from questionnaire survey as quantitative method, the quantitative analysis such as weighted average index, perception index and satisfaction index were used to analyze those data and qualitative data like detail interview of KIs were analyzed in descriptive or interpreted pattern.

3.11.1 Quantitative Data Analysis

Quantitative data analysis varies depending on the nature and extent of variables. Data were analyzed in some methods below

3.11.1.1 Weighted Average Index

The weighted average index (WAI) was the major statistical tool used following the sampling technique (Ha & Thang, 2017). It combined choice weights and question weights to produce a single index for all responses, analyzed the checklist scores and computed a weighted average for a questionnaire (Pal & Ghosh, 2017). The WAI

identified the degree of importance of each indicator; it is considered as a quick technique to assess the differences on respondent's perceptions (Pakzad, Osmond & Corkery, 2016). It was used to convert the ordinal data to analyze the level of perception of different groups of people who were considered as KII about environmental governance practices in the selected study area.

The WAI for each indicator was calculated by adding up the responses numbers for each indicator, multiplied by weighted value between 0 and 1, and dividing the sum by the number of total responses (Pakzad et al. 2026). From this calculation, overall weighted average score for each particular indicator can achieve. The formula of calculation of WAI is as follows (Ha & Thang, 2017):

$$WAI = \sum S_i F_i / N$$

Where WAI is the weighted average index ($0 \leq WAI \leq 1$), S_i is the scale value assigned at its priority, F_i is the frequency of respondents (interviewee) and N is the total number of observations. These indices were designed based on social scale; the value of each index was kept from 0 to 1. The type of each index is described as follows.

3.11.1.2 Perception Index

The perception index was applied to evaluate the level of interviewee's perceptions of environmental governance practices in the study area. It includes five levels of the Likert score valued assigned as follows (see Table 3.7).

Table 3.7 Perception Index Levels

Categories	Very strong	Strong	Medium	Weak	Very weak
Scale	1	0.75	0.5	0.25	0

The Overall Assessment (OA) of the condition was identified if the value was between 0.81-1 means Very Good (Strongly Agree (SA), 0.61-0.8 means Good (agree (A), 0.41-0.6 means Moderate (neutral (N), 0.21-0.4 means Poor (disagree (D) and 0.01-0.2 means Very Poor (strongly disagree (SD)).

3.11.1.3 Satisfaction Index

The formula for calculating satisfaction index is as follows:

$$WAI = (1.00 \cdot f_1 + 0.75 \cdot f_2 + 0.50 \cdot f_3 + 0.25 \cdot f_4 + 0 \cdot f_5) / N$$

WAI is the weighted average index ($0 \leq WAI \leq 1$); f_1 is the frequency of first scale choice; f_2 is the frequency of second scale choice; f_3 is the frequency of third scale choice; f_4 is the frequency of fourth scale choice; f_5 is the frequency of fifth scale choice. The overall assessment (OA) is calculated from the average of WAI value (Nooriafshar, Williams & Maraseni, 2004).

IBM SPSS statistics 24 software was used to analyze the quantitative data collected through interview survey to evaluate environmental governance practices in the Paurashava level. The raw data were analyzed using spreadsheet (Excel) to summarize the results. Moreover, simple statistical techniques in Excel were used to present data as graphical form which helped to interpret result as graphically.

3.12 Instrumental Experiment and Measurement of Noise Level

The noise levels from 12 locations were examined through standard method by helping the calibrated sound level meter at 6:00 AM to 9:00 PM (day time) and 9:00 PM to 6:00 AM (night time) during the working days. The sound level meter (4 in 1 Multi-Function

Environmental Meter, Model: ST-8820, made in China) comprises of a microphone that transfers the pattern of sound pressure fluctuations in to a similar pattern of electric voltage, amplifiers and a voltage meter that a normally calibrated to read in decibel.

Measurement Range is

- i) Lo=35~100dB
- ii) Hi=65~130dB (Frequency Weighting: A, C)

Sound level meters are usually equipped with weighting circuits which filter out selected frequencies. It has been found that the A-scale on a sound level meter best approximates the frequency response of the human ear.

The sound level in decibel is defined as follows:

$$\begin{aligned}\text{Sound Level (dB)} &= 10 \log_{10}\left(\frac{p}{p_0}\right)^2 \\ &= 20 \log_{10}\left(\frac{p}{p_0}\right)\end{aligned}$$

Where, P = Root-mean square sound pressure

P_0 = Standard reference pressure corresponding to the weakest audible sound (20 micro Newton per square meter)

3.13 Sources of Secondary Data

Secondary data is a vital support of the study to include and understand the background and detail information thoroughly of the research. In this purpose, the secondary data were collected from various public and non-governmental organizations, libraries etc. Among them, Municipality of Tangail, Department of Public Health and Engineering (DPHE), Department of Environment (DOE) of Tangail, Bangladesh Bureau of Statistics

(BBS), Centre for Urban Studies (CUS), Dhaka were the very important and useful sources.

3.13.1 Office of Tangail Municipality

Tangail Municipality is a self-governing organization, administrating the municipal area of Tangail. Tangail Municipality was established on 1 July 1887. Proposed Master Plan, water supply, sanitation, gas supply, drainage maintenance, wastes management related all documents were collected from this office. Even though reaming small amount of published documents, proposed Master Plan of Tangail and Budget book of 2021-2022 was very helpful for the research.

3.13.2 Department of Public Health and Engineering (DPHE), Tangail

Department of Public Health and Engineering (DPHE) is an important department of Local Government. Water supply, sanitation related information was collected from this department of Tangail.

3.13.3 Department of Environment (DOE), Tangail

The Department of Environment (DOE) is the section of Ministry of Environment and Forestry in Bangladesh. It is the vital part for a city to monitor environmental problems but DoE of Tangail did not measure prevailing air, river water quality, liquid waste and noise levels in several areas of city. It did not analyze surface and ground water and drinking water quality. So, limited information and data were collected from this office.

3.13.4 Bangladesh Bureau of Statistics (BBS)

Bangladesh Bureau of Statistics (BBS) is the large storage of all data in the country under the Ministry of Planning. In is conducting every 10 years population census from 1881 except 1971 due to liberation war and other census and statistical year books. Census statistics, official statistics at the national and regional levels, useful maps, population, households and urban area data, 2011 of Tangail were collected from BBS.

3.13.5 Centre for Urban Studies (CUS), Dhaka

CUS is a self -governing, neutral and urban research organization which is situated in Dhaka, Bangladesh. CUS has own publications and remarkable collection of books, journals and many urban research literatures on diverse topics. The research publications on ‘Local Partnership Approach for Urban Development in Bangladesh’ 2001 and ‘Poor Settlement in Tangail Paurashava’ 2011 published by CUS were useful publications for this study.

3.13.6 Non-governmental Organizations (NGOs)

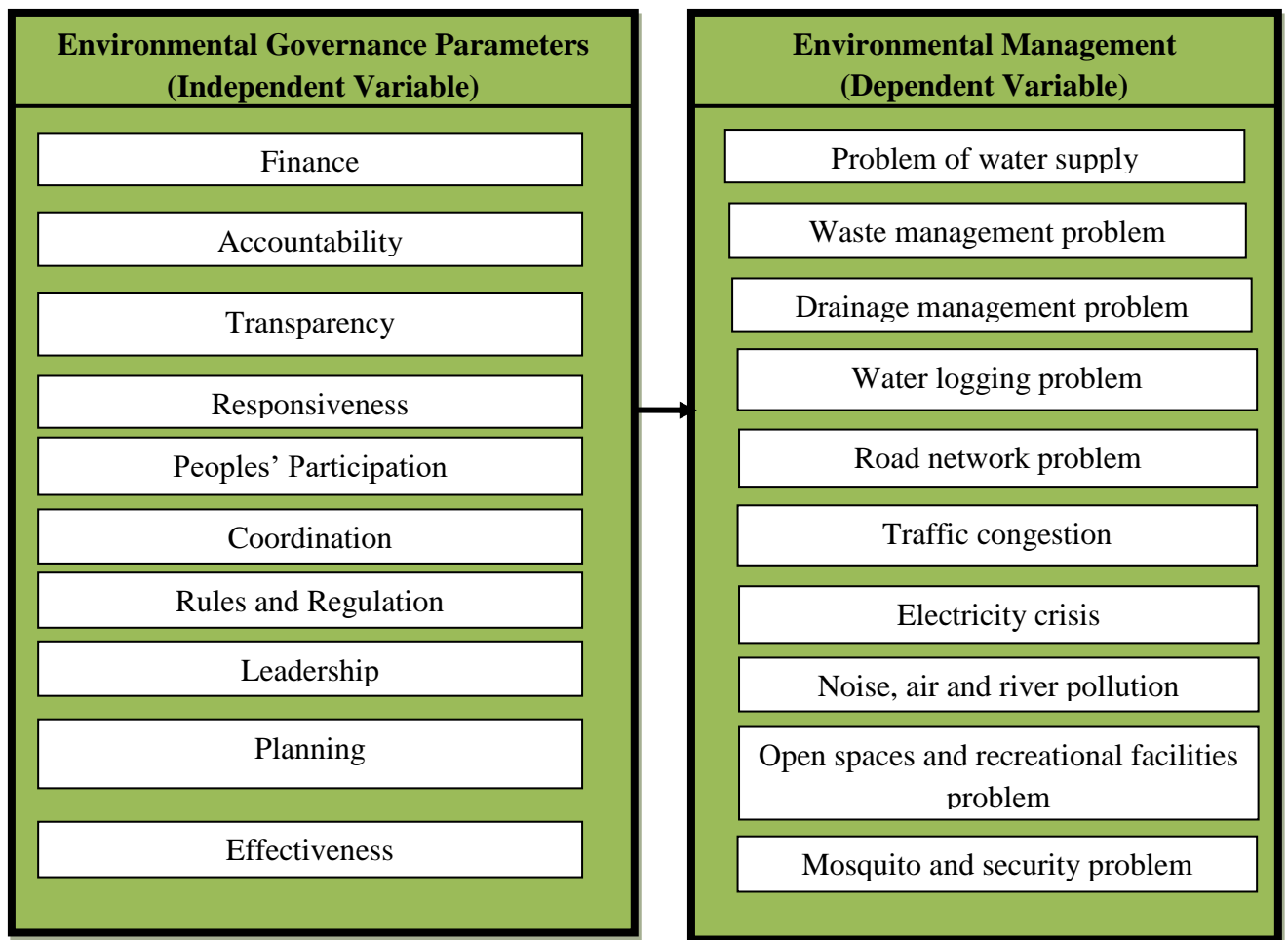
Different non-governmental organizations like Bangladesh Environmental Lawyers Associations (BELA), Bangladesh Paribesh Andolon (BAPA) etc usually worked before for urban development and environment in Tangail city. But recent, these NGOs activities are rare in this city. NGO Forum is active in Tangail to facilitate pure drinking water and sanitation facilities in rural areas of Tangail.

3.14 Analytical Framework

Analytical structure of the study was organized according to literature review and theoretical aspects and from field study. From the study, two notions; environmental

governance and environmental management were identified. In this structure environmental governance is treated as the independent variable and environmental management as dependent variable (Figure: 3.2).

Figure: 3.2 Analytical Framework of the Study



Source: Created by the Author, 2022

If environmental governance executed effectively, efficient environmental management would be ensured. Budget, accountability and transparency, coordination, people's participation, responsiveness, coordination, rules and regulation application are the major parameters of environmental governance. Moreover, better water supply, garbage management, drainage maintenance, water logging, pollution control, better road and

traffic control as well as better urban health system are depends on the efficiency of governance system of a city. Then the healthy urban environment can be achieved.

3.15 Conclusions

The methodology of the study is the guideline by which can be fulfill the research objectives. It is the tools and techniques to do research work properly. Three types of research methods were used in this study. Quantitative technique was used to fulfill the first objective of the study ‘to explore the environmental problems linked with environmental governance in Tangail Paurashava’. In this quantitative technique, door to door household survey was conducted to collect environmental problems, causes of the problems and governance condition of the study area.

To know the noise pollution, instrumental survey of some zones were conducted in the city. To investigate the second objective ‘to investigate into the existing condition of governance which is related to environmental problems in the city, questionnaire survey and in depth interview of the Key persons was conducted. To fulfill the third objective ‘assess the role of different actors; NGOs, CSOs, CBOs of environmental governance of the city’, qualitative survey (detail interview) of KIs was conducted to collect these objectives related data of Tangail Paurashava.

CHAPTER FOUR

STUDY AREA PROFILE

CHAPTER FOUR

Study Area Profile

4.1 Introduction

It is necessary to describe in detail about the study area that it is very important part of the research. In this chapter, origin and history of the Paurashava, absolute and regional location, area, population, climate, topography, river system, infrastructural condition, urban slum condition and pollution situation of the study area has been included.

4.2 Origin and History of the Study Area

Tangail district is situated at the middle of Bangladesh. After Dhaka district, it is the biggest district of Dhaka Division. There were many contribution of Tangail district in Liberation War in Bangladesh; one remarkable event is during the War in 1971, Bangabir Kader Siddique formed the ‘Kaderia Bahini’ with about 1700 freedom fighters and successfully launched many operations against the Pakistan army. There are other remarkable historical events in this district like Kagmari Conference (1957), Sannayasi revolution (1850), Farmer revolution (1858) etc (Banglapedia, 2006).

The Tangail Paurashava was a part of former “Atia” and has been developed by the newly raised land in the Jamuna River. In 1869, British Government established “Tanayil Thana” in Atia Pargana under Pardighulia Mouza. According to the writer named Khandakar Abdul Rahim on his book Tangail history, people used to word “taan” as (long sound out) and “ayil” (a Bengali word means narrow divider between two parcel of land) during British period and in this way the word “tanayil” has changes into “Tangail”. From the assumption, one kind of transport like horse cart (locally called *Tanga*) was used to carry goods and passengers in this area and general belief that the city name might

have originated from the word *Tanga* (Tangail Master plan, 2013 and Banglapedia, 2006).

4.3 Location and Regional Settings

Tangail Paurashava is located in the Tangail Sadar Upazila and has been developed by the side of old Dhaleshwari River. The Lauhajang River is spread over the Tangail Paurashava (Banglapedia, 2006). Tangail Paurashava was established in 1st July 1887 with the area of 29.43 sq. km. including 18 Wards and 34 Mouzas. Now, the area is 33.80sq. km. and located between 24'10' and 24'22' north latitudes and in between 88'46' and 89'59' east longitudes (BBS, 2011). Tangail Municipality occupies 0.99 percent land area and contains 6.59 percent population of Tangail district. It is bounded by Kalihati Upazila on the north, Nagarpur and Delduar Upazilas on the south, Basail Upazila on the east, Belkuchi and Chauhali Upazilas on the west. National and Regional highways passes through the paurashava like Dhaka-Rajshahi and Dhaka-Jamalpur highways which act as a vital role in connect with north, east and western part of Bangladesh and Dhaka division. Bangabandhu Jamuna Multipurpose Bridge has constructed from Tangail to Sirajgonj which is located on the Asian Highway and the Trans-Asian Railway (Banglapedia, 2006 and BBS, 2011).

4.4 Administrative Areas

During (1st July 1887) the establishment of Municipality Tangail, the municipality was grown with five wards.

Table: 4.1 Former Wards of the Tangail Municipality in 1887

Ward No.	Area
1	Tangail Kanda Para, Par Dighulia, Akur Takur Para
2	Korer Betka, Mirer Betka, Nondir Betka, Sabalia, Dorun, Ashekpur, Nagor Jalfai, Boali
3	Garai, Berai, Kazipur, Bachrakandi, Potol, Bajitpur, Berabuchna, Valluk Kandi
4	Kagmari, Sontosh, Aloa, Boitta, Patuli, Ekranpur
5	Kalipur, Dighulia, Sakrail, Kaiyamarra, Beradoma, Basha, Khanpur

Source: Population Census, 2011 Community Census, Tangail, BBS, 2011.

After that, the paurashava was redesigned into four wards and in 1988 it was subdivided in to six wards. The Paurashava was resigned again into 18 wards and become its today's structure in 1999. In 1985, Tangail municipality was upgraded to 'B' class from 'C' class and in 1989; it was upgrades as 'A' class. Asian Development Bank and Government of Bangladesh has sponsored the paurashava to develop water supply facilities, increase sanitation coverage, making bus terminal, markets and create other facilities (BBS, 2001, 2011 and Banglapedia, 2006).

Table: 4.2 Name of the Wards, Population, Population density, Household size, Literacy rate.

Ward No.	Area	Household	Population	Sex Ratio	Average Size of Households	Literacy 7+yrs
1	Akur Takur Para-North, Dewla, District hq.	2070	10388	102	4.2	78.3
2	Enayetpur	2142	8760	104	4.1	56.5
3	West Akur Takur Para, North Kagmara, South Kagmara	3205	13903	98	4.3	64.6
4	Bepari Para, Fakir Para, Bera Doma, Dighulia, Char Dighulia	2119	9208	95	4.4	69.3
5	Kalipur, Lakshmipur, Sarutia,Shakrail	1614	7235	96	4.4	57.3
6	College Para, Paradise Para, Par Dighulia part	1569	6712	96	4.2	74.4
7	Baluk Kandi, Bagbari, Patuli Bhabani Bagbari, Uttar Santosh part, Santosh Palpara	1674	7325	117	4.3	70.1

8	Aloa Bhabani Phim, Aloa Pahim, Dakshin Santosh part	1797	8026	103	4.4	42.9
9	Aloa Baratia, Aloa Paikasta, Aloa Tarini, Baluk Kandi part, Char Patulia, Purba Aloa, Aloa Bhabani	1888	8575	99	4.5	46.6
10	Bajitpur, Berai, Basrakandi, Kazipur, Patal	1458	6189	97	4.2	57.2
11	Berabuchna, Kachua Para, Kanda Para	1929	7536	86	3.7	64.4
12	Adi Tangail, Bepari Para, Bil Para	1628	7160	104	4.3	72.1
13	Tangail Mahalla, Chayani Bazar, Pachanir Bazar, Thana Para, Uttar Thana	1792	7572	108	4.3	87.7
14	Purba Adalat Para, Adalat Para, Biswas Betka part S W corner, Shaha Para	2790	11786	106	4.1	82.9
15	Ashekpur, Biswas Betka part	2745	12118	104	4.2	81.7
16	Akur Takur Para part, Par Dighulia Part	2459	10670	99	4.2	87.8
17	Kumudini College Para, Munshi Para, Registry Para, Biswas Betka West	2128	11081	114	4.1	86.8
18	Kodalia, Sabalia	2600	13168	112	4.2	82.3
.	Tangail City (Paurashava)	37607	167412	103	4.2	71.8

Source: Population Census, 2011 Community Census, Tangail, BBS, 2011.

4.5 Climate

The climatic condition of Tangail is tropical type and categorized as Aw according to Koppen and Griger. The average temperature is 25.5°C, maximum 33.3°C and minimum 12.0°C and annual rainfall is 1467 mm (Banglapedia, 2006 and BBS, 2011). The average annual humidity is 80 percent and monsoon season lasts June to October (Banglapedia, 2006).

4.6 Topography, River System and Others

Tangail is included in the Pleistocene Upland areas which are named as Madhupur Tract. The Madhupur Tract is located at the east side of the Barhmaputra River and surrounded by the fault alluvial plain and affected by many faults. The elevation of Tangail is 15m / 49feet from sea level. The total extent of this Tract is 4,244 sq km. extends in Dhaka, Mymensingh and Tangail district (Banglapedia, 2006). The river Bangshi flows middle of the Tangail district and the Lohajang River is very important for

this district which flows by the middle of the Tangail Paurashava. But now it is nearly dead (Banglapedia, 2006 and Wikipedia, the free encyclopedia).

The Santosh Zamindar Bari and Karatia Zamindar Bari, tomb of Maulana Abdul Hamid Khan Vasani, home of the great magician P.C. Sarkar and Bazitpur loom industry are the remarkable Archaeological Heritage of Tangail (Banglapedia, 2006).

4.7 Existing Land Use Pattern of Tangail Paurashava

Land use in Tangail Paurashava is dominated by residential development and agricultural land. About 78.96 percent of the lands are occupied by these two types of land use. Others land area covers other categories of land use like commercial, health, road, open space, mixed use, industrial, religious, recreational, urban services, water bodies etc (Table 4.3).

Table: 4.3 Existing Land Use Pattern in Tangail Paurashva

Land use Category	Area (in acre)	Percentage (%)
Administrative	95.54	1.21
Agriculture	3002.29	37.98
Commercial	50.63	0.64
Community Services	15.55	0.20
Education and Research	127.86	1.62
Health	13.27	0.17
Industrial	24.93	0.32
Mixed-use	83.02	1.05
Open Space	128.16	1.62
Religious	26.14	0.33
Recreational	42.03	0.53
Residential	3238.77	40.98
Restricted	28.62	0.38
Road	256.40	3.24
Transportation	1.94	0.02
Urban Services	28.79	0.36
Water body	740.05	9.36
Total	7904.00	100

Source: Master Plan of Tangail Paurashava, 2013

4.7.1 Residential Land use

Most of the areas of the Paurashava are used for residential purpose. Residential land use included the land which is used for all types of settlement, formal or informal for living purpose like urban housing, rural housing, flats and apartment building, mess and hostel type housing. In this Paurashava, maximum houses of the residential area have developed without planning in informal way. High rise apartment type building is increasing day by day in this city. The total land area 3238.77 acres are used in residential purpose. Ward no. 2 occupies highest amount of land and Ward no. 13 minimum (Master Plan of Tangail, 2013).

4.7.2 Commercial Land Use

The commercial structures includes markets, shops, shopping malls, retail shops, storage, hotels, restaurants etc and it occupies .64 Of the land areas. Most of the structures are semi-pucca and pucca and 90 percent structures are single stored, more than two percent double storied and a negligible portion is three or four storied building using commercial purpose (Master Plan of Tangail, 2013).

4.7.3 Educational Land Use

In Tangail Paurashava, 127.86 acres, 1.62 percent land is covered by education purpose. All the Wards have no equal portion of land which was used for education. Maximum buildings are single storied, some are double and some are three storied buildings.

4.7.4 Industrial

A little portion of land 24.93 acres, 0.32 percent of land is used in industrial purpose. Manufacturing, processing and cottage industries are developed here (Master Plan of Tangail, 2013).

4.7.5 Health

There are 35 hospital and clinics, one government hospital and others private clinics in Tangail Paurashava. These establishments' covers 13.27 acres, 0.17% of total lands area.

4.7.6 Mixed- use

Mixed- use areas are the area where residential, commercial, industrial, administrative establishments are developed with each other in same area and the mixed- use areas are very common in all urban areas in Bangladesh which are developed in unplanned way. Only 1.05 percent land covers for mixed land use purpose in Tangail Paurashava(Master Plan of Tangail, 2013).

4.7.7 Open Space

Sufficient open space is important requirement in any urban area. Garden, nursery, park, play ground are considered as open space. Only 1.62 percent of total land area occupies by open space (Master Plan of Tangail, 2013).

4.7.8 Roads and Transportation

Total roads and transport facilities covers 3.24% and 0.02% of the land respectively. Roads and transport facilities include all types of roads and bus terminal, rickshaw stand, CNG stand, ticket counters, toilet facilities of the Terminal etc (Master Plan of Tangail, 2013).

4.7.9 Religious and Recreational

Religious establishments include mosque, madrasha, dargha, eidghah, church, mandir, temple etc and occupy 0.33 percent land in the city and for recreational purpose 0.53 percent land cover (Master Plan of Tangail, 2013).

4.7.10 Administrative

Administrative type establishments include all types of government, non-government, autonomous office and organization which occupy 1.21 percent of total land areas in this Paurashava. There are 84 administrative units are remain here.

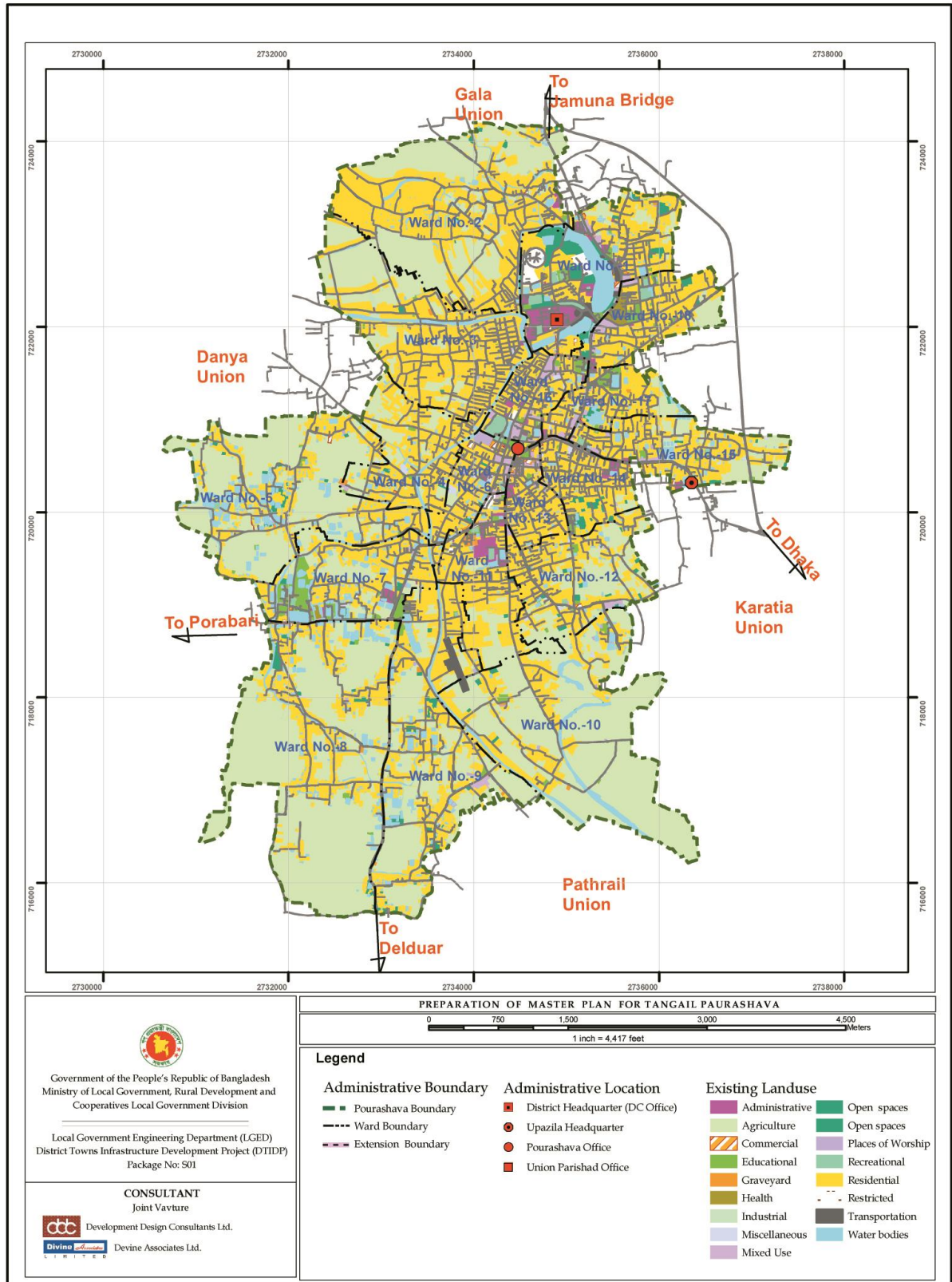
4.7.11 Agriculture

In Tangail Paurashava, agricultural lands cover a big portion (37.98%) of lands which is second highest portion of land use. A large portion of agricultural land is surrounded by the agricultural lands (Master Plan of Tangail, 2013).

4.7.12 Water bodies

Water bodies cover all ponds, canals and river and which cover 9.36% of total land areas. Lauhajong River passes through the middle of the Paurashva and eight canals exist in the Paurashava (Master Plan of Tangail, 2013).

Map: 4.1 Existing Land use Map of Tangail Paurashava



Source: Master Plan of Tangail Paurashava, 2013

4.8 Demographic Characteristics of Study Area

The city has a total population of 1,67,412 of which 84741 are males and 82671 are females with a density of 4953 person per sq. km. The sex ratio of the city is 103 and literacy rate (7 years and above) is 71.8. The total number of household of the city is 37607 (BBS, 2011)

The population data is given in Table 4.3. This table indicates the male female ratio, population structure and household size. The female percentage of the Town is 49.38, representing the sex ratio of 103 male per 100 female, against the national average of 100.3 male per 100 female. The average household size of the town is 4.4.

Table: 4.4 Demographic data of Tangail Paurashava

Item	Total	Percentage
Population	Male	50.62
	Female	49.38
Age Group	0-4	7.9
	5-9	10.6
	10-14	11.7
	15-19	10.1
	20-24	9.6
	25-29	9.5
	30-49	27.6
	50-59	6.7
	60-64	2.4
	65+	3.9
Average Household Size	4.2	-
Sex Ratio (Male/ Female)	103/100	-

Source: Population and Housing Census, Community Report Tangail, BBS, 2011

4.9 Area and Population Density of the Study Area by Year

Area, Household, Population and Literacy rate of Tangail Paurashava have changed over 50 years with similarity of urban population of Bangladesh. Population density has also increased at a great rate from 1961 to 2011. In 1961, the population was 23688 in this Paurashava and it had a growing trend until 2011 when the population has increased at remarkable rate 167412. It exposed that there was a quick rises of population from 1961-2011. The urban area of Tangail Paurashava increased from 29.43 sq. km to 33.80 sq. km. in 2001- 2011. The literacy rate has also moderate increasing trends from 1961 to 2011 in the Tangail Paurashava.

Table: 4.5 Area, Household, Population Density and Literacy rate of Tangail Paurashava, 1961-2011

Year	Area (Sq.Km)	Households	Population			Density (Per Sq.Km)	Literacy Rate (%)
			Total	Male	Female		
1961	-	-	23688	-	-	-	38.20
1974	23.31	-	51863	27370	24493	2225	40.01
1981	21.00	12633	77518	41749	35769	3691	46.7
1991	35.23	19541	106004	55239	50765	3009	56.2
2001	29.43	26740	128785	66856	61929	4376	63.06
2011	33.80	37607	167412	84741	82671	4953	71.8

Source: (BBS), *Population Census of 1961, 1974, 1981, 1991, 2001, 2011.*

4.10 Level of Urbanization in Tangail District

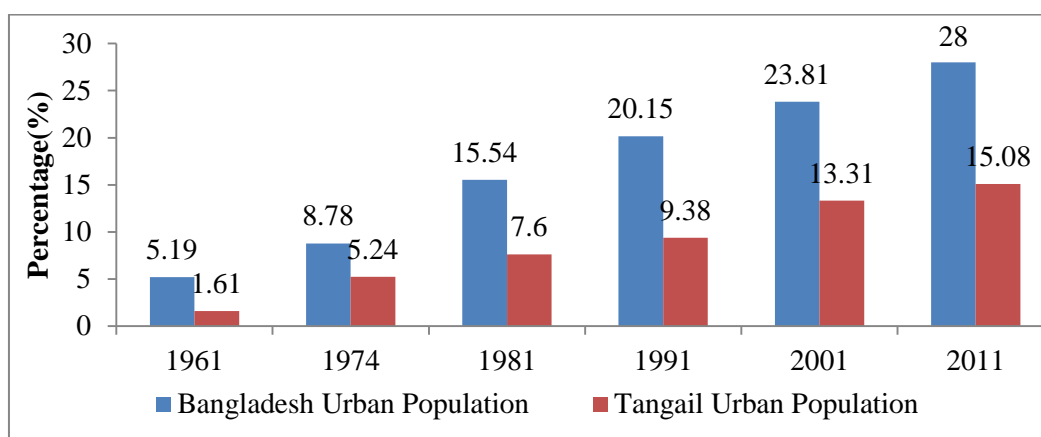
From the Table: 4.6 it is observed that, percentage of urban population both Bangladesh and Tangail District has increased from 1974-2011. After 1961, there was a increasingly upward trends of urbanization till 2011 without any without any instability.

Table: 4.6 Level of Urbanization

Year	Urban Population of Bangladesh (%)	Urban Population of Tangail District (%)
1961	5.19	1.61
1974	8.78	5.24
1981	15.54	7.6
1991	20.15	9.38
2001	23.81	13.31
2011	28.00	15.08

Source: Community and National Series Tangail, Population Census- 1974, 1981, 1991, 2001, 2011

Figure: 4.1 Level of Urbanization (Bangladesh v Tangail District)



Source: Community and National Series Tangail, Population Census- 1974, 1981, 1991, 2001, 2011

In the year of 2011, urban population of Bangladesh was 28.0% and Tangail district was 15.08%. From this statistics, it can be said that, growing rate of urban population of Tangail District is moderate than the Bangladesh urban.

4.11 Population Growth Rate of Tangail Paurashava

The 1961 census placed the population of urban area in Bangladesh at 2.64 million and in 1974 the urban population of Bangladesh was 6.27 million. So, the growth of urban population was 137.57% which is given in below in successive 13 years. On the other hand, the populations of Tangail which have mentioned in previous Table no. 4.6 from 1961 to 2011.

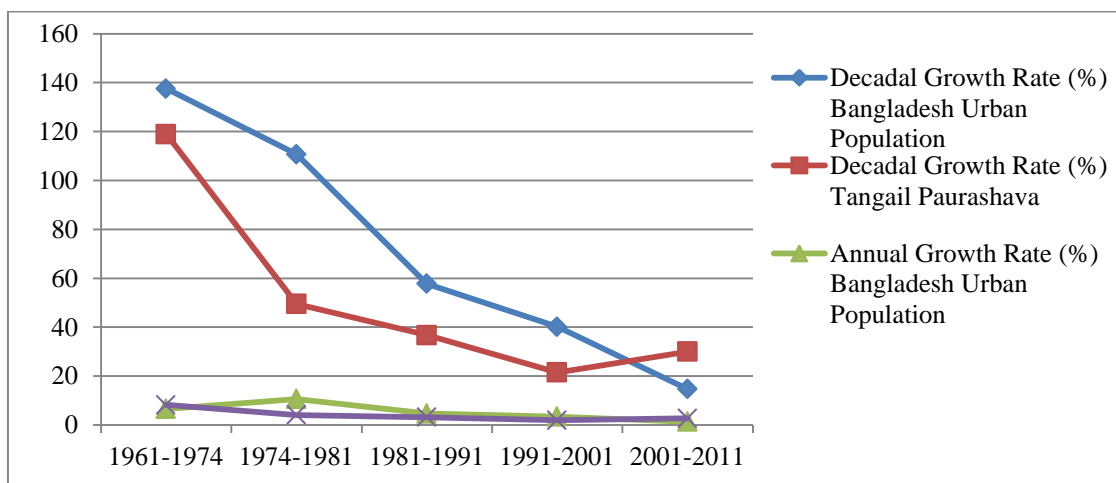
Table: 4.7 Decadal and Annual Growth Rate of Urban population of Bangladesh and Tangail Paurashava.

Year	Decadal Growth Rate (%)		Annual Growth Rate (%)	
	Bangladesh Urban Population	Tangail Paurashava	Bangladesh Urban Population	Tangail Paurashava
1961-1974	137.57	118.94	6.62	8.2
1974-1981	110.68	49.5	10.63	4.1
1981-1991	57.79	36.75	4.67	3.2
1991-2001	40.17	21.49	3.43	1.96
2001-2011	14.72	29.99	1.37	2.7

Source: BBS, Population Census, 1961, 1974, 1981, 1991, 2001, 2011.

From the Table: 4.7 it is evident that the decadal population growth of Tangail was 118.94% while national population growth was 137.57% in 1974. In 1981, the urban population growth of Bangladesh was 110.68% while Tangail Town was 49.5% in successive 7 years and annual national urban population growth rate was 10.63% while Tangail paurashava's growth rate was 4.1% which shows the upward growth rate of Tangail city. But in 1991 and 2001, both decadal and annual population growth rate turned towards downward manner and shaped controlled population size in both Bangladesh and Tangail. Decadal (29.99%) and annual (2.7%) growth rate was increased in Tangail Paurashava in next decades while both growth rate of Bangladesh remained downward trends.

Figure: 4.2 Decadal and Annual Growth of National Urban Population vs. Tangail Town.



Source: BBS, Population Census, 1961, 1974, 1981, 1991, 2001, 2011

4.12 Infrastructure and Services

4.12.1 Transportation Facilities (Roads, railway, waterway and airway)

There are three bus stations, two bus stands and two tempo stands in Tangail Paurashava. New Bus Terminal is the central bus terminal which is located in Dewla, Tangail. Dhaka–Tangail highway passes through Tangail Paurashava and there is no any railway and river-way network. But a rail way station is situated by the other side of Paurashava, named Gharinda Railway Station (Master Plan Tangail, 2013).

4.12.2 Sources of Drinking Water

The water supply system in Tangail Paurashava is supported by pump houses, individual house connections and hand tube wells. Supplied drinking water is very limited for inhabitants. From the study of Master Plan 2013 it was seen that in the Paurashava, a total of 2569 house has connection for supplying drinking water and 105 street hydrants (Paurashava Master Plan, 2013). Main problem of drinking water is quality; it is mixed with excessive iron (according to the survey of Master plan, opinions of respondents 41.33% household) (Paurashava Master Plan, 2013).

4.12.3 Sanitation Facilities

The number of sanitary latrine in the Paurashava was 11256 and coverage of the sanitation in the Paurashava is about 78% (Paurashava Master Plan, 2013).

4.12.4 Drainage Condition

There was no any well defined drainage network in Tangail Paurashava; only there seen the drains of household oriented. Eight canals of paurashava are maintaining drainage related activity. In this area, water logging situation became worst in rainy season due to absence of proper drainage network. A well planed drainage network should be constructed with primary, secondary and tertiary drains to reduce the water logging problem in the area (Paurashava Master Plan, 2013).

4.12.5 Electricity Connection

Electricity is provided by PGCB in the Paurashava. About 86% to 93% families used electricity for lighting their home at night and 7% to 14% families used kerosene or other sources. A large number of electric poles (5542) were in the Paurashava. But the distribution of electric pole was not sufficient to the need of the people (Paurashava Master Plan, 2013).

4.12.6 Telecommunication

Except all mobile services, the BTCL was providing telephone facilities with 1300 connections in the Paurashava. There were three telephone exchanges in the Tangail Paurashava located in the Ward No. 7, 16 and 17. Except telephone exchange, 26 Mobile towers of different companies were also in the Paurashava (Paurashava Master Plan, 2013).

4.12.7 Solid Waste Management

In Tangail Paurashava, there were 58 dustbins. Three waste collection trucks were using to collect solid waste. Hospital waste is disposed in its own dustbins, household and market waste were dumped at roadside, low lands, near the water body. Some of the waste was collected by the local CBOs. People’s participation in waste collection can be ensured by involving the CBOs into the process (Master Plan Tangail, 2013).

4.12.8 Educational Facilities

On the basis of the Population Census 2011, the literacy rate of the town was 71.8 %. Tangail Paurashava is rich in educational institutions. At present, 189 educational institutions were in the Paurashava and of them 147 were primary-level schools (DEO of Tangail, 2020).

Table: 4.8 Educational Institutions of Study Area.

Type of the Educational Institutions	No. of the Institutions
Government Primary School and Primary Level Private School	39+108
Government High School	3
Non-Government High School (MPO and Private)	13
Government College	2
Non-Government College and Vocational college	9
Madrashas	4
Medical College	1 (Sheikh Hasina Medical College and Hospital)
University	1 (Mawlana Bhashani Science and Technology University)

Source: DEO of Tangail, 2019 and Master Plan of Tangail Municipality, 2013.

4.12.9 Healthcare Facilities

In total, 35 hospital and clinics were in the Paurashava. According to the ratio, one clinic for 11958 populations (total 15 clinics), one diagnostic centre for 167412 populations and one govt. hospital for 334824 populations (5 hospitals (Govt. and Non-Govt.) are in the Paurashava. (Paurashava Master Plan, 2013).

4.12.10 Community and Recreational Facilities

There were one community centre, three crematoriums, seven Eidgah and twenty nine graveyards, two cinema halls and one auditorium in Tangail Paurashava as community and recreational facilities. According to the population census 2011, 1 cinema hall is allocated for 83706 people and 1 auditorium for 167412 people in the area (Paurashava Master Plan, 2013 and BBS, 2011)

4.13 Overview of Poor Settlement in the Town

According to the Islam, “The urban poor are people who cannot afford to meet the basic needs requirements in urban areas with their own income” (Islam, 1996). There are six basic needs like food or nutrition, clothing, shelter, healthcare, education and recreation. The settlement which is lack of livable condition like no or limited provision to all utility services such as drinking water, sanitation, health care and education facilities etc, these can be defined as slum.

Centre for urban studies (CUS) 2011 conducted a study on poor settlement named ‘Poor Settlements in Tangail; Mapping Urban Poor Settlements and Vacant Lands in Upper Project Towns’ under the project of Urban Partnerships for Poverty Reduction (UPPR), UNDP. According to this study, 1536 poor settlements were found in Tangail Paurashava area. These settlements contained 22, 396 dwelling structure where 22370 households

lived during the survey carried out in December 2010. It was estimated that there were 70,000 poor settlements and it was 32 % of total city (CUS, 2011). In 2020, there was 18 slums and total slum people was 760 (Municipality office, 2020).

Table: 4.9 No. of Slums and Population

Total population	No. of Slums	Slum population	Percent of total population
167412	18	760	0.45

Source: Municipality Office of Tangail, 2020.

4.14 Urban Environmental Condition

The environmental degradation components include air, water, noise, soil, drainage congestion, waste management, industrial and hospital wastes, water-logging, pit latrine, slums, market and open excreta of unauthorized dwellers in the town. Urban environmental condition was degrading day by day. In Tangail Paurashava wastes were no managed properly that's why city looks like dirty, wastes were fallen down here and there. The agricultural chemicals like fertilizers, insecticides, pesticides and herbicides which are used massively in agricultural field are creating water pollution of the Lauhajong River. Air is also polluted by engine driven vehicles and rice husking mills. In the study area, engine driven and motorized vehicles like Nochimon/ Karimon are moving on and these makes more trips over the paurashava in whole day and make extreme sound pollution (Paurashava Master Plan, 2013).

4.15 Conclusions

Tangail Paurashava was formed in 1887, then total wards of this were 5 and today the wards are 18. Population density and area has also increased day by day from 1961 to 2011. In 1974, the total area of the Paurashava was 23.31 sq. km. and in 2011, the areas were increased by 33.80 sq. km. The population of the area was 51863 in 1974 where in 2011 it was increased at noticeable rate 167412 (BBS, 1974, 1981, 1991, 2001 and 2011). Now the population density is very high. At first, Tangail Paurashava was developed along the Louhajang River and after that, the Paurashava had been expanded along the national highway and local roads. Tangail Paurashava is well known for becoming a part of Madhupur Tract, Shantosh Zamindar Bari, Karatia Zamindar Bari, tomb of Mawlana Abdul Hamid Khan Bhashani, home of magician P.C Sharkar, hand loom industry in Bazitpur etc. (Banglapedia, 2006 and Wikipedia, the free encyclopedia). Sheikh Hasina Medical College, Mawlan Bhashani Science and Technology University are established here and it plays a vital role as corridor of north bangle. Though, Tangail is big and old city facing many environmental services problems like water supply, sanitation, roads and transport facilities, waste collection and disposal problem, gas and electricity problem, slums and squatters settlements, problems of health care facilities and air, water, noise pollution etc.

CHAPTER FIVE

LINKAGE BETWEEN ENVIRONMENTAL PROBLEMS AND ENVIRONMENTAL GOVERNANCE OF TANGAIL PAURASHAVA

CHAPTER FIVE

Linkage Between Environmental Problems and Environmental Governance of Tangail Paurashava

5.1 Introduction

In developing cities like Bangladesh, population of urban areas has increased with no providing necessary environmental utility facilities which are indispensable for living healthy and quality life in urban ecology (Hardoy et al. 2001). These types of cities faced many local, health and environment related troubles (McGranahan and Songsoe, 1994; McGranahan et. el. 2001 and MaGranahan et. el. 2007). The major household's environmental conditions, problems and causes and environmental governance linked with environmental problems which were collected by drawing household survey in Tangail Paurashava are analyzed in this chapter. In first part of this chapter, urban environmental problems in Tangail city are described. In second part of the chapter, environmental governance condition linked with environmental problems is discussed in detail which was perceived by households in Tangail city.

From the literature review of other city's environmental problems and background study of the study area, it has been conceptualized and identified some specific problems in Tangail city. Moreover, before conducting the research, researcher has talked with some citizens with different categories about the problems of city they faces and by reading and gathering knowledge from published news of environmental problems in local news papers which can justify the environmental problems of Tangail Paurashava. After that researcher has conceptualized and made a checklist of the problems. Finally, some major problems were identified for detail study.

Table: 5.1 Overall Environmental Problems in Tangail Paurashava

SL. No.	Environmental Problems in Tangail Paurashava
1.	Problem of Municipal water supply
2.	Inadequate sanitation and sewerage facilities
3.	Inadequate electricity connection
4.	Lack of gas supply
5.	Insufficient municipal Street lighting
6.	Problem of solid waste management
7.	Inadequate drainage maintenance
8.	Water logging
9.	Problem of road and transportation system
10.	Traffic congestion
11.	Insufficient public health facilities
12.	Air pollution
13.	Water pollution
14.	Noise pollution
15.	Lack of open space, play ground and recreational facilities
16.	Illegal and unplanned structures
17.	Mosquito problem
18.	Insecurity

Source: The Daily Progotir Alo, 14 April, 2017, 12 June, 2017, 27 September, 2019, discussion with local people, The Daily Star 2011 and 19; Akash, et al 2018; Taheruzzaman, & Janik, 2016; CCC, 2004, Rana, 2011; Siddiqy, 2017; Kawsar, 2012; Quddusi, Kazi 2007; Rahman, 2010; Ahmed and Islam, 2014; Ghulam, 2001;

Questionnaire survey of household's level in Tangail Paurashava was conducted to investigate the environmental problems linked with the governance system and causes of those problems. The environmental problems of Tangail Paurashava which were perceived by the households included in Table 5.4 and the description and analysis of the problems are included according to highest opinion of the respondents.

At first, Socio-demographic information of respondents were included and after that main outcome of the study such as environmental problems, causes and how the problems are governed by the authority are included in second part of the chapter.

5.2 Socio-Demographic Characteristics of the Respondents

Before describing the outcomes and findings of the field study, description of the characteristics of respondents' like age, sex, education level, and occupational status are very important. Because, it is important to know which ages, sexes, educational level and occupation group people were considered in this study and how was their opinion valuable for the study.

5.2.1 Age

The respondents' age ranges were categorized into six groups like 20-29, 30-39, 40-49, 50-59, 60-69 and above 70. But maximum (45%) respondents were included under 30-39 age groups. Then second largest group was 40-49 age. Only 4% people were fallen in to the 60-69 age range (See APPENDIX-1).

5.2.2 Sex

In the household Survey, 80% male respondents and 20% female respondents participated in this study. When surveyed in weekdays maximum household head (Male) were in outside of home but in weekends male people were at home and participated in survey. So, mostly, weekend was chosen to collect data. (See APPENDIX-1).

5.2.3 Education Level

Education level of the respondents was divided into six categories i.e. illiterate to post graduation. Maximum respondents (31%) were in secondary level which was included in class six to S.S.C. Then higher secondary level was 22 percent. Among all of respondents, 14 percent were in graduation level, 8 percent were in post graduation level and 5% were illiterate who had no institutional education in the Paurashava (See APPENDIX-1).

5.2.4 Occupational Status

The respondents' occupation as businessmen like glossary shops, cloth store, stationary shop, contractor, electronics, tea stall, small shop holders (43.5%) was highest followed by service holder (27.75 percent) (government and non-government employee) and housewife or homemaker (17.5 percent). About 5.75% of the respondents did not do any work and only 1.25% of the people worked in the foreign countries (See APPENDIX-1).

5.2.5 Monthly Household Income and Expenditure

From the household Survey it was observed that Maximum, 45.42% of the total respondent's income range was taka 5000-20,000 and the second largest (37.16) income groups was taka 21,000-35,000. Only 11.1% respondents' income was up to 50,000 tk.

In case of monthly expenditure, 60.36% respondents spent from tk 5000-20,000 which was also highest portion of people who spent money this amount. They spent money for their house, food, education, treatment and cloths purpose but couldn't spend money for environmental maintenance related activities. About 31.06 percent of the total respondents' monthly expenditure was 21,000-35,000 tk and only 7.05 percent of the respondent spent money from 36,000-50,000. These expenditure groups were capable to spend their income for environmental purpose but they were not that much concern about it (See APPENDIX-1).

5.2.6 Duration of Living at Present House and at Present Neighbourhood

From the Household survey it was revealed that 27.27 percent of the respondents lived in their houses and similarly 30.3 percent lived in the present neighbourhood as a renter or permanent householders from 1 to 10 years. The permanent householders, 16.41% lived

in their house and 18.43% lived in same neighbourhood from 11-20 years. About 13.63 percent and 13.89 percent respondents stayed in their house and neighbourhood as permanent residence from 31-40 years and some people lived in their house and locality from long time 51-60 and 61-70 years permanently (Table: 5.2).

Table: 5.2 Duration of Living at this House/Address and at Present Neighbourhood

Years	Duration of Living in this House		Duration of Living in Present Neighbourhood	
	Households	Percentage (%)	Households	Percentage (%)
<1	51	12.89	29	7.34
1-10	108	27.27	120	30.3
11-20	65	16.41	73	18.43
21-30	57	14.4	48	12.12
31-40	54	13.63	55	13.89
41-50	34	8.6	37	9.34
51-60	13	3.3	17	4.29
61-70	12	3.0	15	3.79
70+	2	0.5	2	0.5
Total	396	100.00	396	100.00

Source: Household Survey, 2022

The respondents who live in their present address or locality, all of them (100%) had no problem to live that house or locality. They said that they had to face many environmental problems in that locality but did not consider moving from this house or locality. About 98% of the respondents liked their locality due to become permanent dwellers of that place. Only 2 percent did not like their locality due to environmental problems.

5.2.7 Reasons of Preference to Live in Present Locality

As maximum people (50.25%) lived in their own house or lived by marriage especially for women in their locality, they liked that place. Second largest respondents (34.29 percent) preferred their living place due to situated nearest distance of different infrastructural facilities like children’s school, college, hospital, office etc from home.

Table: 5.3 Reasons of Preference Living in Present Locality

Reasons	Households	Percentage of Sample (%)
Paternal/ Marriage factor	199	50.25
Facilities of going workplace	12	3.03
Clam and less noise pollution	18	4.55
Nearest to infrastructural facilities (school, college, hospital, office etc)	136	34.29
Availability of utility facilities (electricity, pipe water supply, gas, etc)	19	4.85
Good peoples' cooperation	2	0.50
Others	10	2.53
Total	396	100.00

Source: Household Survey, 2022

A little amount of people (4.85%) liked to stay in that locality to get available utility facilities like electricity, pipe water supply, gas connection, etc. About 4.55 percent people preferred to live their present houses due to less noisy area.

5.3 Available Services Facilities and Environmental Problems in Tangail Paurashava

Available services facilities and environmental problems were explored by the household survey in Tangail Paurashava. These are described in bellow;

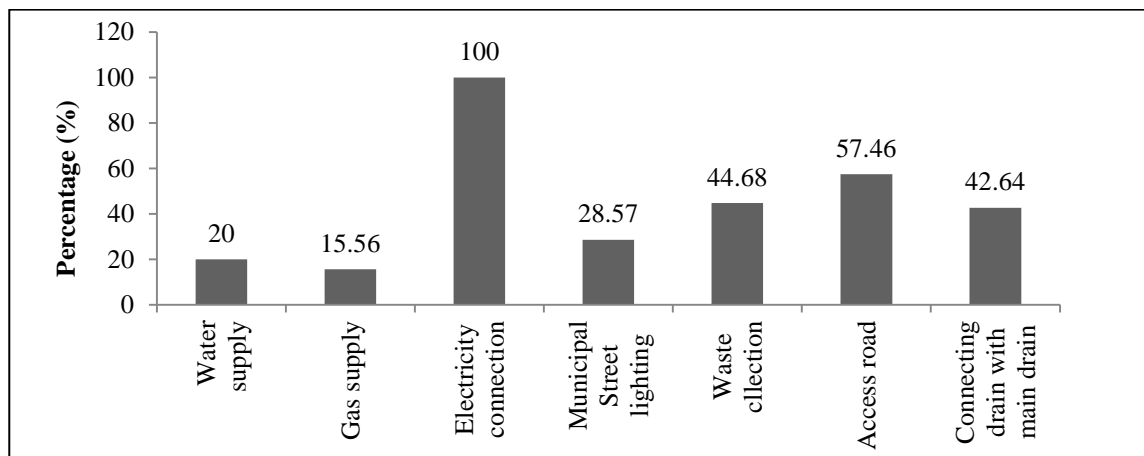
5.3.1 Available Services Facilities in the Households

Every urban citizen's has right to access urban utility services facilities in an urban area. On the other side, urban authorities like municipality is bound to provide urban utility services like piped water supply, sanitation facilities, gas connection, electricity connection, road lighting, garbage management, sewerage and drainage maintenance, road and transport management etc to the urban dwellers.

However, the performance of authorities in developing countries is not adequate sometimes poor in providing infrastructure and utility services facilities (Jacobi et. Al. 1998 and McGranahan et. al. 2001). In Tangail Paurashava, municipal authority is trying to provide these basic services facilities to its citizens.

From this household study it was observed that 20% of the total respondent's houses were access to municipal piped water supply in the Paurashva (Household Survey, 2022). In case of gas supply, there was also very limited gas connection in the study area as there is limited gas connection in whole Bangladesh. Only 15.56% of the respondents used gas for cooking their foods and other used LPG gas or timber etc and 100 percent people used electricity for lighting their houses and its condition was better. Tangail Municipality provides street lighting facilities for its residents. But it was very limited for all residents of all wards (Figure 5.1).

Figure: 5.1 Major Municipal Services Facilities Available in the Household



Source: Household Survey, 2022

Only 45.65% of the surveyed respondents said that they had street lighting system or facilities of their neighbourhood. They also said that most of the time the lighting system

was disrupted and the municipality normally took long time to repair connection or provide bulbs or resolve lighting related problems.

In case of waste collection, 44.68% of the total respondents said that CBOs collected wastes from their household but sometimes irregular (Household Survey, 2022). From the study it was revealed that 57.46% of the respondents said they had access road connection of their neighbourhood but some roads were pucca, some were very narrow, broken and some were muddy in condition and 42.64% had connecting drains with main drain (Household Survey, 2022).

5.3.2 The State of Environmental Problems in Tangail Paurashava as Perceived by Households

From the field study, the environmental problems of household and neighbourhood levels in Tangail Paurashava were explored by the household's perceived view and made ranking of those problems according to highest respondent's opinion.

From this Table: 5.4, it is observed that in case of municipal water supply, 87.12 percent respondents claimed that Municipal supply water was very limited and this is the no 1 problem according to respondents opinion. The second problem of household and neighbourhood level is waste management as 85.10 percent respondents mentioned this problem the faced.

Table: 5.4 Environmental Problems of Household and Neighbourhood Level in Tangail Paurashava Perceived by Households

Types of Environmental Problems	Households N=396	Percentage of households (%)	*Rank
Inadequate Water supply	345	87.12	1
Problem of waste management	337	85.10	2
Inadequate drains and management problem	320	80.80	3
Water logging	296	74.74	4
Insufficient, broken and narrow road network	265	66.91	5
Traffic Congestion	260	65.65	6
Electricity crisis	210	53.03	7
Noise pollution	185	46.71	8
Excessive dust in air	120	30.30	10
Water pollution (Lauhajong River)	102	25.75	12
Limited open space and recreational facilities	106	26.76	11
Mosquito Problem	150	37.87	9
Security Problem	80	20.20	13

Source: Household Survey, 2022 (multiple responses were considered)

(***Rank** of the environmental problems has been considered on the bases of highest percentage of household's opinions

The problem which was also faced by the citizen's severely in the city is inadequate drains and lack of proper maintenance of drains. This problem is ranked as third and 80.80 percent of the respondents demonstrated that the Paurashava has limited pucca drains, and municipal authority did not maintain drain regularly. Water logging is another problem which has direct link with the drainage inadequacy and improper maintenance. In this aspect 74.74 percent respondents mentioned that they faced water logging in the Paurashava. As per consideration of highest respondent's opinions, this problem secured as fourth position.

Insufficient, broken and narrow road network is another problem which was claimed by 66.91 percent respondents. Traffic congestion is the other problem which is related with quality of road network and transportation system of the city. These problems are ranked

as fifth and sixth position. From this study it was seen that 100 percent of respondents had electricity supply but more than half the people (53.03 percent) claimed about inadequate supply of electricity and frequent cut off especially in summer.

The other problems which were faced by the citizens are noise pollution, mosquito problem, excessive dust in air, limited open space, playground and recreational facilities, pollution of Lauhajong River, security problem etc. In case of noise pollution, 46.71 percent respondents mentioned as they faced excessive sound in their locality in present time and 37.87 percent respondents reported that in their locality they faced excessive mosquito problem (Household Survey, 2022).

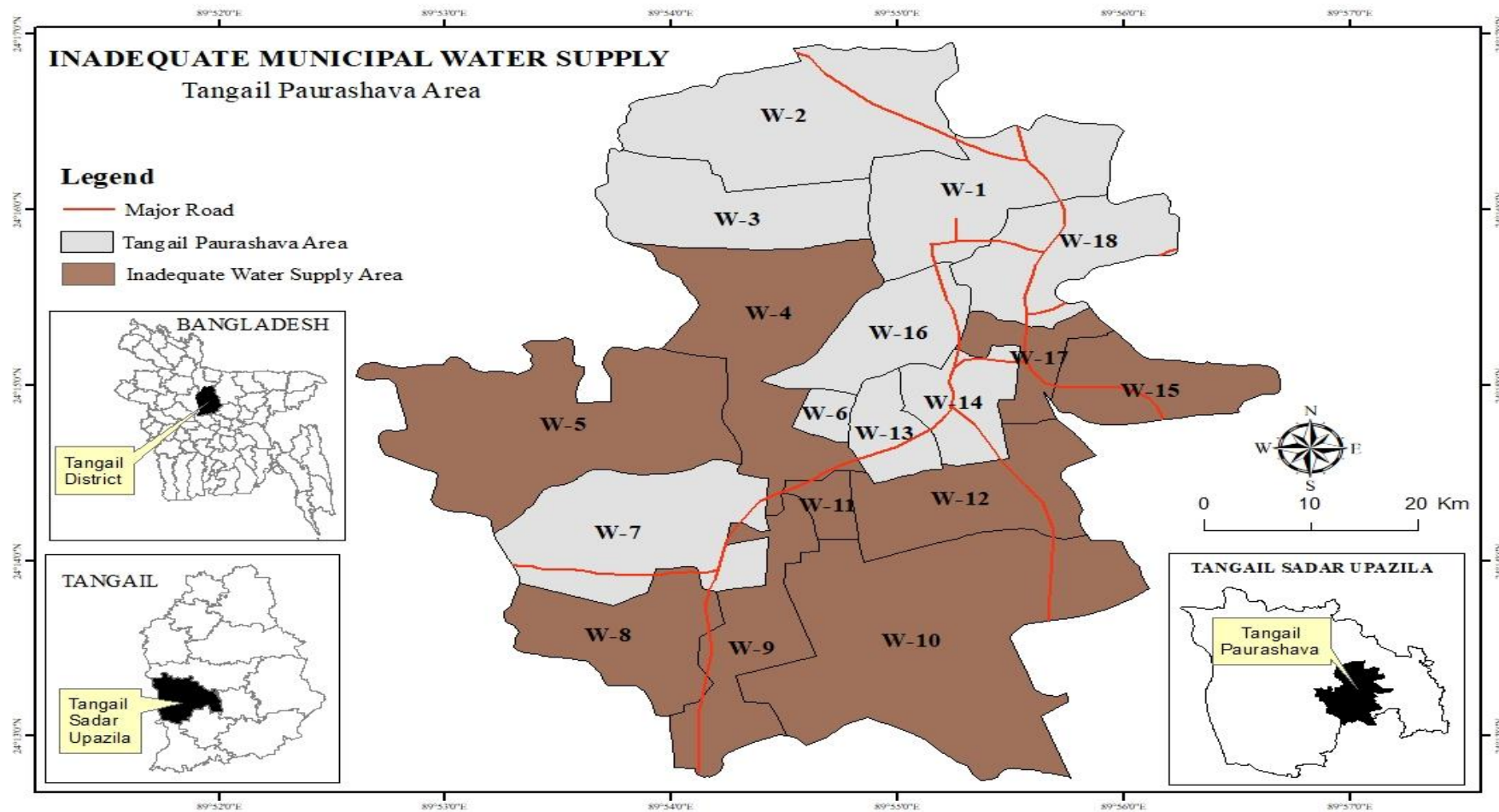
5.4 Detail Scenario of Environmental Problems in Tangail Paurashava

Detail environmental problems and condition are described in bellow according to respondent's opinion. Respondents were asked about the problems of the city in detail to know the real fact of these problems.

5.4.1 Problems of Inadequate Municipal Water Supply

In Tangail Paurashava, there were 3 overhead tanks, 10 deep tube wells, 243 hand tube wells, 21 pump houses and 93.01 km pipe line for supplying drinking water to the people. From the household survey, 20% people said they had piped water supply and Municipality office stated that about 25% of total households were covered by piped water supply. The piped water supply was not available in Ward No. 4, 5, 8, 9, 10, 11, 12, 15 and 17 (Municipality Office and Household Survey, 2022).

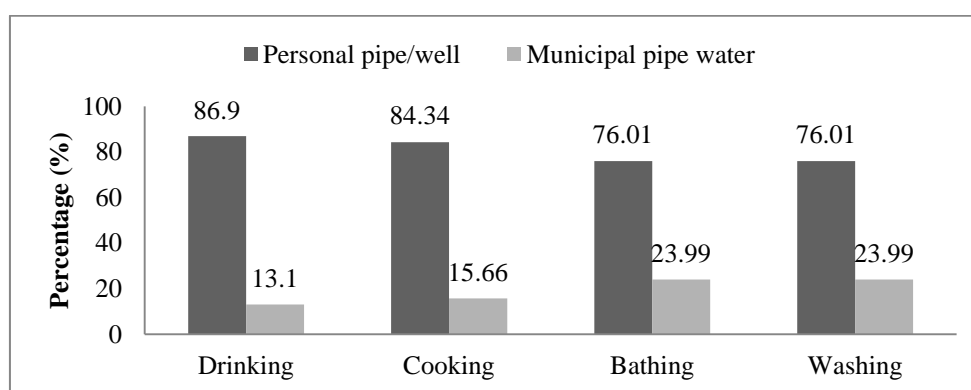
Map 5.1 Map showing the Inadequate Municipal Water Supply in Various Wards.



Source: Field Survey, 2022, Created by Author

As Tangail Paurashava had no adequate supply of piped water, most of the respondents used personal pipe or tube well for daily necessary activities like drinking, cooking, bathing and washing. Most of the people, 86.9 percent used personal pipe or well for drinking purpose where as 13.1% respondents used municipal supply water for that purpose. About 84.34% and 76.01% respondents used personal pipe or well for cooking and bathing purpose respectively where as 15.66% and 23.99% of the respondents used municipal water supply of those purpose respectively (Figure: 5.2).

Figure: 5.2 Household's Major Source of Water by Use



Source: Household Survey, 2022

According to household study, 30.05 percent respondents whose had supply water connection said that sometimes supply water become unavailable and quantity of giving water is inadequate and 20.95 percent people said that supplied water was mixed with iron, sometimes dirty and odor water came.

About 60 percent of them used one water billing meter for one house and rest of them were did not know about this. The respondents who use municipal supply water for daily purpose, 65 percent of the respondents said that they paid water bill to the authority and rest of them (renter) paid bill to the house owner. The respondents had to pay 250 tk per month for water supply to the authority (Household Survey, 2022).

5.4.1.1 Alternative Management System of Water

Sometimes municipal water supply disrupted by the cut off electricity, problems in lines or others construction related problems. When there was hampered in water supply or not available supplied water in households, residents had to manage water by the alternate system. From the household survey it was seen that 39.4 percent respondents managed water from their personal tube-well and 59.6 percent managed from their personal motor system. Only one percent respondents brought water from the other houses (Household Survey, 2022).

Table: 5.5 Alternative Management System of Water in absence of Supplied Water in the House

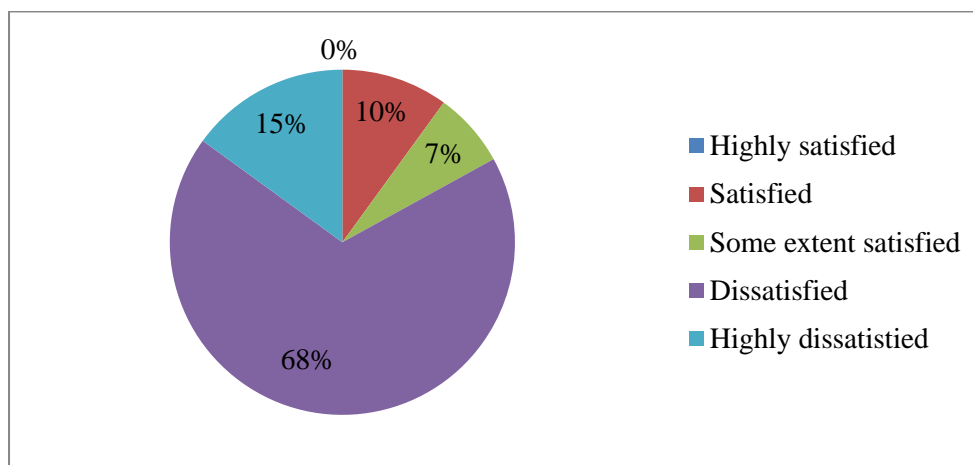
Management Procedure	Households	Percentage of Sample (%)
Personal Tube-well	156	39.4
Bring from the others house	4	1.0
Personal Motor	236	59.6
Total	396	100.00

Source: Household Survey, 2022

5.4.4.2 Satisfaction Level of Respondents with the Providing Water Supply Service Facilities

The figure 5.3 shows that 68 percent respondents were dissatisfied with the water supply facility and only 10 percent respondents were 'satisfied'. On the other hand, 15 percent respondents were highly dissatisfied with this service facility in the Paurashava.

Figure: 5.3 Level of Satisfaction with the Provision of Water Supply Service Facilities



Source: Household Survey, 2022

5.4.2 Problem of Waste Management

Solid waste management is the severe crisis in all types of cities in Bangladesh and about 50 percent of the generated wastes are uncollected in the cities of Bangladesh (Bhuiyan, 2010). Solid waste management is a vast process; of this process, collection part of the management was done by the Municipality and local CBOs through Municipality's assistance in Tangail Paurashava and approximately 45 percent respondents' wastes were collected by the Municipality and CBOs.

Table: 5.6 Dustbins in the Paurashava (in No.)

Ward No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
Dustbin	20	3	-	1	-	3	-	-	-	-	2	2	6	3	2	5	4	7	58

Source: Master Plan of Tangail Municipality, 2013

It was also seen that most of the wards did not have any waste collection facilities as well as any management activity. The waste collection activity by the Municipality's and CBOs was found in the Ward No. 1, 6, 9, 11, 13, 14, 16 and 17. Municipality office stated that approximately 25 tons solid wastes (60 tons produced daily) were collected

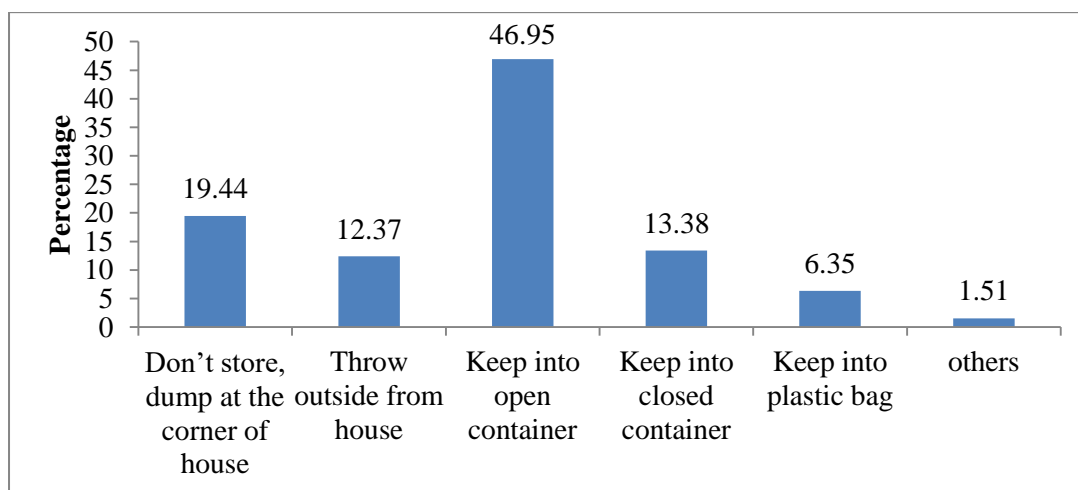
from temporary, permanent dustbins, road side and bazaars daily by Municipality and CBOs through Municipality's assistance in this Paurashava (Municipality Office and Household Survey, 2022).

There are 58 dustbins in this Paurashava (Table 5.6). But now, the total dustbins are 60 in whole Paurashava.

5.4.2.1 Storage System of Waste at Home

From the household survey it was evident that 46.95% respondents kept their household wastes into open container. A major portion of respondents did not store wastes; 19.44 percent respondents dumped at the corner of house and 12.37 percent threw straight outside of the house.

Figure: 5.4 Storage System of Waste before Taking Outside from Home



Source: Household Survey, 2022

5.4.2.2 Collection System of Household Garbage

Wastes management system of the Paurashava was very poor. From the study it was seen that more than half (55.32%) of the respondents' household wastes were not collected by any authority but 29.75 percent respondents said that their wastes were collected by the Municipality and 14.93 percent people said their waste were collected by Community based Organizations (CBOs).

Table: 5.7 Authority who Collect Household's Garbage

Collection Authority	Households	Percentage of households (%)
Not collected	219	55.32
Municipality people	118	29.75
Community collection	59	14.93
Total	396	100.00

Source: Household Survey, 2022

5.4.2.3 Frequency of Garbage Collection

From the study it was observed that 67.39% respondent whose wastes were collected said that their garbage were collected by CBOs people once a day, 20.52% said their garbage were collected two or three times in a week, 4.52% said garbage were collected three or four times in a week. The respondents, 35.66% (out of 177 respondents whose garbage was collected) mentioned about irregular collection of garbage a little portion of people (2.02%) claimed about more bill.

Table: 5.8 Frequency of Garbage Collection from Respondent's Home

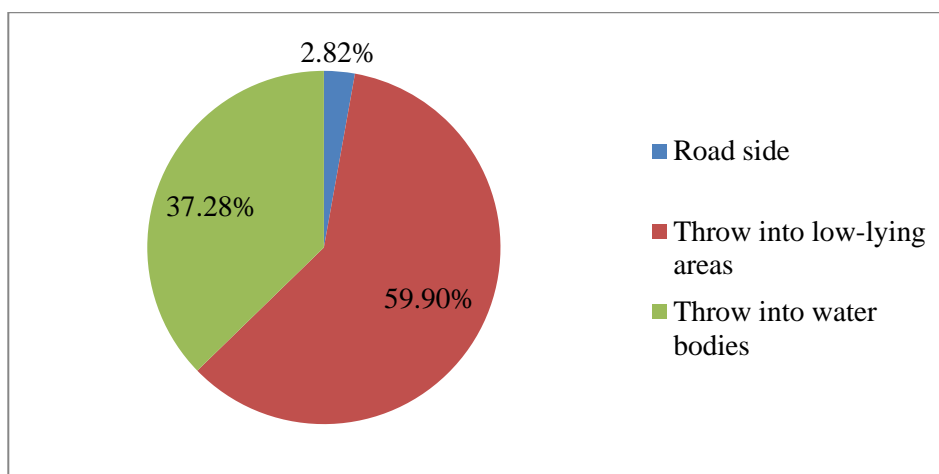
Frequency of collection	Households	Percentage of households (%)
once/ daily	119	67.39
2-3 times in a week	37	20.52
3-4 times in a week	8	4.52
Others	13	7.57
Total	177	100.00

Source: Household Survey, 2022

5.4.2.4 Secondary Transfer Station/ Site

The solid waste of Tangail Paurashava were dumped in the two places one is Rabna bypass area and others is Baby Stand area which was low lying, near water body and road side area. There was no any specific own dumping site of the Paurashava.

Figure: 5.5 Secondary Transfer Station/ Site



Source: Household Survey, 2022

Whose (177 respondents) garbage were collected from the home they were asked about secondary transfer site of garbage where garbage were dumped, 59.9 percent of them were said that garbage were dumped by the authority into low-lying area of Paurashava, 37.28 percent said that they threw into water bodies and 2.82 percent mentioned that garbage were dumped on the road side.



Picture: 5.1 Garbage Dumping into the Water Body



Picture: 5.2 Showing Garbage Dumping on the Road Side, low Land from the Truck

5.4.3 Inadequate Drains and Management Problem

There was weak drainage maintenance and limited proper connected drain network system in Tangail Paurashava area. Only household centered drains were constructed to go out waste water. Though Tangail Paurashava has eight canals, drains are not well connected with these canals. So drainage management condition of this Paurashava is not well (Paurashava Master Plan, 2013).

From the field study it was seen that 42.64% respondents had connecting drain with main drain (Household Survey, 2022). According to Paurashava Master Plan there were 49.91 km. with two types, pucca and katcha drains existed in several wards in the city. The total length of pucca drains were 47.44 km. and katcha drains were 2.47 km (Paurashava Master Plan, 2013).

Table: 5.9 Existing Man-made Drains in Tangail Paurashava

Ward No.	Length (km.)		Total (km.)
	Katcha	Pucca	
1	0.12	4.54	4.66
2	0	1.32	1.32
3	0.03	1.49	1.52
4	0.14	1.43	1.57
5	0	0	0
6	0	4.45	4.45
7	0.18	0.52	0.52
8	0	0	0
9	0.7	0.75	0.75
10	0	0.11	0.11
11	0	2.18	2.18
12	0	1.08	1.08
13	0	7.82	7.82
14	0.01	4.02	4.03
15	0.79	2.11	2.90
16	0	7.03	7.03
17	0.5	3.88	4.38
18	0	5.59	5.59
Total	2.47	47.44	49.91

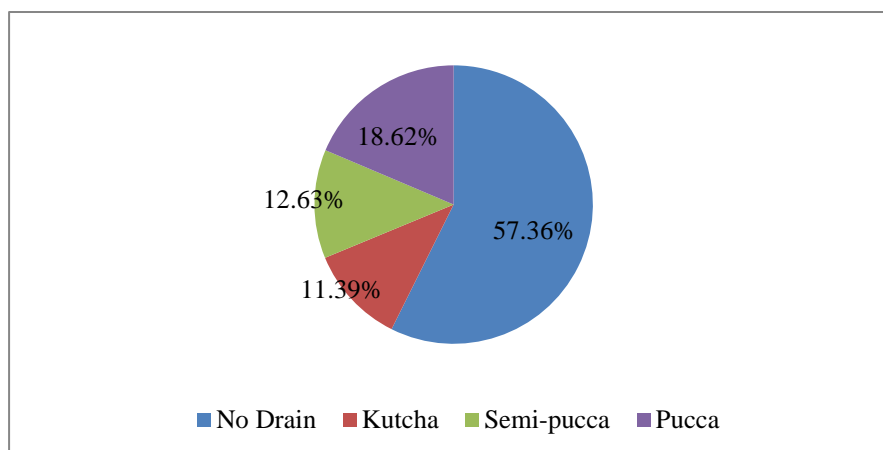
Source: Master Plan of Tangail Municipality, 2013

A good number of drains were found in Ward No. 13 (7.82 km) a little number of drains were available in Ward No. 10 (0.11km). No drains found in Ward No. 5 and 8. The status of the drains was covered and uncovered. Good quality of drains were seen in Ward No. 14, 16 and 18 (Paurashava Master Plan, 2013). According to Municipality office, out of 18 Wards, 13 Wards had drain and management facility because of exist within in conservancy areas of Paurashava. Among the 13 Wards (conservancy area), the drains of 9 Wards were maintained irregularly and other drains of 4 wards were cleaned or maintained irregularly (Municipality office, 2022).

5.4.3.1 Types of Drain According to Household Survey

There were three types of drains in the study area i.e.; Kutcha (naturally made with mud), Semi-pucca (constructed by brick and mud) and Pucca (constructed by brick linked with main drainage network).

Figure: 5.6 Types of Drain in Respondent's Neighborhood



Source: Household Survey, 2022

From the field survey it was seen that 57.36 percent respondents' had no any kind of drain rest of them were drains. The respondents who had drains asked about types of drain in their neighbourhood. Of them 18.62 percent respondent's had pucca drain which

was made by brick, linked to main drainage network, 12.63 percent had semi-pucca drains which was made by mud with brick and 11.39 percent had kutchra drains which was made by mud with naturally (Household Survey, 2022).

5.4.3.2 Destination of Going Respondent's Households Waste Water

In this section respondents were asked about where their household's waste water went? according to their answer 32.58 percent of them said that their waste water went into a drain, 49.24 percent said that their waste water went into pond or lake or river, 8.75 percent said that their waste water went into low land areas.

Table: 5.10 Destination of Respondent's Households Waste water

Destination of waste water	Households	Percentage of households (%)
Into drain	129	32.58
Into pond/lake/river	195	49.24
Into low-lying area	35	8.75
Others	8	2.11
don't know	29	7.32
Total	396	100.00

Source: Household Survey, 2022

5.4.3.3 Drainage Congestion/ Water Logging Problem

Water stagnation or water logging in Tangail Paurashava is not a recent crisis and increasing day by day. Water logging causes severe problem such as sanitation problem, problem of people movement, mosquito breeding, diseases as well as environmental degradation of the city due to drainage blockage and excessive rainfall.

From this study it was observed that 74.74 percent respondents mentioned about the water logging problem was prevailing in the city of them 68 percent respondents faced water

logging in their neighbourhood area and rest of them did not face (Household Survey, 2022). Out of 18, 8 Wards (W-3, 6, 7, 11, 13, 14, 15, 18) of Tangail Paurashava were face negative impact of water logging (Latif et.al 2016) and all of these Wards were not equally affected. Some Wards were most vulnerable and some were less. A study was conducted in 2016, 70% respondents (respondent's opinion) were affected by water logging in this Paurashava (Latif et.al 2016).

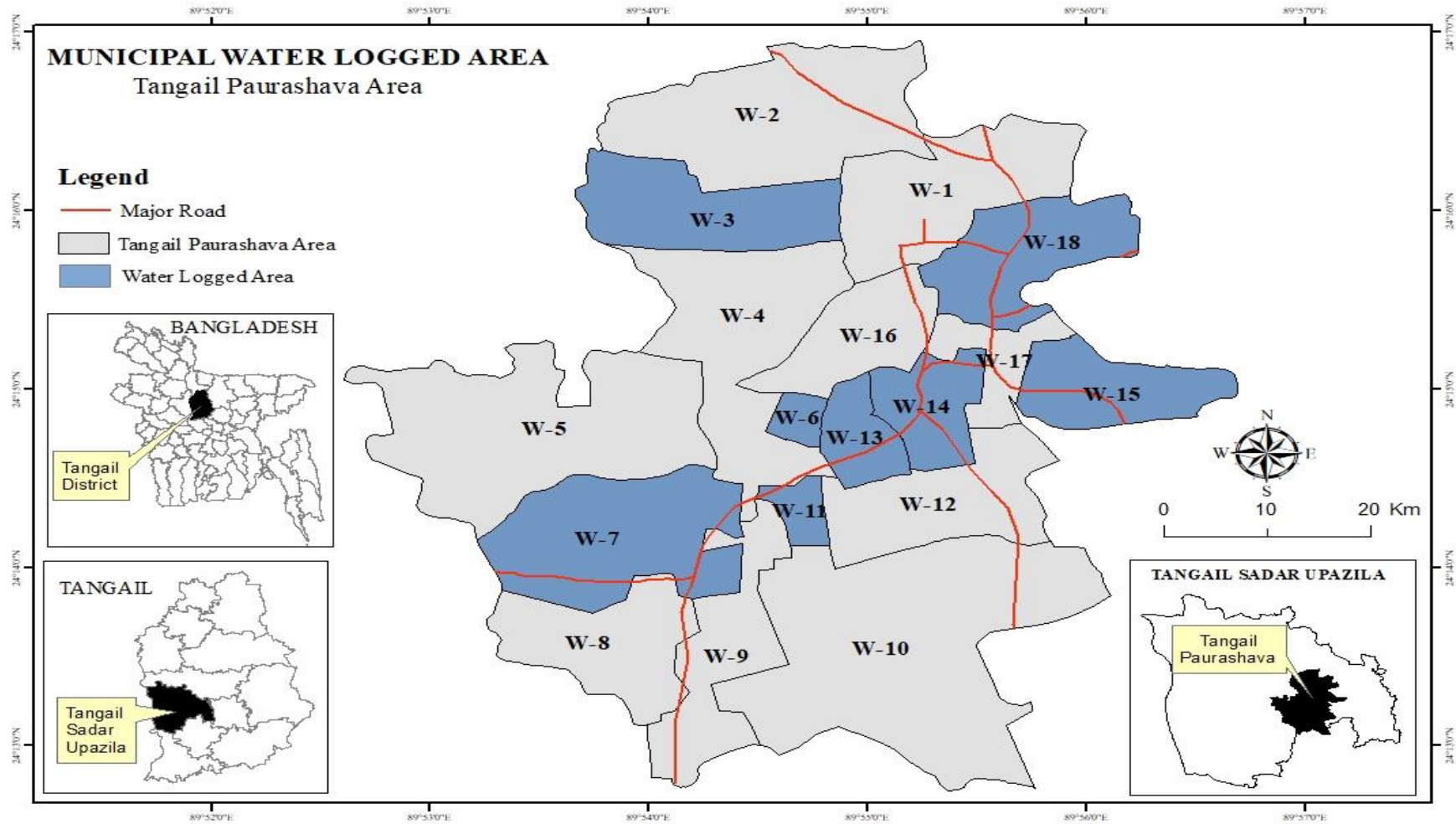


Picture: 5.3 and 5.4 Water Logging Situation in Rainy Season in Tangail Paurashava



Picture: 5.5 Drainage Congestion Situation in Dry Season

Map. 5.2 Map showing the Municipal Water Logged Area in Various Wards



Source: Field Survey, 2022, created by Author

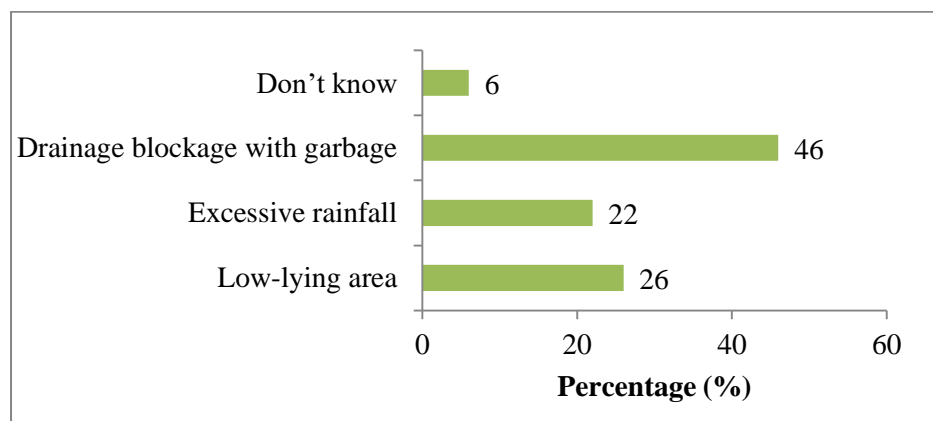
The respondents who (68%) faced drainage congestion, of them 62.90 percent faced during rainy season and 37.1 percent faced all the year round (Household Survey, 2022).

5.4.3.4 Causes of Water Logging in the Study Area

Figure 5.7 shows, three types of causes of water logging were identified in the study area.

From all the respondents, 269 respondents were faced water logging in some wards.

Figure: 5.7 Causes of Water Logging in Study Area (n=269 who faced the problem)



Source: Household Survey, 2022

The main reason was drainage blockage with garbage which was mentioned 46.00 percent of the respondents, 22.00 percent claimed excessive rainfall in the rainy season was another reason for water logging and 26.00 percent said that low lying area was responsible for water logging in the Tangail Paurashava.



Picture: 5.6 Water Logging Situation due to Drainage Blockage

5.4.3.5 Problems Occurred by the Water Logging

From this Table 5.11 it is observed that many problems are caused by the water logging like most of the respondents (69.60%) said that they could not move one place to another when water logged, 18 percent faced problems to do their daily necessary works, 6.8 percent faced problem of going toilets whose toilets were far from the house and 5.6 percent said water logging caused mosquito breeding in the area.

Table: 5.11 Consequences of Water Logging in the Study Area

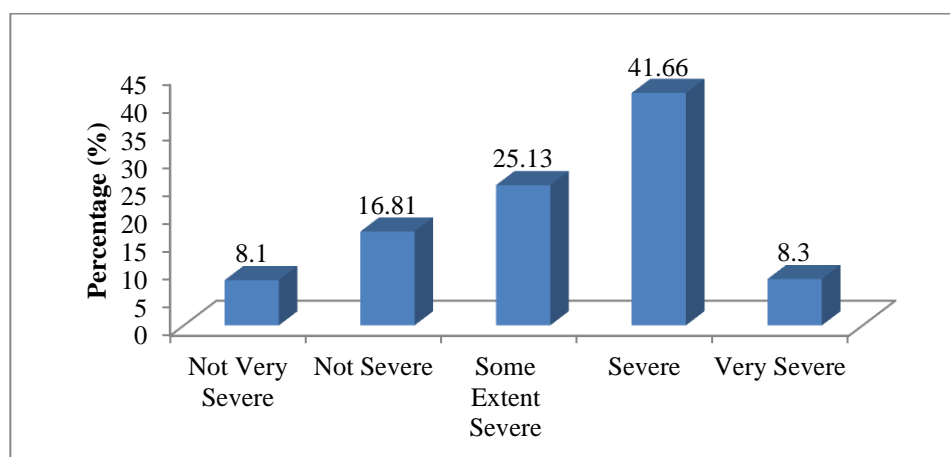
Problems	Households	Percentage of households (%)
Problem of Moving One Place to Another	187	69.60
Sanitation Problem	18	6.80
Problems to do Daily Works	49	18.00
Mosquito Breeding	15	5.60
Total	269	100

Source: Household Survey, 2022 (N= 269, who were affected by water logging)

5.4.3.6 Severity of the Congestion Occurred in Neighborhood

From the field study it was observed that, 41.66 percent of the respondents said according to their problem facing intensity that their drainage congestion was severe, 25.13 percent said drainage congestion was some extend severe, 8.30 percent said it was very severe in their neighbourhood.

Figure: 5.8 Severity of the Congestion Occurred in Neighborhood

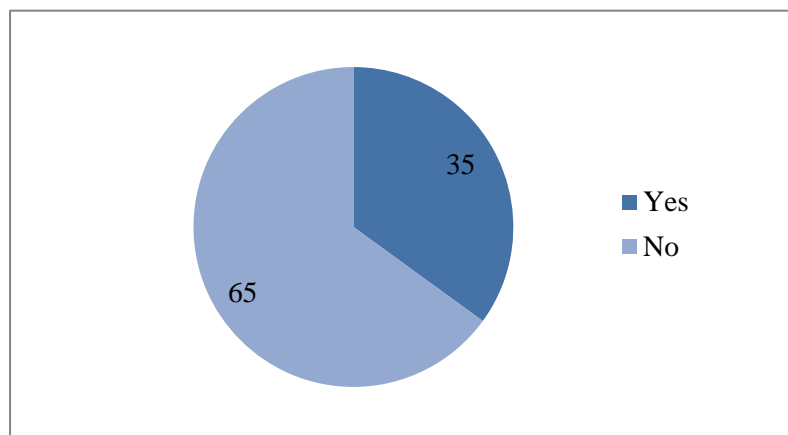


Source: Household Survey, 2022

5.4.3.7 Opinions about Municipal Authority's Response

When asked about the responsibility of municipal authority in managing disaster was adequate or not, 35 percent of the respondents said that municipal authority's response was adequate in managing water logging and rest of them answered negative.

Figure: 5.9 Opinions about the Adequate Responsibility of Municipal Authority in Managing Water Logging by percentage



Source: Household Survey, 2022

In this aspect, one prominent journalist of local daily news paper named ‘The Daily Progotir Alo’ described in this way that

“The roads of Tangail city turned into drain or canal due to water logging during rainy season. This situation occurs due to fill up drain by garbage, insufficient drains, and unplanned development in this city”.

5.4.4 Insufficient, Broken and Narrow Road Network System

The total length of road network in Tangail Paurashava is 309.36 km. with three types ie. pucca, semi-pucca and katcha road. Among the total length, pucca road is 174.32 km. and it is classified in three categories - primary, secondary and tertiary. Semi-pucca and katcha roads are 13.76 km. and 121.27 km. respectively and they are also categorized in primary, secondary and tertiary.

Table: 5.12 Roads in Tangail Paurashava

Road Type	Length (km)	Area (acre)	Percent (%) of Total Land
Pucca Road	174.32	138.12	56.35
Semi-pucca Road	13.76	8.52	4.44
Katcha road	121.28	62.48	39.21
Total	309.36	209.12	100.00

Source: Master Plan of Tangail Municipality, 2013.

A large number of roads are still katcha in character (Master Plan of Tangail, 2013).

Table: 5.13 Road Type who had Access Road Connection

Road type	Households	Percentage (%)
Pucca road (good condition)	24	6.00
Very narrow	102	25.74
Broken	40	10.06
Muddy	62	15.66
Total	228	57.46

Source: Household Survey, 2022

From the study it was noticed that more than half (57.46%) of respondents had access road connection but some were very narrow (25.74%), broken (10.06%) or muddy (15.66%) type. Now, 15.9 km. road networks are constructing by the ‘Infrastructural Development Project’ of Tangail Paurashava since the year 2021.



Picture: 5.7 Showing the Broken Road Network in the Paurashava

5.4.4.1 Vehicles Used by Respondents within the Paurashava Area

Two types of vehicles like Motorized and Non-Motorized moved in the road of the study area. Most of the people fulfilled their daily trips using bicycle, auto rickshaw, rickshaw and motor cycle. Major goods were transported by truck for long-distance and van for short-distance.

Table: 5.14 Types of Vehicles Used by Respondents for Going Outside within Paurashava Area

Vehicles Used by Respondents	Households	Percentage of Sample (%)
Motorized Rickshaw	156	39.39
Bus	0	0.00
Private cars	2	0.50
Motor cycle	23	5.78
Easy bike	215	54.33
Total	396	100.00

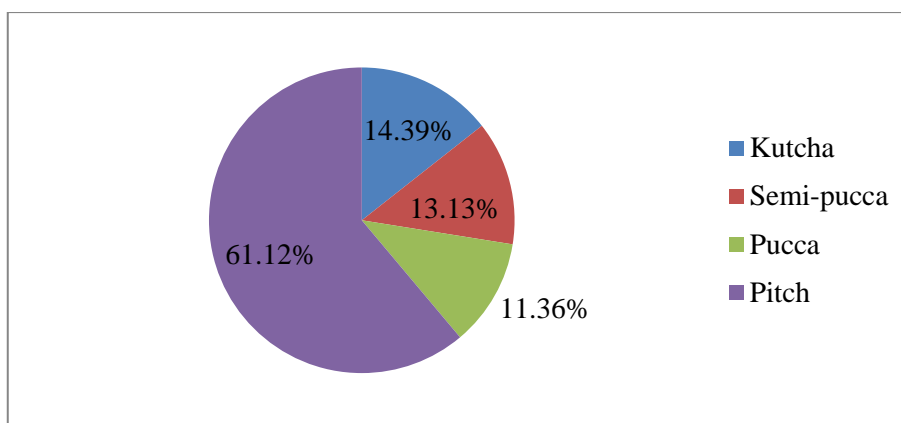
Source: Household Survey, 2022

From the field study it was observed that most of the people (54.33%) used easy bike (big rickshaw), 39.39 percent of the respondents used motorized rickshaw and 5.75% respondent used motor cycle for going to office, educational institutions, shopping, relatives houses and outing within the Paurashava (Household Survey, 2022).

5.4.4.2 Types of Access Roads

There were limited access roads in Tangail Paurashava. Only 57.46 percent respondents had access roads in their neighbourhood according to respondent's opinion.

Figure: 5.10 Types of Access Roads in respondents' neighborhood



Source: Household Survey, 2022

From the Figure: 5.10, it is seen that only 11.36 percent of the respondents had pucca (fully constructed by bricks and concrete) road in their neighbourhood, 61.12 percent had pitch access roads, 13.13 percent had semi-pucca road and 14.39 percent had kutchha access road in their neighbourhood.

5.4.4.3 Pedestrian movement Facilities

Pedestrian movement facility is very essential for road and transport system of urban area. During field survey, it was noticed that people moved on the road in booth side for going in and out. Moreover, only 12 percent people said that they had sufficient footpaths and rest of them said that they had no sufficient footpaths for pedestrian movement in their neighbourhood.

It was common scenario that, people were walking shoulders of the road but they were obstructed by the many informal businessmen. Because, many informal businessmen blocked footpaths for their selling, side of the roads and some portion of the road. This was also a reason of traffic congestion in the city (Household Survey, 2022).

Table: 5.15 Footpaths in the Tangail Paurashava

Location	Average Roads width (Meter)	Length of Footpaths (Meter)
Tangail Circuit House	1.50	125.12
Access Road	1.70	38.00
Front Side of Paura Market	1.71	159.70
Total	-	322.82

Source: Master Plan of Tangail Paurashava, 2013

From this statistics it is found that, there were footpaths in three roads, Tangail Circuit House road, Paura Market Road and in access road. In total, 322.82 meters footpaths were available in this city. Sometimes, this little portion of footpaths is blocked by the informal businessmen. In the other roads there were no footpaths for pedestrian movement (Household Survey, 2022 and Master Plan of Tangail, 2013).

5.4.4.4 Facilities of Car Parking

Car parking facility was absent in Tangail Paurashava. There were many shopping centers and market place in this city but there were no any car parking facilities in these shopping centers. All (396) of the respondents mentioned that in this city there had no any car parking facilities in any shopping centers, people coming for market, shopping purpose, keeping their cars or other vehicles on the road or road side which created traffic jam in that place.

Moreover, there was no any particular place for rickshaws, auto rickshaws or easy bike, these vehicles stand haphazardly on the road or side of the road which is another reason of traffic congestion (Household Survey, 2022).

5.4.5 Traffic Congestion Problem

There was hardly any notable traffic management system in Tangail Paurashava. Signalized traffic management system was not present here. The Victoria College Moor and Paurashava office Moor, Baby stand Moor was noted as traffic congestion areas where highway and local roads intersected and produced a node (Master Plan of Tangail, 2013). According to household survey, 65.65 percent respondents mentioned that traffic congestion was another problem in this city.

From the field study it was revealed that 65.65 percent respondents faced traffic congestion during peak hours or sometimes all day long and 34.35 percent did not faced traffic jam.

Majority, 97.2 percent respondents who (65.65 percent) faced traffic jam mainly faced in daily during peak hours and 2.80 percent faced all day long. In traffic management aspect, respected Engineer quoted that

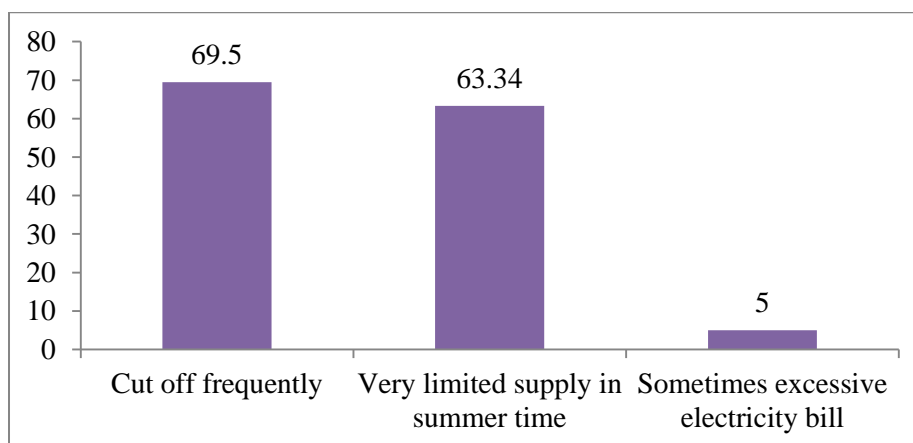
“Traffic jam in this Paurashava is increasing day by day due to narrow roads and absent of car parking facilities in shopping centers and houses”.

In case of road accident respondents were asked whether they experienced any road accident, only 2.5 percent said yes and rest of them said no (Household Survey, 2022).

5.4.6 Power/Electricity Crisis

Bangladesh Power Development Board (PDB) is responsible to supply power or electricity in Tangail Paurashava. From the household Survey it was observed that 100 percent respondents had electricity connection though some people in the Paurashava used kerosene or candle for lighting the house.

Figure: 5.11 Types of Electricity Crisis



Source: Household Survey, 2022, (multiple responses were considered)

The Figure 5.11 shows that who (53.03 percent) said about the electricity crisis in Tangail Paurashava, of them 69.50 percent respondents said that electricity supply became irregular and cut off frequently, 63.34 percent said that electricity become very limited in summer and 5 percent mentioned that sometimes PDB supplied excessive electricity bill without reading meter.

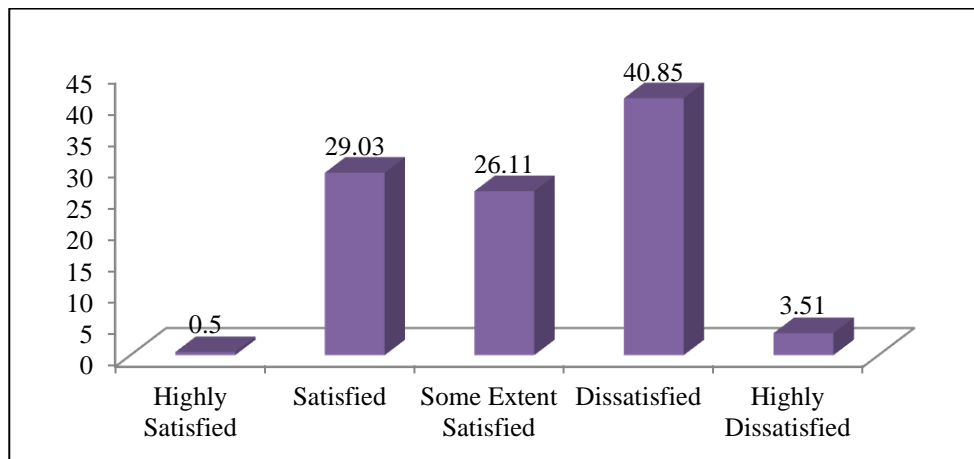
From the study it was also seen that, 98.74% of the electricity users said that they used electricity which was provided by the Power Development Board (PDB) in Bangladesh and rest of them used electricity which was provided by the Rural Electrification Board (REB) and all respondents liked to have PDB service facilities.

From the Master Plan of Tangail, 2013 it was observed that average 86% - 93% households of the Paurashava used electricity for lighting their house at night and rest of them used kerosene, candle and other sources. In Ward No. 1, all the families used electricity as their source of light and in Ward No. 10, only 10% families used kerosene as their light source (Master Plan of Tangail, 2013 and Household Survey, 2022)

5.4.6.1 Satisfaction Level of Respondents with the Providing Electricity Service Facilities

The figure 5.12 shows that 29.03 percent respondents were satisfied with the provided electricity service facilities. They also said that electricity became cut off two or three times a day sometimes it occurred several times a day. However, 40.85 percent respondents were ‘dissatisfied’ and 26.11percent were ‘some extent satisfied’ with electricity service facilities in the Paurashava.

Figure: 5.12 Level of Satisfaction with the Provision of Electricity Service Facilities



Source: Household Survey, 2022

5.4.7 Noise Pollution

The unpleasant sound which created by human, animals or machine that hampered the normal activity and imbalanced human life is known as noise pollution. The main source of noise pollution is transportation especially motorized vehicles and others like office instruments, machineries of industries, construction activity and tools, loud sound system and crowd, etc.

According to respondent’s opinion (Table 5.4), 46.71 percent faced sound pollution which were created by vehicle’s loud horns, construction activities and high volume music system that was increasing day by day in the city (Household Survey, 2022). Among three types of pollution, respondent’s opinion’s was highest (47.71 percent) in noise pollution than the other two (air Pollution-30.30 percent, water pollution-25.75 percent) that they faced. That’s why noise pollution status in this city was measured further as a case to know the intensity of noise.

Moreover, the Tangail city was growing and urbanizing day by day and building construction work was happening massively. Consequently, inhabitants were facing problems by loud sounds which were created by motorized vehicles and construction works. Moreover, saw mills, plastic factories and other food processing industries created noise.

Table: 5.16 Measured Noise Levels in Tangail Paurashva

Areas	Day(d BA)	Night (dBA)	Average Noise Level (L)	Bangladesh Standard (dBA)			
				Day	Night	Average	
Silence Areas (hospitals, schools, mosques, parks)							
Hospitals	Shiekh Hasina Medical College Hospital	90.2	69.3	79.75	50	40	45
	Dhaka Clinic	76.4	66.2	71.3			
Educational Institutions	Bindu Basini Boys School	82.5(D uring Class)	101.3 (After Class)	91.9			
	Mawlana Mohammad Ali College	79.2(D uring Class)	95.3 (After Class)	87.25			
Residential area	Shanti Kunja	75.2	45.3	60.25	55	45	50
	Polashtali (Near New Bus Stand)	80.3	61.2	70.75			

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Mixed Area	New Bus Stand Area	90.1	65.4	77.75	60	50	55
	Old Bus Stand Area	84.5	62.6	73.55			
Commercial Area	Nirala Mor	84.3	54.5	69.4	70	60	65
	Pachani	83.4	56.6	70.0			
Industrial Area	Chayani Bazar Plastic and Rubber Industry	101.4	84.3	92.85	75	70	72.5
	Baby Stand Saw Mill	104.3	83.5	93.9			

Source: Instrumental Survey, 2022, Department of Environment (DOE), Bangladesh (2002) and The Noise Pollution Control Rules, 2006 (DOE).

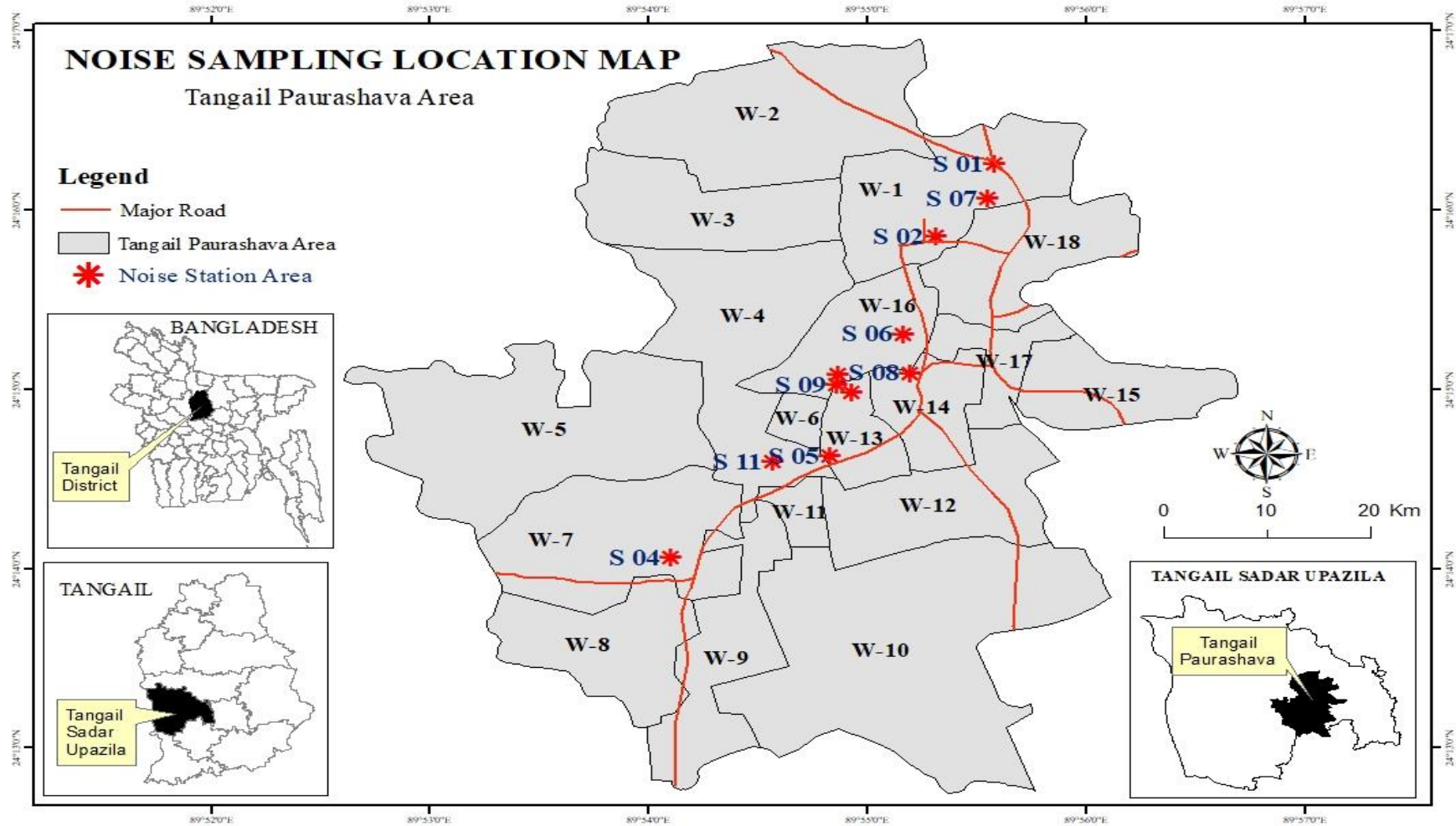
For monitoring noise status and pollution, noise level was measured in some selected places in Tangail Paurashava. In this study, five zones were selected for data collection such as silence area (hospitals, schools, mosques, parks), residential area, mixed area, commercial area, and industrial area. From every zone, two stations were selected but from silence zone, two categories (hospitals and educational institutions) were selected and from two categories, 4 stations were selected for this study.

The noise level study, Table 5.16 shows that the highest average noise level (79.75 dBA) was measured in Shiekh Hasina Medical College Hospital area as silence zone where as the standard noise level in silence zone for Bangladesh is 45 dBA. In educational institutions, the highest average noise level (91.9 dBA) was measured in Bindu Basini Boys School which was very high from the Bangladesh Standard noise level of silence area. From two selected residential area Shanti Kunja and Polashtali (Near New Bus Stand), the highest average noise level (70.75) was measured in Polashtali due to situated near New Bus Stand area while the average standard noise level is 50 dBA for residential area in Bangladesh.

New Bus Stand area and Old Bus Stand area were selected as mixed area, between these two areas, New Bus Stand area was more noisy (77.75 dBA) area than others which is

more exceeded than Bangladesh standard. From commercial area, the highest noise level (70.0 dBA) was measured in Pachani bazaar area and 69.4 dBA was measured in Nirala Mor area which are very high than Bangladesh standard (65 dBA) of commercial area. From industrial area, Chayani Bazar Plastic and Rubber industry, Baby Stand Saw Mill were selected and the highest noise level (93.9 dBA) was measured in Baby Stand Saw Mill while the noise level was very high than the Bangladesh standard (72.5 dBA).

Map: 5.3. Map Showing the Noise Sampling Location of Tangail Paurashava



Source: Instrumental Survey, 2022, Google Map, created by Author

5.4.8 Excessive Dust in Air (Air Pollution)

In the study area, motorized and engine driven vehicles which use diesel or petrol causes air pollution. There were various types of industries in Tangail Paurashava. These were agro-based industry, cotton industry, cottage industry, food manufacturing industry, pharmaceuticals industry, workshops and textile garments industry. At present more than 24 acres land were using for industrial purposes (Master Plan of Tangail, 2013). From the field study it was seen that 30.30 percent respondents said that they felt excessive dust in the air (Household Survey, 2022).

A study was conducted on air of this Paurashava to know the quality of air for preparing Master Plan of Tangail, 2013. In this study, three types of zones were divided for data collection such as central part which included Ward no. 1, 3, 4, 6, 11, 13, 14, 15, 16, 17 and 18 which is the core city area, sub- central part included Ward no. 2, 7, and 12, and rural part included Ward no. 5, 8, 9 and 10 in Paurashava.

Table: 5.17 Composition of Air in Tangail Paurashava (in %)

Ward. No	Dust particles	Bacteria	Organism	Average humidity
1	69	0	8	23
2	72	0	7	21
3	72	0	6	22
4	72	0	5	23
5	66	2	8	24
6	68	2	9	21
7	75	0	5	20
8	67	0	8	25
9	68	1	9	22
10	71	1	7	21
11	69	0	7	24
12	67	1	10	22
13	68	2	9	21
14	67	3	8	22
15	71	2	7	20

Ward. No	Dust particles	Bacteria	Organism	Average humidity
16	63	4	11	22
17	66	3	10	21
18	67	1	10	22
Average	69	1.22	8	22

Source: Master Plan of Tangail Paurashava, 2013

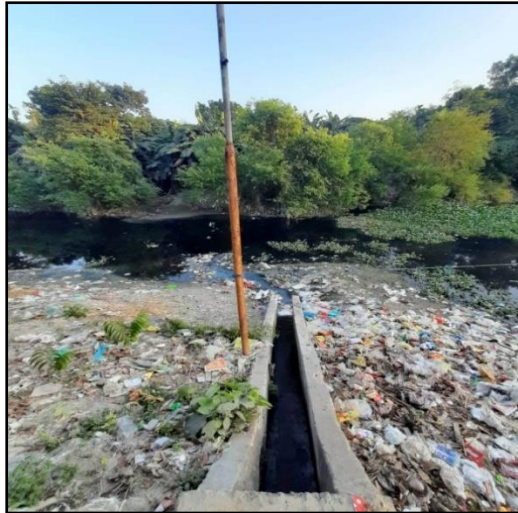
Here, Ward wise air quality parameters like dust particles, bacteria, organism, average humidity were measured. From all of the components dust particles existence in ambient air in this city was higher (average 69 percent) than the others (Table: 5.17).

The rice husking mills created thick smoke and gases which was released by the chimney and contaminated air. Moreover, it also created dust and polluted the surrounding environment. Garbage dumping in the two entry area of the city (Rabna by pass and Baby Stand) occurred odor smell, toxic gases and created air, water and soil pollution. The Municipal authority had not given proper attention to manage these wastes properly and protect the environment (Household Survey, 2022 and Master Plan Tangail, 2013).

5.4.9 Water Pollution (Lauhajong River pollution)

Surface water pollution is originated by using insecticides, pesticides, chemical fertilizers in the agricultural lands. This activity caused pollution of Lauhajong River.

From the household survey it was observed that 25.75 percent respondents said that Lauhajong river water was polluted because water color was dark, household waste water went into that river, sometimes fecal materials went in to the river water and garbage were dumped in to it (Household Survey, 2022).



Picture: 5.8 Lauhajong River is filled up with Garbage

In Tangail Paurashava, ponds, canals and rivers are the sources of surface water. Surface water body was also polluted by discharging domestic waste water and bathing animals. The Lauhajong River flowing through Tangail town was all but dead due to illegal encroachment and filled up by garbage (Household Survey, 2022; Mia, et.al 2012; and Master Plan Tangail, 2013).

A study was conducted by Sarker, et al. in 2015 on seasonal variation in quality of Lauhajong River water, Tangail and the three points were selected named Dighulia, Kagmari Bridge and Oloa to observe physic-chemical parameters in two seasons. In this study it was seen that the value of BOD was 2.0 and 0.8 ppm at Kagmari Bridge (point 2) during dry and wet seasons respectively and DO was ranged from 1.4 to 3.1 and 2.4 to 3.8 ppm during dry and wet seasons. Maximum and minimum EC was recorded as 890 and 130 $\mu\text{s}/\text{cm}$ at point- 1 (Dighulia) during dry and wet seasons and the values of other parameters like TDS, alkalinity and acidity was exceeded the standard level in all points in dry season which was unsuitable for fish culture and aquatic life (Sarker, M. R. H. et al. in 2015).

Another study showed (40 water samples collected) that all measured parameters were exceeded to the local and international standard levels during winter season than the summer season with remarkable variation ($p < 0.05$). The values of all parameters in winter and summer seasons were pH 6.22-7.43, EC 345-798 mS/cm. Cr 0.18-13.2, Cu 0.96-15.92, Cd 0.02-2.42, As 2.18-12.51 and Pb 0.49-15.74 $\mu\text{g/L}$ which are not suitable for drinking, irrigation and aquatic life (Proshad, R. et. al. 2021).

Moreover, the report on 'Lauhajang River: Palette of pollution' was published in 'The Daily Star' in May 5, 2019. In this report, there was a comparison between the pictures of 2010 and the 2019 at a same location of the Lauhajang River and the study showed that the river has changed its color by time, sometimes red, yellow or purple due to human intervention. The local people (riverside) said that before establishing the Alauddin Textile Mills at Khudirampur village, they could catch fish from the river throughout the year but now they didn't see even any frog (The daily Star, 2019).

In case of drinking water quality, an experiment was conducted to explore the drinking water quality of the some selected educational institutions of Tangail Municipality by M. Sultana, A. S. m. Saifullah, M. B. Latif, S.A. Mamun and D.S. Sultana in 2013. For this purpose, some water quality parameters were measured such as pH, EC, TDS, Pb, As, Fe and E. coli concentration of those selected academic institutions. In this case, there were no major difference observed in pH, EC and TDS values among the studied stations and not exceeded the standard thresholds (WHO Bangladesh). But in case of heavy metal concentration, very trace amount of Arsenic (0.0071 ppm) was found from all selected stations. However, average lead concentration (0.307 ppm) was observed which was much higher than the acceptable limit of Bangladesh standard. Furthermore, Pb (0.307

ppm) Fe (0.255 ppm) concentration was not exceeded the acceptable values of WHO Bangladesh standard. All the samples were E. coli bacteria free (Sultana, et. al, 2013).

5.4.10 Mosquito Problem

Mosquito problem was another environmental problem in Tangail Paurashava. Lack of drainage maintenance, stagnant water, garbage dumping nearby houses and irregular spreading of mosquito spray were the reasons of excessive spreading of Mosquito in the Paurashava. About 37.87 percent of the respondents said that excessive mosquito has become a problem in this Paurashava (Household Survey, 2022). Mosquito can carry germs from open drains; open toilets from the slum, open waste disposal site in the study area and the inhabitants are in threat to spread diseases though peoples are use to stay in this situation (Household Survey, 2022).

5.4.11 Limited Open Space and Recreational Facilities

It is the responsibility of every Paurashava to prepare a town plan and development plan with tree coverage, conservation of forests and management of open spaces. There were three open spaces remain in the study area namely stadium, ponds and parks. Only 1.62 percent areas of total lands were open space, play ground and 9.36 percent water body remains in the city (Master Plan of Tangail, 2013). In this perspective, respondents were asked about the sufficiency of playground and parks in the city. One fourth of the respondents (26.76 percent) said that there was no sufficient playground, open space and recreational facilities in the city. Only two parks were available in the Paurashava but had limited maintenance (Household Survey, 2022).

5.4.12 Security Problem

Sometimes people didn't feel secure at night or mid night to move in the Paurashava. In this aspect, 20.20 percent people said that they feel insecure at night (Household Survey, 2022). All wards of the Paurashava are not covered by the street light. The wards which had no light become dark at night and inhabitant of the areas feel insecure to move one place to another at night. Some respondents said that at present, young generation are addicted by drugs and they have lack of social values, norms. Sometimes, people faced hijacking, eve teasing, steeling etc in that place due to addicted peoples. Specially, women didn't feel safe in those areas to move at night.

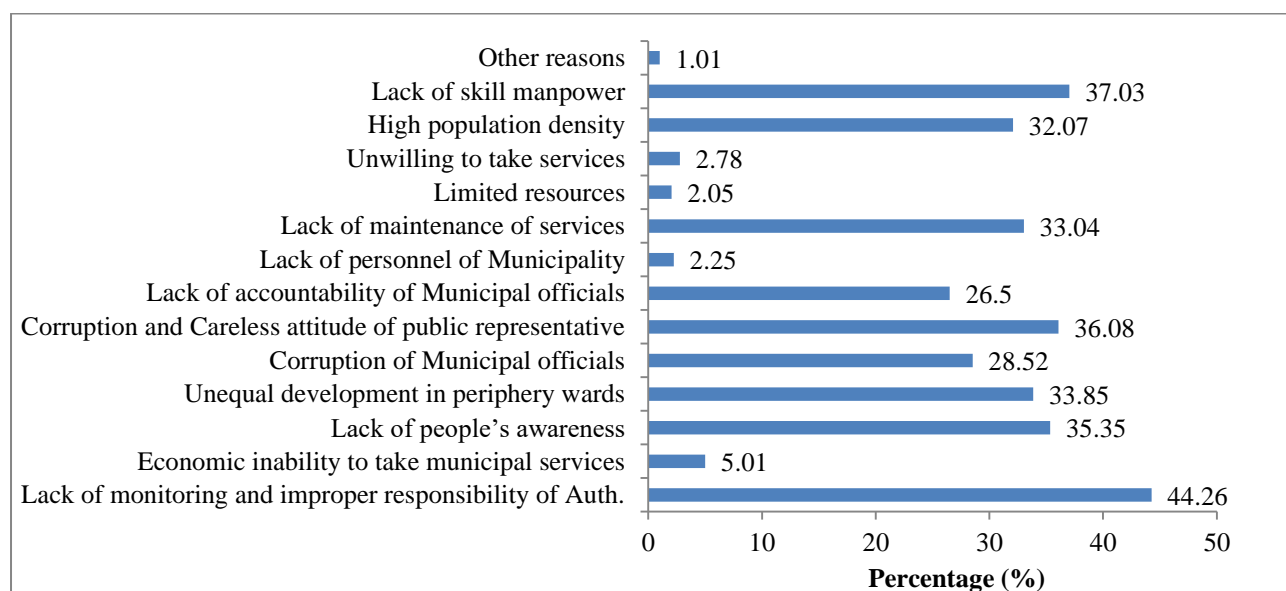
5.5 Causes of Environmental Problems of the Paurashava

There were many causes of household and neighbourhood environmental problems of the Tangail Paurashava. In this field study respondents were asked what were the main causes that occurred environmental problem of the city they thought. From this study (Figure: 5.13) it was observed that most of the people (44.26 percent) mentioned that lack of monitoring and improper responsibility of Municipal authority causes environmental problems of the city.

Second majority, 37.03 percent respondents said that lack of skilled manpower was another causes of this problem. About 36.08 percent of the respondents mentioned that many public representatives were careless, irresponsible and sometimes corrupted in their activity. Sometimes they did not serious to implement their election mandate in their locality. About 35.35 percent respondents said that people were not aware about environmental problems or sometimes they did not give importance any environmental problems within their neighbourhood of the city. Among the respondents, most of them

(33.85 percent) were from periphery of Paurashva like respondents of W 5, W 7, W 8, W 9, W 11, W 18 (29.15 percent of total Paurashava’s people (BBS, 2011) etc demonstrated that being situated far from the core city area, people were suffering from lack of utility services and environmental problems. They thought that they were neglected by the municipal authority (See Table in Appendix).

Figure: 5.13 Major Causes of Environmental Problems in this City



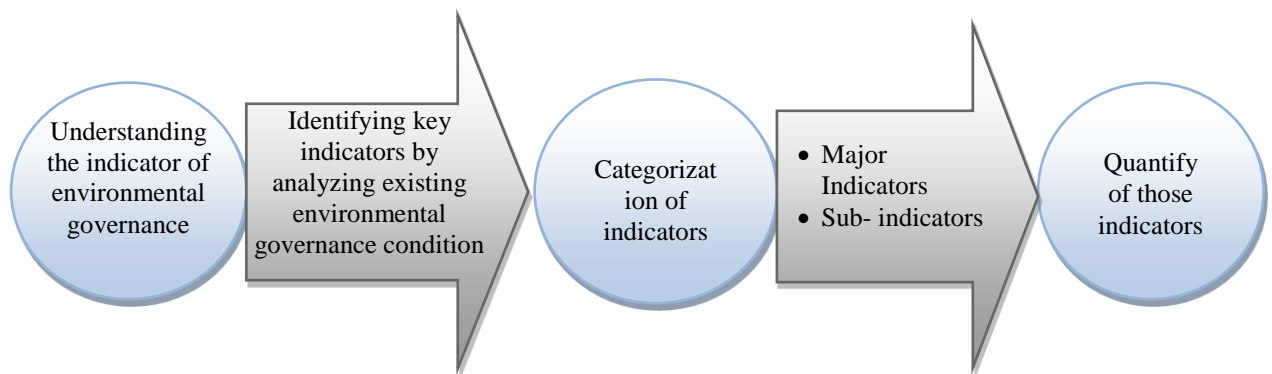
Source: Household Survey, 2022 *N=396 (multiple responses were considered)

After that, 33.04 percent respondents mentioned that there was no proper maintenance of supply services facilities. Sometimes authority did not pay attention of maintaining services. About 32.07 percent of the people said that high population density in the Paurashava and 28.52 percent of the respondents claimed about municipal officials’ corruption in any development work, projects, programmes, solving problems of the inhabitants. Some respondents (26.5 percent) said that there was lack of accountability of Municipal people and that’s why environmental problems were not solved or increasing day by day (Household Survey, 2022).

5.6 The Governance Condition of Environmental Problems in Tangail Paurashava

To assess how environmental problems are governed by the authority in the Tangail Paurashava, some environmental governance indicators were selected. After that, some sub- indicators were considered from the major indicator to assess the environmental governance condition of the study area. Then some specific questions were made to know the household's perceptions on environmental governance of the authority to manage the problems of the city on the bases of environmental governance parameters.

Figure: 5.14 Process followed to identify major indicators and sub-indicators of environmental governance



These environmental governance indicators were selected for collecting data from the household level about the governance system of the problems (Table: 5.18).

Table: 5.18 Indicators and Sub-indicators of Environmental Governance

No.	Major Indicators	Sub- indicators	Sources
1	Finance / Resources	<ul style="list-style-type: none"> • Sources of fund • Adequacy of fund • Allocation of fund 	Nazmfar et al., (2017), Zanjani., 2021, Abbott, (2018)
2	Accountability	<ul style="list-style-type: none"> • Proper utilization of funds • Institutional responsibility • Stakeholder's involvement in decision making 	Mees, and Petes, (2018); Kaufmann, (2010); Zanjani, et al (2021), Han,et.al (2014) ADB working paper, UN, (2015), UN-HABITAT(2004), UNDP (2008), UNDP–TUGI (2003); Biswas, et al (2018); UN-HABITAT (2005); UNDP (2008); Tsegaw, (2020).
3	Transparency	<ul style="list-style-type: none"> • Openness • Financial transparency • Access to information • Timely information of existing condition • Published financial and project related detail information • Involvement of various stakeholders 	Zanjani, et al (2021), Cruz, (2015), UNDP (2008), UNDP–TUGI (2003); Biswas, et al (2018); UN-HABITAT (2005).
4	Responsiveness	<ul style="list-style-type: none"> • Address the needs of all member • Reception of opinions and complains • Unfair practices • Publish citizen's charter 	UN, (2015), U20 White Paper, 2018, UNDP–TUGI (2003); UN-HABITAT (2005); UNDP (2008).
5	Peoples' Participation	<ul style="list-style-type: none"> • Participatory approaches in decision- making • Stakeholders' participation in meeting and management activities • Local peoples' participation in meeting and development work • Women's participation 	JEFFERY, 2005. Zanjani, et al (2021), Uittenbroek, (2019), HABITAT (2004), Biswas, et al (2018); UN-HABITAT (2005).
6	Coordination	<ul style="list-style-type: none"> • Coordination among multiple actors • Coordination among all the areas 	Pramanik., (2013); Lu. C. et al (2021); UN-HABITAT (2005).

7	Rules and Regulations	<ul style="list-style-type: none"> • Enforcement of rules impartially • Monitor and evaluate applied development activities 	Kaufmann, (2010), Han, et.al (2014) ADB working paper, UNDP–TUGI (2003); Tsegaw, (2020).
8	Leadership	<ul style="list-style-type: none"> • Quality of leaders to serve people 	Pichler, (2018), Angeles (2014)
9	Planning	<ul style="list-style-type: none"> • Long term or short term working plan 	Angeles (2014), UNDP–TUGI (2003); Biswas, et al (2018); UN-HABITAT (2005).
10	Government Effectiveness	<ul style="list-style-type: none"> • Performance • Satisfaction level of the people • Proper utilization of resources • Quality of the services • Status of accountability, transparency, responsiveness, peoples’ participation 	Hartanto, et al, (2021); Economic and Social Commission for Asia and the Pacific, (2009); Kaufmann,.(2010), Zanjani, et al (2021), Han, et.al (2014) ADB working paper, HABITAT (2004), UNDP–TUGI (2003); Biswas, et al (2018); UN-HABITAT (2005); Tsegaw, (2020).
Others	Manpower and Technological Support	<ul style="list-style-type: none"> • Availability of manpower • Availability of skilled manpower • Adequate technical and machineries support 	

In this section, the indicator, coordination is not considered for data collection because the respondents were household’s head. So, most of the respondents did not know properly about the coordination; how the Paurashava authority worked with other department to mitigate problems, how is the coordination of Paurashava authority with other department etc. Consequently, this parameter is not considered here. However, coordination is considered in Chapter 6 where the perceptions of Key Informant’s were analyzed to know about the coordination of Paurashava authority with others.

5.6.1 The Governance Condition of Water Supply Problem Perceived by Households

The authority could not mitigate water supply related problems properly. According to Paurashava office 2022, 25 percent of total households had water supply connection. To know the governance condition on water supply in Tangail Paurashva, household's perception was considered.

5.6.1.1 Nature of Finance/Resource for Water Supply Activities

Two types of statements were selected to ask question to the respondents to know the respondent's perception about finance or resource capacity of the authority such as does authority has adequate fund for water supply connection and for establishment of water treatment plant.

From the household survey it was observed that, in aspects (see Table 5.19); 'authority has adequate fund for water supply connection' and 'authority has adequate fund for establishment of water treatment plant' the overall assessment was 'Moderate'.

Table: 5.19 Perceived views of Households on Financial Support for Water supply in Tangail Paurashava

Statements	Responses					Weighted Average Index (WAI)	Overall Assessment (OA)
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Authority has adequate fund for water supply connection	5	55	7	27	6	0.56	Moderate

Authority has adequate fund for establishment of water treatment plant	0	50	12	29	9	0.50	Moderate
	Average					0.53	Moderate

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

More than half (55 percent) of respondents perceived as ‘agree’ on the statement of authority has adequate fund for water supply connection and on the aspect of other statement half of the respondents were ‘agreed’.

In both cases Weighted Average Index (WAI) is 0.56 and 0.50 respectively and average WAI is 0.53 and the overall assessment of respondents on adequacy of fund for mitigating water supply related problem was ‘moderate’. A good number of people mentioned that authority have sufficient financial support.

5.6.1.2 Nature of Accountability of the Authority on Water Supply Activities

Respondents were asked four categories of question to know the accountability of authority in case of water supply. There are: does the authority utilize their income for water supply purpose properly, utilize government fund for this purpose, other fund of various projects and programmes of Paurashava for water supply purpose and does authority invite local people on water supply related meeting.

The Table 5.20 shows that almost (59 percent) respondents answered negatively with the statement of ‘proper utilization of income in Paurashava for water supply purpose’ and WAI value is 0.39.

Table: 5.20 Perceived views of Households on Accountability for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Proper utilization of income in Paurashava for water supply purpose	2	25	14	46	13	0.39	Poor
Proper utilization of government fund in Paurashava for water supply purpose	2	27	15	38	18	0.39	Poor
Proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose	3	30	12	39	16	0.41	Moderate
Authority invite local people on water supply related meeting	0	15	10	62	13	0.31	Poor
Average						0.37	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

Moreover, 56 percent and 55 percent also replied negatively on the statement of ‘proper utilization of government fund in Paurashava for water supply purpose, and proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose respectively.

On the other hand, three forth (75 percent) of the respondents were ‘disagreed’ and ‘strongly disagreed’ of authority’s invitation of local people on water supply related meeting and WAI value was 0.31. The overall assessment of the condition was ‘poor’ accountability for water supply in Tangail Paurashava.

5.6.1.3 The State of Transparency of the Authority on Water Supply Activities

Accountability and transparency are interrelated to each other. To assess transparency of the authority, six types of statements were selected such as available information of people's water supply related right and choice are remain in website, authority share expenditure of water supply projects with mass people, detail information of water supply projects and development work available in website, authority invite various stakeholders before implementing water supply project, authority set up signboard with detail information of water supply projects of those projects area and information of water supply project are available in notice board.

Table: 5.21 Perceived views of Households on Transparency for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Available information of people's water supply related right and choice are remain in website	0	0	11	80	9	0.25	Poor
Share information of expenditure of water supply projects with mass people	0	5	12	73	10	0.27	Poor
Detail information of water supply projects and development work available in website	1	4	11	75	9	0.28	Poor
Invite various stakeholders before implementing water supply project	1	6	10	72	11	0.28	Poor
Set up signboard with detail information of water supply projects of those projects area	3	25	9	55	8	0.39	Poor
Information of water supply project are available in notice board	3	27	11	52	7	0.41	Moderate
Average						0.31	Poor

Source: author's fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

From the Table 5.21 shows that 80 percent respondents were ‘disagreed’ of the statement ‘available information of people's water supply related right and choice are remain in website’ the WAI value is 0.25. In case of these statement ‘share expenditure of water supply projects with mass people’ ‘detail information of water supply projects and development work available in website’ and invite various stakeholders before implementing water supply project, the WAI values are similar 0.27, 0.28 and 0.28 successively. The overall assessment of these statements was poor transparency of authority.

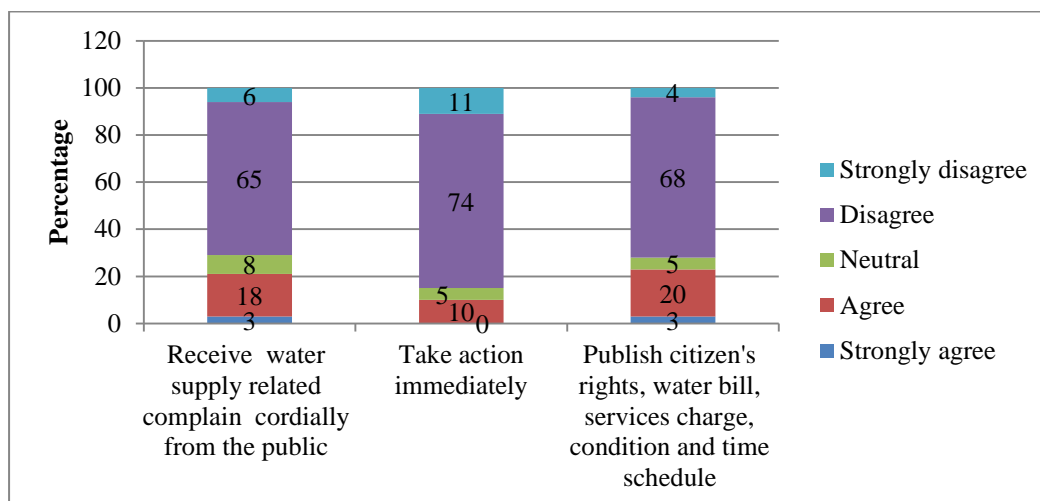
In contrast, the statement ‘information of water supply project are available in notice board’ has received ‘moderate’ assessment. The WAI value is 0.41. The overall assessment of transparency on water supply was ‘poor’.

5.6.1.4 The Condition of Responsiveness of the Authority for Water Supply Activities

Three statements were applied to assess responsiveness of the authority about water supply such as ‘authority receive water supply related complain cordially from the public’ ‘authority take action immediately’ and ‘authority publish citizen's rights, water bill, services charge, condition and time schedule of water supply’ (Figure:5.15).

From the Household survey it was seen that, when asked question to the respondents (who had water supply connection) about the authority’s response if any problem occurred in providing water supply, does authority take action immediately, most of the respondents (85 percent) said negatively as ‘disagreed’ and ‘strongly disagreed’. The WAI value is 0.28 (Table 5.22).

Figure: 5.15 Perceived views of Households on Responsiveness for Water supply in Tangail Paurashava



Source: author’s fieldwork (2022)

Table: 5.22 Household’s perception on Responsiveness for Water supply by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Receive water supply related complain cordially from the public	0.36	Poor
Take action immediately	0.28	Poor
Publish citizen's rights, water bill, services charge, condition and time schedule of water supply	0.37	Poor
Average	0.33	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of other statement like ‘receive water supply related complain cordially from the public’ respondents answered also ‘negatively’. The overall assessment of all the statement of responsiveness was poor the average value of WAI is 0.33.

5.6.1.5 Nature of Peoples’ Participation (Respondents) in Water Supply Activities

Four types of questions were asked to the respondents to know the participation of them in water supply related activity. These are: Does authority ensure participation of local

people in preparation and implementation period of water supply related project, consider participants opinion in water supply related projects, women participation in meeting of the Paurashava and women participation in water supply project?

Table: 5.23 Perceived views of Households on Peoples’ Participation for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Ensure participation of local people in preparation and implementation period of water supply related project	0	4	12	67	17	0.25	Weak
Consider participants opinion in water supply related projects	0	3	14	68	15	0.26	Weak
Women participation in meeting of the Paurashava	0	3	15	72	10	0.27	Weak
Women participation in water supply project	0	0	20	71	9	0.27	Weak
Average WAI						0.26	Weak

Source: author’s fieldwork (2022) , N=396

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (P):0.21-0.4; very weak (VP):0.01-0.2, WAI: weighted average index, OA; overall assessment

The Table 5.23 shows that peoples’ participation in water supply related works and development projects was ‘weak’. Participation of local people in preparation and implementation period of water supply related project was ‘weak’ as 67 percent people said ‘weak’. The WAI value was very low 0.25. Especially, women participation in meeting of the Paurashava and their participation in water supply project were very limited as 82 percent and 80 percent respondents as ‘weak’ and ‘very weak’ respectively. The average WAI value is 0.26 and overall assessment of the participation of local people was weak.

5.6.1.6 Rules and Regulation applied on Water Supply Activities

Some questions were carried out to know the rules and regulation applied in Water supply of Paurashava. These are: does water supply activity is carried out according to municipality rules?

Does authority take action against those who have not paid water bill on time? does authority monitor first to last implementation of water supply related work and does authority assess households satisfaction after delivery water supply?

From the Table 5.24 it is observed that, 67 percent and 62 percent respondents were ‘disagree’ on the statement of ‘water supply activity is carried out according to municipality rules’ and ‘take action against those who have not paid water bill on time’. They said that “Paurashava did not maintain rules and regulation properly. Moreover, water supply facilities are not distributed equally like there are some Wards (Ward no. 5, 7, 8, 11,) which have no minimum water supply facilities.

Table: 5.24 Perceived views of Households on Rules and Regulations Responses for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Water supply activity is carried out according to municipality rules	2	20	5	67	6	0.35	Poor
Take action against those who have not paid water bill on time	0	20	7	62	11	0.33	Poor
Monitor first to last implementation of water supply related work	6	45	5	41	3	0.52	Moderate
Assessment of households satisfaction after delivery water supply	0	0	4	74	22	0.20	Poor
	Average					0.35	Poor

Source: author’s fieldwork (2022), N= 79 (who had water supply connection)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

On the statement of monitoring, half of the respondents (51 percent) said 'agree', the WAI value is 0.52 and overall assessment this is moderate. There is no any assessment of provided services facility. None of the respondents agreed with the statement of whether Paurashava do assess household's satisfaction after delivery of water supply. The overall assessment of implementation, monitoring and evaluation of provided services is poor in condition.

5.6.1.7 Planning and Leadership Status for Water supply Activity

For planning aspect, respondents were asked does Paurashava maintain planning and guideline to provide water supply in Paurashava, 52 percent people were 'disagreed' 6 percent were 'strongly disagreed' and for leadership aspect, tried to know whether public representatives are committed, honest and dedicated to provide water supply in own Wards and overall Paurashava, 64 percent respondents were 'disagreed'. The WAI value of planning aspect is 0.43 and overall assessment is moderate and the leadership aspect, WAI is 0.36 and overall assessment is poor.

Table: 5.25 Perceived views of Households on Planning and Leadership Responses for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Maintain planning and guideline to provide water supply in Paurashava	2	35	5	52	6	0.43	Moderate
Committed, honest and dedicated public representatives to provide water supply in own Wards and overall Paurashava	0	25	4	64	7	0.36	Poor

Source: author’s fieldwork (2022), N= 396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

5.6.1.8 Nature of Effectiveness on Water Supply Activities

Some parameters were selected to assess the effectiveness of water supply activities like ‘the Paurashava performs all the mandatory functions’, ‘citizens are satisfied with the delivery of water supply services provided by the Paurashava’ ‘authority has adequate fund for water supply connection’ ‘proper utilization of government fund in Paurashava for water supply purpose’ ‘share expenditure of water supply projects with mass people’ ‘Invite various stakeholders before implementing water supply projects’ ‘detail information of projects and development work available in website’ ‘take action immediately when occur problem in supply,’ ‘take action against those who have not paid water bill on time’ ‘participation of citizen in preparation and implementation period of water supply related project’ and ‘women participation in meeting of the Paurashava’ etc. The Table 5.26 shows that, 40 percent people were answered positively in the statement of ‘the Paurashava perform all the mandatory functions’ and rest of the people answered negatively. In term of level of household’s satisfaction, 68 percent people were ‘disagree’ and 15 percent were ‘strongly disagree’. The WAI value is 0.28.

Table: 5.26 Perceived views of Households on Effectiveness for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	3	37	4	56	0	0.46	Poor
Citizens are satisfied with the delivery of water supply services provided by the Paurashava	0	10	7	68	15	0.28	Poor
Authority has adequate fund for water supply connection	5	55	7	27	6	0.56	Moderate
Proper utilization of government fund in Paurashava for water supply purpose	2	27	15	38	18	0.39	Poor
Share information of expenditure of water supply projects with mass people	0	5	12	73	10	0.27	Poor
Invite various stakeholders before implementing water supply project	1	6	10	72	11	0.28	Poor
Detail information of projects and development work available in website	1	4	11	75	9	0.28	Poor
Take action immediately	0	10	5	74	11	0.28	Poor
Take action against those who have not paid water bill on time	0	20	7	62	11	0.33	Poor
Participation of local people in preparation and implementation period of water supply related project	0	4	12	67	17	0.25	Poor
Women participation in meeting of the Paurashava	0	3	15	72	10	0.27	Poor
Average						0.33	Poor

Source: author's fieldwork (2022), N=396

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N): 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

Moreover, in case of other statements such as ‘authority has adequate fund for water supply connection’ 60 percent respondents gave answered positively, the overall assessment is moderate. In terms of accountability aspects people were asked whether authority ‘share expenditure of water supply projects with mass people’ 83 percent people answered negatively. In terms of transparency, peoples were asked whether paurashava share ‘detail information of projects and development work available in website’, 84 percent people were disagreed and strongly disagreed. The WAI value is 0.28. In the local people’s participation aspect, 84 percent people were negatively answered. The WAI value is 0.25. The overall assessment of the effectiveness of environmental governance of the Paurashava was poor.

5.6.1.9 Nature of Manpower and Technological Support in Water Supply Activities

In this aspect, three parameters were selected to know the capability of manpower and technological support in water supply related activities. These are: ‘adequate manpower of authority for water supply’ ‘adequate skilled manpower of authority for water supply’ and ‘sufficient technological support for water supply’ etc.

Table: 5.27 Perceived views of Households on Manpower and Technological Support for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate manpower of authority for water supply	4	62	3	26	5	0.33	Poor
Adequate skilled manpower of authority for water supply	2	40	7	47	4	0.47	Moderate

Sufficient technological support for water supply	0	26	20	33	21	0.37	Poor
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Source: author’s fieldwork (2022), N= 396

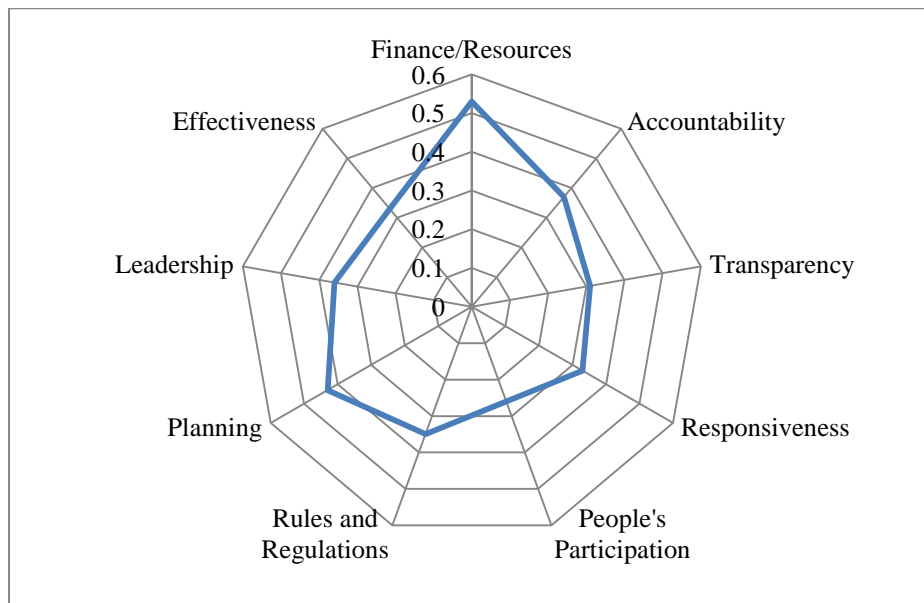
Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

From the household survey, it was evident that when asked to the respondents about the adequacy of manpower of the authority, 66 percent people were agreed and strongly agreed. They mentioned that authority has sufficient manpower to serve water supply. But when asked about whether the authority has skilled manpower or not 42 percent respondent were agreed and strongly agreed because they mentioned that authority has limitation of skilled manpower. The WAI value is 0.47. In terms of whether the authority has technological support or not, 54 percent people were disagreed and strongly disagreed. The WAI value is 0.37. The overall assessment was poor in condition.

5.6.1.10 The Overall Governance Condition on Water Supply Activities in Tangail Paurashava as Perceived by Households

The Figure 5.16 shows the overall governance condition on water supply activity in Tangail Paurashava which was perceived by households. Financial support or resources condition of the authority is better (WAI 0.53) than the other parameters according to households opinion. In case of accountability aspect, the WAI value is 0.37. The accountability status was poor. The transparency and responsiveness on water supply activity was also poor in condition mentioned by the respondents. The WAI values are 0.31 and 0.33 respectively (Table 5.21 and 5.22).

Figure: 5.16 The Governance Condition on Water Supply Activities by overall WAI



Source: author's fieldwork (2022)

Moreover, Peoples' participation on water supply activities of authority was also very poor. The WAI value is 0.26. But in applying rules and regulations and planning on water supply activities is little bit better than the peoples' participation. The WAI values are 0.35 and 0.43 successively.

In leadership aspect, the WAI value is 0.36. The leadership condition on water supply activity was also poor as per household's perceptions. The governance effectiveness quality on water supply activity was also poor. So the overall WAI results confirmed that the values for 'finance', 'accountability' and 'planning' are better than those for 'transparency', 'responsiveness' 'peoples' participation', 'leadership' and 'effectiveness of governance'.

5.6.2 The Governance Condition of Solid Waste Management Problems Perceived by Households

To know how authority governs the waste management problem in Tangail Paurashva, the perception of household's level was considered. From the environmental problem part in this chapter, it is seen that 85.10 percent (Table 5.4) respondents were mentioned the waste management problem as environmental problem in the city. Only 44.68 percent household's had waste collection system (Figure 5.1). However, the Planning indicator is not fitted for the waste management purpose. So, the indicator planning was not considered here to assess the governance condition of waste management activity in the study area.

5.6.2.1 Nature of Finance/Resource for Solid Waste Management Activities

Three parameters were selected; 'authority has adequate fund for waste collection and manage' 'authority has adequate fund for establishment of necessary dustbins' and 'adequate fund for buying waste dumping site' to know the households perception about whether the financial support of authority for waste management is adequate or not.

The Table 5.28 shows that 62 percent and 58 percent people were agreed about the adequacy of fund for waste collection and manage to the authority and adequacy of fund for establishment of necessary dustbins respectively. The WAI value for both is 0.62 and 0.59 successively.

Table: 5.28 Perceived views of Households on Financial Support for Solid Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Authority has adequate fund for waste collection and manage	8	62	3	25	2	0.62	Good
Authority has adequate fund for establishment of necessary dustbins	7	58	4	27	4	0.59	Moderate
Adequate fund for buying waste dumping site	5	43	5	45	2	0.51	Moderate
	Average					0.57	Moderate

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

Moreover the other parameter when people were asked about does authority has adequate fund for buying waste dumping site?, 43 percent respondents were agreed. The WAI value is 0.51. The overall assessment of the respondents in adequacy of fund for wastes management related activity was moderate.

5.6.2.2 The State of Accountability of the Authority on Solid Waste Management Activities

Four parameters were selected for assess accountability of authority in waste management activity such as does Paurashava utilize their income in waste management purpose, utilize government fund and other funds for this purpose and does authority invite local people on waste management related meeting.

The Table 5.29 revealed that 59 percent people were disagreed with the statement of Proper utilization of income in Paurashava for waste management purpose. The WAI

value is 0.37. In addition, in case of the statements like ‘proper utilization of government fund in Paurashava for waste management purpose’ ‘proper utilization of other fund of various projects and programmes of Paurashava for waste management purpose’, 48 percent and 55 percent respondents were disagreed and the WAI values are 0.41 and 0.40. The overall assessment of these statements was moderated and poor in condition.

Table: 5.29 Perceived views of Households on Accountability for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Proper utilization of income in Paurashava for waste management purpose	2	25	3	59	11	0.37	Poor
Proper utilization of government fund in Paurashava for waste management purpose	3	30	7	48	12	0.41	Moderate
Proper utilization of other fund of various projects and programmes of Paurashava for waste management purpose	3	28	6	55	8	0.40	Poor
Invite local people on waste management related meeting	6	33	5	40	16	0.42	Moderate
	Average					0.40	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N): 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

Moreover when asked about the question does authority invite local people in waste management related meeting? 33 percent people were agreed and the WAI value is 0.42. The overall assessment of the statement was moderate.

5.6.2.3 Nature of Transparency of the Authority on Solid Waste Management Activities

To assess transparency of authority in solid wastes management, four parameters were considered such as ‘available information of people's waste management related right and choice are remain in website’ ‘share expenditure of waste management related activity with mass people’ detail information of waste management related activity available in website and ‘invite local people to implement any waste management related works’.

Table: 5.30 Perceived views of Households on Transparency for Solid Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Available information of people's waste management related right and choice are remain in website	0	0	9	72	19	0.22	Poor
Share information of expenditure of waste management related activity with mass people	3	9	13	65	10	0.32	Poor
Detail information of waste management related activity available in website	0	0	10	78	12	0.24	Poor
Invite local people to implement any waste management related works	6	32	4	49	9	0.44	Moderate
	Average					0.30	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

From the Table 5.30 it is observed that 72 percent respondents were disagreed about the statement of 'available information of people's waste management related right and choice are remain in website'. The WAI value is 0.22. The overall assessment of the condition was poor.

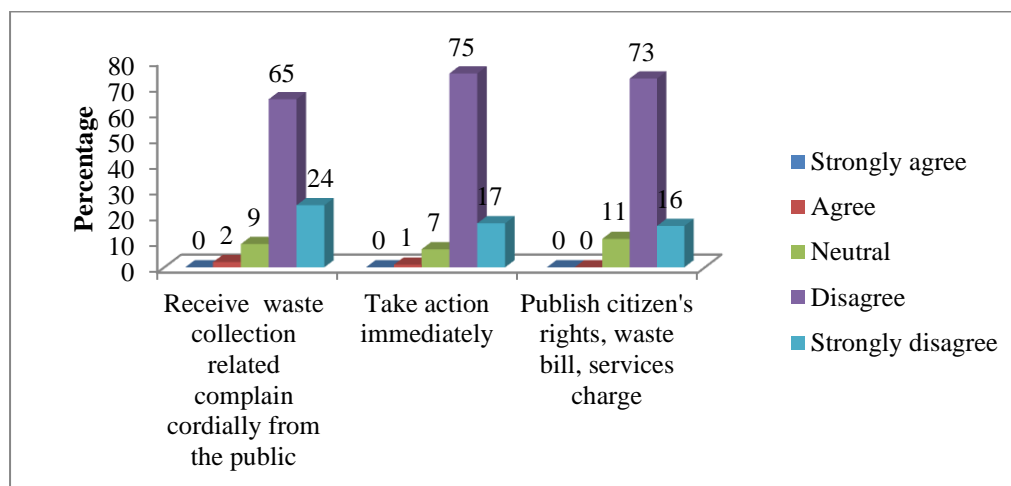
In case of other statement like whether Paurashava share expenditure of waste management related activity with mass people or not, 65 percent people were disagreed and in aspect of the statement 'detail information of waste management related activity available in website, none of the respondents said 'agree' where as 78 percent people were 'disagreed'. The WAI value is 0.24. The overall assessment was poor.

However, 49 percent people were agreed with that Paurashava invite local people in waste management related activities. The WAI vale is 0.44 and the overall assessment of this statement is Moderate. The overall assessment of transparency in waste management of authority was poor in condition.

5.6.2.4 The Condition of Responsiveness of the Authority on Solid Waste Management Activities

To assess the responsiveness of the authority about solid waste management activity, three parameters were considered such as does authority receive waste collection related complain cordially from the public, does authority take action cordially and are citizen's rights, waste bill, services charge of waste collection publish? In case of the statement authority receives waste collection related complain cordially from the public, 65 percent people were disagreed; only 2 percent people were agreed. The WAI value is 0.22 and the overall assessment on this statement was poor.

Figure: 5.17 Perceived views of Households on Responsiveness for Waste Management in Tangail Paurashava



Source: author’s fieldwork (2022)

In case of the question about whether authority take action immediately when someone complain about the waste management related activity, 75 percent people were ‘disagreed’; only one percent people were agreed. The overall assessment was poor and in the statement of ‘publish citizens rights, waste bill, services charge of waste collection’ 73 percent people were ‘disagreed’. The WAI for these two statements are 0.23 and 0.23. The overall condition of responsiveness of authority in waste management was poor (Table 5.31).

Table: 5.31 Perceived views of Households on Responsiveness for Waste Management by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Receive waste collection related complain cordially from the public	0.22	Poor
Take action immediately	0.23	Poor
Publish citizen's rights, waste bill, services charge of waste collection	0.23	Poor
Average	0.22	Poor

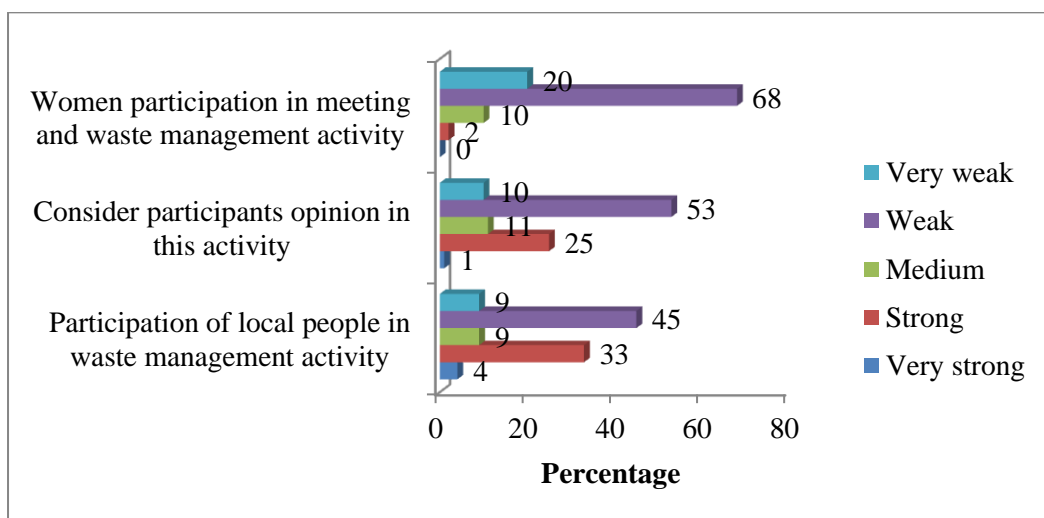
Source: author’s fieldwork (2022), N= 177 (who was in waste collection coverage)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

5.6.2.5 Nature of Peoples' Participation (Respondents) on Solid Waste Management Activities

Three parameters were chosen to assess the peoples' participation in solid waste management in Tangail Paurashava. In case of first parameters, 45 percent people said 'weak' in participation of local people in waste management activity, where as 33 percent people said positively as 'strong' participation (Figure 5.18). The WAI value is 0.44 and overall assessment was moderate.

Figure: 5.18 Perceived views of Households on Peoples' Participation for Waste Management in Tangail Paurashava



Source: author's fieldwork (2022)

In terms of does authority consider participants opinion in this activity, 53 percent people said negatively as 'weak' and overall assessment in the statement was 'poor' and in aspect of women participation in meeting of waste management related activity, 68 percent people answered negatively. The WAI value for this statement is 0.23 and overall assessment of participation of local people and women in waste management related activity was 'poor' (Table 5.32).

Table: 5.32 Household’s Perception on Peoples’ Participation for Waste Management by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Participation of local people in waste management activity	0.44	Medium
Consider participants opinion in this activity	0.38	Weak
Women participation in meeting and management activity	0.23	Weak
Average	0.35	Weak

Source: author’s fieldwork (2022) , N=396

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA; overall assessment

5.6.2.6 Rules and Regulation applied on Solid Waste Management Activities

To assess the rules and regulation in solid waste management, four parameters were considered. These are ‘waste management activity is carried out according to municipality rules’ ‘take action against those who have not paid waste bill on time’ ‘authority monitor first to last waste management activity’ and ‘authority assess household’s satisfaction in this activity’. More than half (52 percent) of the respondents were ‘agreed’ with the statement ‘waste management activity is carried out according to municipality rules’ and WAI value is 0.56 and overall assessment was ‘moderate’ where as 78 percent people were disagreed with the statement ‘take action against those who have not paid waste bill on time’.

Table: 5.33 Perceived views of Households on Rules and Regulations Responses for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA	
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)			
Waste management activity is carried out according to municipality rules	5	52	12	26	5	0.56	Moderate	
Take action against those who have not paid waste bill on time	0	0	10	78	12	0.24	Poor	
Authority monitor first to last waste management activity	0	31	12	51	6	0.41	Moderate	
Authority assess household's satisfaction in this activity	0	0	3	75	22	0.20	Very Poor	
			Average				0.35	Poor

Source: author's fieldwork (2022), N= 177 (who was in waste collection coverage)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

A good number of people (57 percent) people were agreed and strongly agreed with the statement 'authority monitor first to last waste management activity' but in case of authorities assessment of household's satisfaction in this activity, 97 percent people were disagreed and strongly disagreed. The WAI value of these two statements is 0.41 and 0.20. The overall assessment of the Authority's assessment of household's satisfaction in this activity is very poor. The overall assessment of the rules and regulations response in waste management purpose was 'poor' in condition.

5.6.2.7 Leadership Status for Solid Waste Management Activity

Two parameters were considered to examine the nature of leadership for waste management in this Paurashava. In this purpose, two statements like are public

representatives committed, honest and dedicated to manage waste in own Wards and overall Paurashava? and CBOs NGOs are dedicated to manage waste in this Paurashava?

Table: 5.34 Perceived views of Households on Leadership Responses for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Committed, honest and dedicated public representatives to manage waste in own Wards and overall Paurashva	0	5	6	72	17	0.24	Poor
CBOs NGOs are dedicated to manage waste in this Paurashava	2	15	6	64	13	0.32	Poor
Average WAI						0.28	Poor

Source: author’s fieldwork (2022), N= 396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

The Table 5.34 shows that people were asked about commitment, honesty and dedication of the public representatives and CBOs NGOs to manage waste in own Wards and overall Paurashva, 72 percent people and 64 percent people were ‘disagreed’ respectively. The WAI values are 0.24 and 0.32 accordingly. The overall assessment of the leadership status in waste management activity was ‘poor’.

5.6.2.8 Nature of Effectiveness on Solid Waste Management Activities

A good number of parameters were considered to examine the effectiveness of waste management activities in this Paurashava. The Table 5.35 shows that 60 percent people were ‘disagreed’ with the waste management related services and overall satisfaction condition is poor. In case of availability of fund for the waste management, 62 percent people were agreed.

Table: 5.35 Perceived views of Households on Effectiveness for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	3	37	4	56	0	0.46	Poor
Citizens are satisfied with the waste management by the Paurashava	0	25	5	60	10	0.36	Poor
Adequate fund for waste management	8	62	3	25	2	0.62	Good
Proper utilization of government fund in waste management purpose	3	30	7	48	12	0.41	Moderate
Share information of expenditure of waste management activities with mass people	3	9	13	65	10	0.32	Poor
Invite local people to implement any waste management related works	6	32	4	49	9	0.44	Moderate
Detail information of waste management related activity available in website	0	0	10	78	12	0.24	Poor
Take action immediately when waste related problems occur	0	1	7	75	17	0.23	Poor
Participation of local people in waste management activity	4	33	9	45	9	0.44	Moderate
Women participation in meeting and management activity	0	2	10	68	20	0.23	Poor
Average						0.37	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of the statement does authority share expenditure of waste management activities with mass people, 65 percent people were disagreed but in people’s invitation to implement any waste management related works is moderate in condition. A good number of people said positively but the authorities did not take steps immediately waste

related problems occur. In this aspect 75 percent people were disagreed. The overall condition was poor.

However, participation of local people in waste management activity is moderate in condition and 45 percent people were agreed but women participation in meeting and management activity was weak. The WAI value is 0.23. The overall assessment of effectiveness status of waste management in Tangail Paurashava was ‘poor’ in condition.

5.6.2.9 Nature of Manpower and Technological Support in Solid Waste Management Activities

To know the manpower and technological sufficiency in the Paurashava, respondents were ask about this related questions. Respondents were asked has the authority sufficient manpower? 75 percent people answered ‘disagree’. The WAI value is 0.25 and also in the statement of adequate skilled manpower does paurashava has, third fourth of the people (75 percent) were ‘disagreed’.

Table: 5.36 Perceived views of Households on Manpower and Technological Support for Waste Management in Tangail Paurashava

Statement	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate manpower of authority for waste management	0	6	5	75	14	0.25	Poor
Adequate skilled manpower of authority for waste management	0	0	9	75	16	0.23	Poor
Sufficient technological support for waste management	0	0	9	68	23	0.21	Poor

Source: author’s fieldwork (2022), N= 396

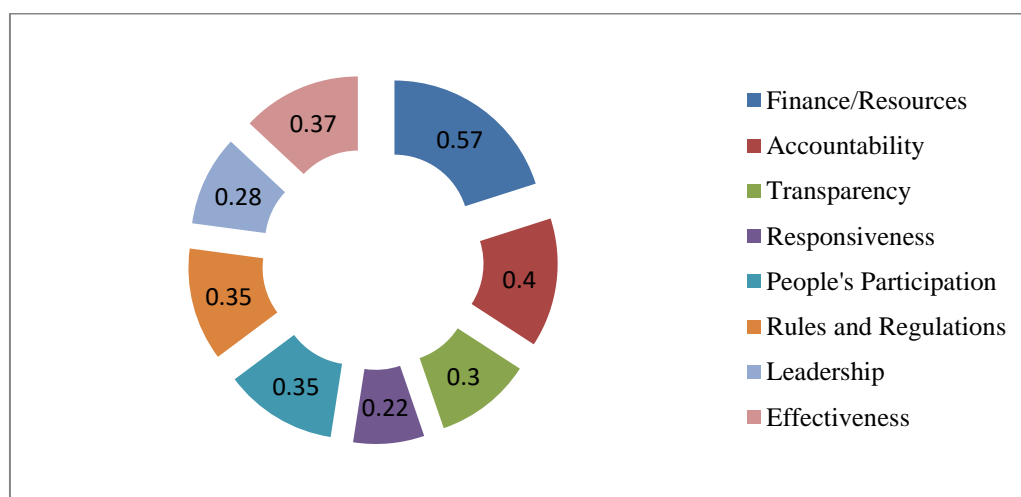
Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of the question about sufficient technological support authority has, 68 percent people answered negatively. The overall assessment was poor in condition.

5.6.2.10 The Overall Governance Condition on Waste Management Activities in Tangail Paurashava Perceived by Households

The figure 5.19 shows that the governance condition of waste management activity in Tangail Paurashava which was perceived by households. From the figure it is observed that, finance or resource condition is better. The assessment of financial condition according to respondent's view is 'moderate'. The WAI value is 0.57. Accountability was also better than other parameters. The WAI value is 0.4.

Figure: 5.19 The Governance Condition on Waste Management Activities by overall WAI



Source: author's field work, 2022

In case of transparency and responsiveness, the WAI values were poor; 0.3 and 0.22. The transparency and responsiveness condition on waste management in Tangail Paurashava was poor. Peoples' participation and rules and regulation condition on waste management purpose was also poor. The WAI values are 0.35 and 0.35 accordingly. The leadership

condition was very poor and effectiveness of governance of waste management was also poor. The condition of all of the parameters on waste management purpose in Tangail Paurashava was poor except the financial condition. Transparency, responsiveness, peoples’ participation and leadership condition were very poor than the others. The manpower and technological support was also poor (Table 5.36)

5.6.3 The Governance Condition of Drainage and Water Logging Management in Tangail Paurashava Perceived by Households

The perception of household levels was considered to assess the governance condition of the authority on drainage and water logging management. Major portion of the respondents (80.80 percent) mentioned the waste management problem as a environmental problem (Table 5.1).

5.6.3.1 Nature of Finance/Resource for Drainage Management Activities

To understand the nature of finance of the authority to manage drainage, two sub indicators were considered such as authority has ‘adequate fund for drain cleaning and maintenance, and adequate fund for making drains.

Table: 5.37 Perceived views of Household’s on Financial Support for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate fund for drain cleaning and maintenance	7	56	7	24	6	0.58	Moderate
Adequate fund for making drains	4	45	6	35	10	0.24	Poor
	Average					0.41	Moderate

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N): 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

The Table 5.37 shows that 56 percent respondents were ‘agreed’ about the adequacy of fund of authority for drain cleaning and maintenance. The WAI value is 0.58 and overall assessment of this statement is Moderate. In case of the statement of adequacy of fund for making drain, 35 percent people were ‘disagreed’ and 10 percent people were ‘strongly disagreed’. The WAI value is 0.24 and overall assessment of this statement is ‘poor’. The overall assessment of household’s in the finance and resource support of the authority in drain making, maintenance was ‘moderate’.

5.6.3.2 Nature of Accountability of the Authority on Drainage Management Activities

Four sub-indicators were selected to examine the accountability status of the authority about drainage management activity. The selected statements are; ‘proper utilization of income of Paurashava for drain maintenance and making purpose’, ‘proper utilization of government fund in Paurashava for drain maintenance and making purpose’, ‘proper utilization of other fund of various projects and programmes of Paurashava for this purpose’ and ‘invite local people on drain maintenance and making related meeting’.

Table: 5.38 Perceived views of Households on Accountability for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Proper utilization of income of Paurashava for drain maintenance and making purpose	0	33	4	49	14	0.39	Poor
Proper utilization of government fund in Paurashava for drain maintenance and making purpose	0	27	6	58	9	0.37	Poor

Proper utilization of other fund of various projects and programmes of Paurashava for this purpose	0	32	9	54	5	0.41	Moderate
Invite local people on drain maintenance and making related meeting	2	38	6	48	6	0.45	Moderate
Average						0.40	Poor

Source: author's fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

In case of first statement does authority utilize income properly for drain maintenance and making purpose, 49 percent people were 'disagreed'. The WAI value is 0.39 and the overall condition was poor. When people were asked about the does authority utilize government fund properly for drain maintenance and making purpose, 58 percent respondents were 'disagreed' and about the question of does authority properly use other fund of various projects and programmes of Paurashava for this purpose, 54 percent people were 'disagreed'. The WAI values of two statements are 0.37 and 0.41 accordingly. The overall condition of those statements was 'poor' and 'moderate' respectively.

Moreover, whether authority invites local people on drain maintenance and making related meeting or not, 48 percent people were 'disagreed' and the WAI value is 0.45 and the condition is Moderate. The overall condition of accountability of the authority on Drainage Management Activities was 'Poor'.

5.6.3.3 Nature of Transparency of the Authority on Drainage Management Activities

To measure the transparency level of the authority on drainage management activity, four statements were considered. These are 'available information of people's drainage related

right and choice are remain in website’; ‘share expenditure of drain management and making related activity with mass people’; ‘detail information of drain management and making related activity available in website’ and ‘invite local people to implement any drain construction related works’ etc (Table 5.39).

Table: 5.39 Perceived views of Households on Transparency for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Available information of people's drainage related right and choice are remain in website	0	0	22	68	10	0.27	Poor
Share information of expenditure of drain management and making related activity with mass people	0	43	12	34	11	0.46	Moderate
Detail information of drain management and making related activity available in website	0	0	19	64	17	0.25	Poor
Invite local people to implement any drain construction related works	0	15	10	64	11	0.32	Poor
Set up signboard with detail information of drain construction projects of those projects area	0	6	16	72	6	0.30	Poor
Average						0.32	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

The Table 5.39 shows that when peoples were asked about the information of people's drainage related right and choice are remain in website, 68 percent people were 'disagreed' the WAI value is 0.27 and the condition is poor. None of respondents were agreed on this statement. In case of the statement, authority share expenditure of drain management and making related activity with mass people, 43 percent respondents were 'agreed'. The WAI value is 0.46 and the overall condition of this statement was moderate.

Furthermore, in case of 'detail information of drain management and making related activity available in website' and 'invite local people to implement any drain construction related works'; 64 percent and 64 percent were disagreed successively. But in case of detail information of drain management and making related activity available in website', none of respondents were 'agreed'. The WAI value of these two statements is 0.25 and 0.32 accordingly. The overall assessment of the transparency of the authority for drainage management activity was poor in condition.

5.6.3.4 Nature of Responsiveness of the Authority on Drainage and Water Logging Management Activities

To know the authority's response on drainage and water logging management activity, two sub-indicators were selected. When asked to the people whether the authority receive drain blockage related complain cordially from the public or not, similar portion of people were 'agreed' (43 percent) and 'disagreed' (43 percent); the WAI value is 0.21 and the condition was poor (Table 5.40).

Table: 5.40 Perceived views of Households on Responsiveness for Drainage and Water Logging Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive drain blockage related complain cordially from the public	0	43	8	43	6	0.21	Poor
Take action immediately when water logged	0	20	9	67	4	0.36	Poor
	Average					0.28	Poor

Source: author’s fieldwork (2022), N= 177 (who was in waste collection coverage)

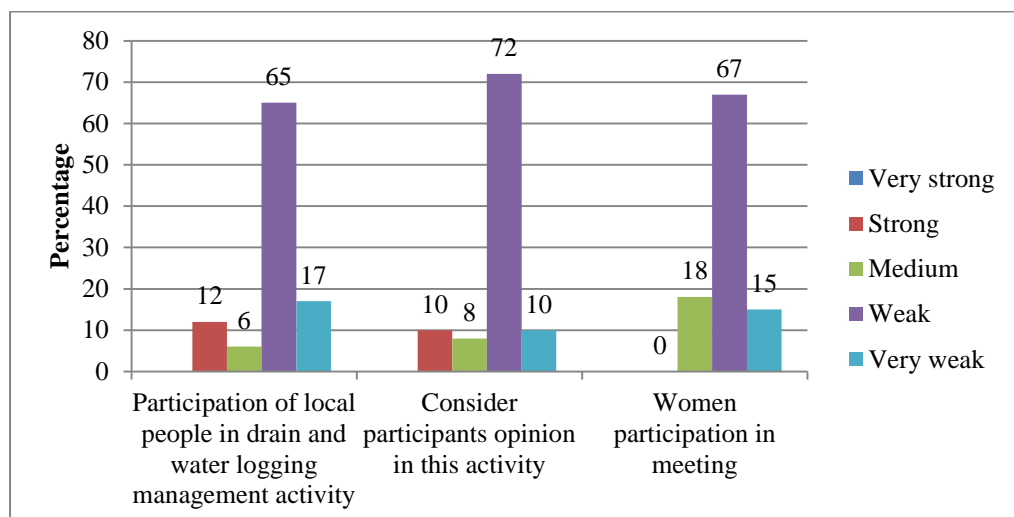
Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of authority take action or did not take action immediately when water logging, 67 percent people occurs were ‘disagreed’ and the WAI value is 0.36. The overall assessment of responsiveness for Drainage and Water Logging Management in Tangail Paurashava was poor.

5.6.3.5 Nature of Peoples’ Participation (Respondents) on Drainage and Water Logging Management Activities

Three sub-indicators were considered to assess the peoples’ participation of drainage and water logging management activities. The selected parameters are: ‘participation of local people in Drain management, making and water logging management activity’; ‘consider participants opinion in this activity’ and ‘women participation in meeting’.

Figure: 5.20 Perceived views of Households on Peoples’ Participation on Drainage Management in Tangail Paurashava



Source: author’s fieldwork (2022)

Participation of local people (citizen) in Drain management, making and water logging management activity was weak; 65 percent people were answered negatively as ‘weak’ and the WAI value is 0.28. When people were asked about does authority consider participants opinion in this activity? 72 percent people said negatively as ‘weak’. The WAI value is 0.29 (Table 5.41).

Table: 5.41 Household’s Perception on Peoples’ Participation for Drainage Management by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Participation of local people in Drain management, making and water logging management activity	0.28	Weak
Consider participants opinion in this activity	0.29	Weak
Women participation in meeting	0.25	Weak
Average	0.27	Weak

Source: author’s fieldwork (2022) , N=396

Note: Very strong (VS): 0.81-1; strong (S): 0.61-0.8, medium (M): 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, AO; overall assessment

The last parameter when people asked as women’s’ participation are ensured in meeting, 67 person people answered negatively as ‘weak’ and the WAI value is 0.25. The overall assessment of the participation of local people and women’s was ‘weak’

5.6.3.6 Rules and Regulation applied on Drainage Management Activities

Three statements were selected to know the rules and regulation responses level on drainage management related activities such as does drain management and making activity is carried out according to municipality rules? Does authority monitor first to last drain management and making activity and does authority assess the household’s satisfaction in this activity? (Table 5.42).

Table: 5.42 Perceived views of Households on Rules and Regulations Responses on Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Drain management and making activity is carried out according to municipality rules	6	46	12	35	1	0.55	Moderate
Authority monitor first to last drain management and making activity	5	40	11	40	4	0.50	Moderate
Assessment of households satisfaction in this activity	0	0	23	67	10	0.28	Poor
Average						0.44	Moderate

Source: author’s fieldwork (2022), N= 177 (who was in waste collection coverage)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of the question does drain management and making activity is carried out according to municipality rules? 46 percent people were ‘agreed’ and 35 percent people were ‘disagreed’. The WAI value is 0.55. The condition of this statement was ‘moderate’.

In case of the question does authority monitor first to last drain management and making activity? Similar portion of respondents were ‘agreed’ (40 percent) and ‘disagreed’ (40 percent). The WAI value is 0.50.

In addition, when asked question does authority assess the household’s satisfaction in this activity? 67 percent respondents answered negatively as ‘disagreed’. The WAI value is 0.28. The overall assessment of rules and regulations responses on drainage management activity was moderate.

5.6.3.7 Leadership and Planning Status for Drainage Management Activity

In leadership aspect people were asked about the public representatives are Committed, honest and dedicated to manage drains in own Wards and overall Paurashva or not, 64 percent people were ‘disagreed’; only 15 percent people were ‘agreed’. The WAI value is 0.34 (Table 5.43).

Table: 5.43 Perceived views of Households on Leadership and Planning Responses for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Committed, honest and dedicated public representatives to manage drains in own Wards and overall Paurashava	0	15	15	64	6	0.34	Poor
Maintain planning and guideline to make drain in Paurashava	6	35	4	52	3	0.47	Moderate

Source: author’s fieldwork (2022), N= 396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

In the planning aspect people were asked do you know authority maintain planning and guideline to make drain in Paurashava? 52 percent answered negatively or disagreed. The WAI value is 0.47. The overall condition is ‘moderate’. The overall assessment of the leadership quality to drainage management in this Paurashava was ‘poor’ and maintenance of planning aspect, the condition was ‘moderate’ perceived by the households.

5.6.3.8 Nature of Effectiveness of Authority’s Governance on Drainage and Water Logging Management Activities

To assess the effectiveness of authority’s governance on drainage and water logging management activity, ten sub-indicators were considered from all of the parameters of before discussed. To know the citizen’s satisfaction of drain management done by the Paurashava, 46 percent people were ‘disagreed’. The WAI value is 0.37 and overall assessment of that condition was ‘poor’. People said that paurashava has adequate fund for maintenance. For the aspect, 56 percent people were ‘agreed’ that authority’s has adequate fund for drain cleaning and management (Table 5.44).

Table: 5.44 Perceived views of Households on Effectiveness for Drainage and Water Logging Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	3	37	4	56	0	0.46	Poor
Citizens are satisfied with the drain management by the Paurashava	0	31	6	46	17	0.37	Poor
Adequate fund for drain cleaning and management	7	56	7	24	6	0.58	Moderate

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Proper utilization of government fund in drain management purpose	0	27	6	58	9	0.37	Poor
Share information of expenditure of drain management activities with mass people	0	43	12	34	11	0.46	Moderate
Invite local people to construct drains and management related works	0	15	10	64	11	0.32	Poor
Detail information of drain construction related activity available in website	0	0	19	64	17	0.25	Poor
Take action immediately when water logged	0	20	9	67	4	0.36	Poor
Participation of local people in Drain management, making and water logging management activity	0	12	6	65	17	0.28	Poor
Women participation in meeting	0	0	18	67	15	0.25	Poor
Average						0.37	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of proper utilization of government fund in drain management purpose, 58 percent people were ‘disagreed’. The WAI value is 0.37. In case of authority share expenditure of drain management activities with mass people, 43 percent peoples were ‘agreed’. The WAI value is 0.46 and the overall condition was ‘moderate’ and in the statement of authority invite or not local people to construct drains and management related works, 64 percent people were ‘disagreed’ the overall assessment in involvement of local people was poor.

Furthermore, 64 percent respondents were disagreed of the statement ‘detail information of drain construction related activity available in website’ and the overall condition was poor. Authority’s response was poor in taking action in time of water logging. Peoples’ participation and women participation in drainage management activity was also ‘poor’. The WAI value of these two issues is 0.28 and 0.25 respectively. The overall effectiveness of governance on drainage and water logging maintenance was ‘poor’.

5.6.3.9 Nature of Manpower and Technological Support in Drainage Management Activities

When asked to the people does authority has adequate manpower and skilled manpower to maintain drains, 43 percent people were ‘disagreed’ in the statement of availability of manpower and 68 percent respondents were ‘disagreed’ in the issue of sufficiency skilled manpower of authority. The WAI values are 0.25 and 0.25. The overall condition of the situation was ‘poor’.

Table: 5.45 Perceived views of Households on Manpower and Technological Support for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate manpower of authority for drain maintenance	6	42	4	43	5	0.25	Poor
Adequate skilled manpower of authority for drain maintenance	0	6	7	68	19	0.25	Poor
Sufficient technological support for drain maintenance	0	21	6	65	8	0.34	Poor

Source: author’s fieldwork (2022), N= 396

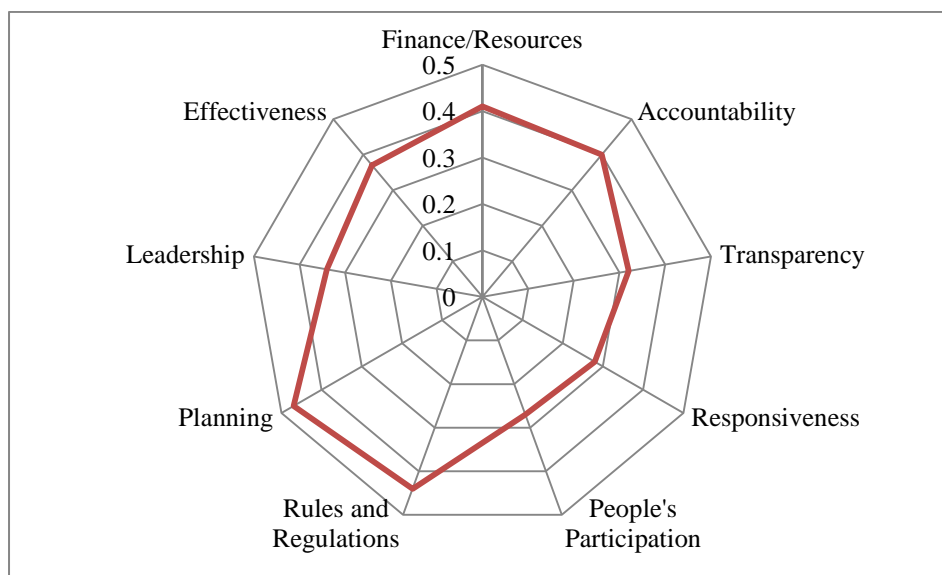
Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of whether the authority has sufficient technological support for drainage maintenance, 65 percent people were ‘disagreed’ and the WAI value is 0.34. The overall condition of available technological support for drainage management was ‘poor’.

5.6.3.10 The Overall Governance Condition on Drainage and Water Logging Management in Tangail Paurashava Perceived by Households

The governance condition of drainage and water logging management in Tangail Paurashava has shown in this figure. In this aspect, financial support is better than the other indicators. The WAI value is 0.41. The parameters accountability, rules and regulations and planning condition is also better than the others according to respondent’s opinion. The WAI values are 0.4, .44 and 0.47 accordingly.

Figure: 5.21 The Governance Condition on Drainage and Water Logging Management Activities by overall WAI



Source: author’s fieldwork (2022)

On the other hand, transparency, responsiveness and people’s participation are poor in condition to manage drainage and water logging perceived by households. The WAI

values are 0.32, 0.28 and 0.27 respectively. In case of leadership and effectiveness of governance are also poor. So, the overall WAI results proved that the obtained values for transparency, responsiveness, peoples' participation, leadership and effectiveness were poor than the other indicators on drainage and water logging management.

5.6.4 The Governance Condition of Road and Traffic Jam Management in Tangail Paurashava as Perceived by Households

To know the governance condition of road and traffic jam management in Tangail Paurashava, household's perception was considered for data collection. More than 60 percent respondent mentioned as road network problems and traffic jam in the city (Table 5.4).

5.6.4.1 Nature of Finance/Resource for Road Construction and Management Activities

Adequate fund is indispensable part of governance system of any city. Household's perception were considered to understand whether the fund of authority in Tangail Paurashava is adequate for road construction and maintenance activity or not. For this purpose, two sub-indicators were selected to know about this such as authority has adequate fund for road construction and maintenance and adequate fund for making foot paths (Table 5.46).

Table: 5.46 Perceived views of Households on Financial Support for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate fund for road construction and maintenance	7	46	4	38	5	0.53	Moderate
Adequate fund for making foot paths	6	42	5	35	12	0.48	Moderate
	Average					0.50	Moderate

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In the statement of authority has adequate fund for road construction and maintenance, 46 percent respondents were ‘agreed’. The WAI value is 0.53. The overall assessment was moderate and in case of the statement adequate fund for making foot paths, 42 percent respondents were ‘agreed’. The WAI value is 0.48. The overall assessment of households on the adequacy of financial support of the authority in road construction and foot path making was ‘moderate’.

5.6.4.2 Nature of Accountability of the Authority on Road Construction and Management Activities

People were asked four types of question to assess the accountability of authority in this Paurashava on road construction and management activity. These questions were ‘does Paurashava utilize their income for road construction purpose, does Paurashava utilize government fund for road construction purpose, does Paurashava utilize other fund for road construction purpose and does Paurashava invite local people on road construction related meeting?’

Table: 5.47 Perceived views of Households on Accountability for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Proper utilization of income in Paurashava for road construction purpose	1	35	6	48	10	0.42	Moderate
Proper utilization of government fund in Paurashava for road construction purpose	0	32	5	52	11	0.39	Poor
Proper utilization of other fund of various projects and programmes of Paurashava for this purpose	0	35	4	53	8	0.41	Moderate
Invite local people on road construction related meeting	2	54	4	36	4	0.56	Moderate
Average						0.44	Moderate

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When people were asked about the first question of utilization of authority’s income properly or not, 48 percent people answered negatively as ‘disagreed’. The WAI value is 0.42. In case of the utilization of government fund and other funds, 52 percent and 53 percent people answered negatively as ‘disagreed’ successively. The WAI values are 0.39 and 0.41. But in aspect of the question does authority invite local people in road construction related meeting, 54 percent people were ‘agreed’. The WAI vale is 0.56. The overall assessment of the accountability of authority on road construction activity was ‘moderate’ (Table 5.47).

5.6.4.3 Nature of Transparency of the Authority on Road Construction and Management Activities

Household’s head were asked three types of questions to know the nature of transparency of the authority on road construction and management activity. When asked people about whether the authority share expenditure of road construction related activity with mass people or not, 36 percent people were ‘agreed’ and 47 percent people were ‘disagreed’. The WAI value is 0.44.

Table: 5.48 Perceived views of Households on Transparency for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA	
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)			
Share expenditure of road construction related activity with mass people	2	36	7	47	8	0.44	Moderate	
Detail information of road construction related activity available in website	0	15	9	67	9	0.32	Poor	
Involve local people to road construction related works	2	22	9	64	3	0.39	Poor	
Set up signboard with detail information of road construction projects of those projects area	0	18	10	64	8	0.34	Poor	
			Average				0.37	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

In case of other sub-indicators like ‘detail information of road construction related activity available in website or not and does authority make involve local people to road

construction related works? 15 percent and 22 percent respondents were ‘agreed’ accordingly. The WAI values are 0.39 and 0.38. The overall assessment of transparency of the authority on road construction related activity was ‘poor’.

5.6.4.4 Nature of Responsiveness of the Authority on Road Construction and Management Activities

Two sub-indicators were considered to assess the responsiveness of the authority in Tangail Paurashava on road construction and management related activity. When respondents were asked about whether the authority receive road damage related complain cordially from the public or not, 60 percent respondents were ‘disagreed’. The WAI value is 0.32.

Table: 5.49 Perceived views of Households on Responsiveness for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive road damage related complain cordially from the public	0	16	10	60	14	0.32	Poor
Take action immediately when people face excessive traffic jam	0	0	17	68	15	0.25	Poor
Average						0.28	Poor

Source: author’s fieldwork (2022), N= 177 (who was in waste collection coverage)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

In case of second parameter, people were asked does authority take action immediately when people face excessive traffic jam, 68 percent people answered negatively as ‘disagreed’. The WAI value is 0.25. The overall assessment of responsiveness of the authority on road management related activity was ‘poor’ (Table 5.49).

5.6.4.5 Nature of Peoples’ Participation (Respondents) in Road Construction and Management Activities

To investigate the peoples’ participation in road construction and management activities, three types of questions were asked to the respondents. In case of first question, does authority ensure participation of local people in road construction and repair activity, 58 percent respondents answered negatively as ‘weak’. The WAI value is 0.35.

Table: 5.50 Perceived views of Households on Peoples’ Participation on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Participation of local people in road construction and repair activity	3	20	6	58	13	0.35	Poor
Consider participants opinion in this activity	0	22	8	62	8	0.35	Poor
Women participation in meeting	0	0	12	71	17	0.23	Poor
Average WAI						0.31	Poor

Source: author’s fieldwork (2022) , N=396

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, AO; overall assessment

In case of authority’s consideration of the participant’s opinion, 62 percent respondents mentioned ‘weak’. The WAI value is 0.35. The overall condition on this statement was weak. Moreover, women participation were poor, 71 percent respondents mentioned ‘weak’. The overall condition of the peoples’ participation on road management related activity was ‘poor’.

5.6.4.6 Rules and Regulation applied in Road Construction and Management Activities

The status of rules and regulation application in the Tangail Paurashava on road management related activity was assessed by the three parameters. In case of the statement ‘road repair, management and making activity is carried out according to municipality's rules’, 48 percent people were ‘agreed’. The WAI value is 0.57 the overall condition of this statement was ‘moderate’

Table: 5.51 Perceived views of Households on Rules and Regulations Responses on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Road repair, management and making activity is carried out according to municipality's rules	11	48	5	32	4	0.57	Moderate
Authority monitor first to last road management and making activity	10	44	6	36	4	0.55	Moderate
Assessment of households satisfaction in this activity	0	0	13	73	14	0.24	Poor
	Average					0.45	Moderate

Source: author’s fieldwork (2022), N= 396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of second and third statement, ‘authority monitor first to last road management and making activity’ and ‘assessment of households satisfaction in this activity’ 44 percent and 0 percent respondents were ‘agreed’ and 36 percent and 73 percent respondents were ‘disagreed’. The WAI values are 0.55 and 0.24. The overall assessment

of the rules and regulations applied in road and management related activity was ‘moderate’.

5.6.4.7 Leadership and Planning Status for Road Construction and Management Activity

To assess the leadership quality and the planning implementation in the Paurashava on road management related activity, two questions were considered to know the household’s perception. To know the leader’s quality, the question was public representatives are committed, honest and dedicated public to manage roads in own Wards and overall Paurashava, 68 percent respondents were disagreed. The WAI value is 0.34 (Table 5.52).

Table: 5.52 Perceived views of Households on Leadership and Planning Responses on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Committed, honest and dedicated public representatives to manage roads in own Wards and overall Paurashva	0	20	6	68	6	0.34	Poor
Maintain planning and guideline to construct road in Paurashava	0	28	10	56	6	0.39	Poor

Source: author’s fieldwork (2022), N= 396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In planning aspect, respondents were asked does authority maintain planning and guideline to construct roads in Paurashava, 56 percent respondents were ‘disagreed’. The WAI value is 0.39. The overall assessment in this statement was poor.

5.6.4.8 Nature of Effectiveness on Road Construction and Management Activities

To assess the effectiveness of the authority on road management activity, some indicators were selected from the other parameters of governance which were described above table. The Table 5.53 Shows that, 55 percent citizens were dissatisfied with the road management by the Paurashava, they said ‘disagreed’ and ‘strongly disagreed’. The WAI value is 0.44. The overall condition was poor.

Table: 5.53 Perceived views of Households on Effectiveness for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	3	37	4	56	0	0.46	Poor
Citizens are satisfied with the road management by the Paurashava	0	38	7	52	3	0.44	Poor
Adequate finance for road construction and management	7	46	4	38	5	0.53	Moderate
Proper utilization of government fund in road construction and management purpose	0	32	5	52	11	0.39	Poor
Share expenditure of road construction and management activities with mass people	2	36	7	47	8	0.44	Moderate
Involve local people to road construction related works	2	22	9	64	3	0.39	Poor
Detail information of road construction related activity available in website	0	15	9	67	9	0.32	Poor

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Take action immediately when people face excessive traffic jam	0	0	17	68	15	0.25	Poor
Participation of local people in road construction and repair activity	3	20	6	58	13	0.35	Poor
Women participation in meeting	0	0	12	71	17	0.23	Poor
Average						0.38	Poor

Source: author’s fieldwork (2022), N=396

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

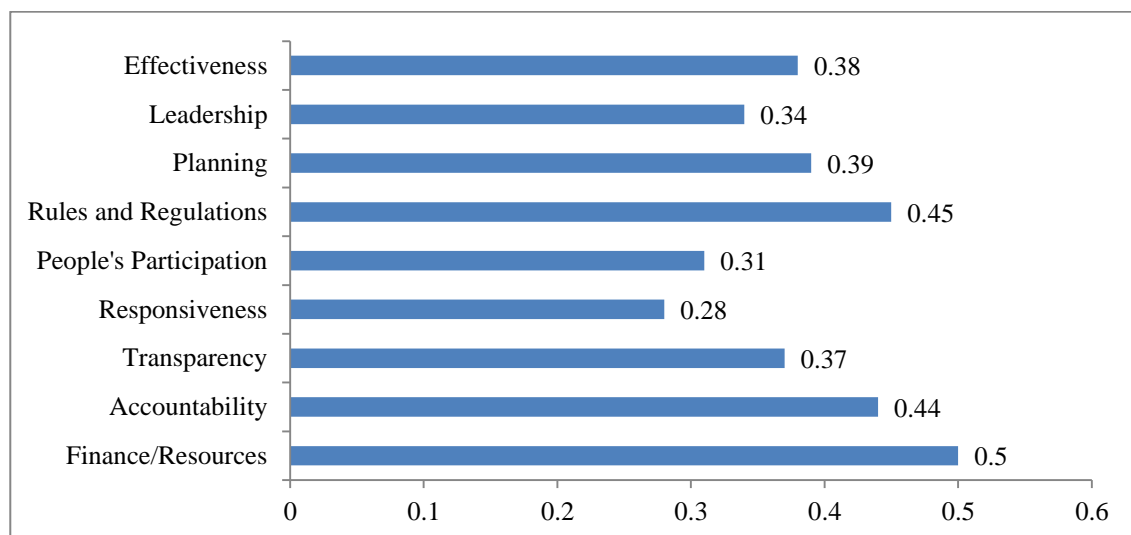
In case of adequacy of finance of the authority 46 percent respondents were disagreed’ and the overall condition was moderate. In addition, in case of ‘proper utilization of government fund in road construction and management purpose’ and authority share expenditure of road construction and management activities with mass people, 52 percent and 47 percent respondents were ‘disagreed’ successfully and overall condition of these statements were ‘poor’ and ‘moderate’.

In case of peoples participation, like involvement of local people in road management activity was poor in condition. Transparency was also poor as authority does not publish detail information of road construction and management activity in website. The overall assessment of this issue was poor. Responsiveness is also poor where authority did not take action immediately when people face excessive traffic jam and women participation is also poor in condition. The average WAI value of effectiveness is 0.38. The overall condition of effectiveness of governance on road management activity was ‘poor’ in condition.

5.6.4.9 The Overall Governance Condition on Road Construction and Traffic Management in Tangail Paurashava Perceived by Households

To know the governance condition of roads and traffic management in Tangail Paurashava, household’s perception was considered which is shown in this figure (Figure 5.22). In this aspect, financial support is better than the other indicators. The WAI value is 0.5. The condition of accountability on roads construction and traffic management is moderate. The WAI value is 0.44. Similar situation is seen in rules and regulation condition. The WAI value is 0.45.

Figure: 5.22 The Governance Condition on Road Construction and Traffic Management Activities by overall WAI



Source: author’s fieldwork, 2022

The poor condition is seen in transparency, responsiveness and in peoples’ participation parameters. The WAI values are 0.37, 0.28 and 0.31. In case of leadership and governance effectiveness, the WAI values are 0.34 and 0.38. The overall condition was poor. In sum up, the overall WAI results evident that the obtained values of transparency, responsiveness, peoples’ participation, leadership quality and governance effectiveness were poor than the other indicators of governance for road construction, repair and traffic management of Tangail Paurashava.

5.6.5 The Governance of others Problems in Tangail Paurashava

5.6.5.1 Governance Condition of Electricity Crisis

Half of the respondents (53.03 percent) mentioned that they faced electricity crisis; inadequate electricity supply and frequent cut off in the Paurashava. For this purpose, respondents were asked does take steps for better electricity supply? 78 percent respondents were 'disagreed' and the WAI value is 0.24. The overall governance condition of the electricity crisis is 'poor' (Table 5.54).

5.6.5.2 Governance Condition of Noise Pollution

Noise pollution in Tangail Paurashava is another problem which was perceived by 46.71 percent respondents. When asked to the respondents, does authority take any steps to mitigate noise in the city like by awareness build up campaigning or by applying rules and regulation on high volume of vehicles or make fine? 80 percent and 85 percent respondents were answered negatively as 'disagree'. The WAI values are 0.26 and 0.24. The average WAI value is 0.25. The overall condition of the governance on noise pollution was 'poor' (Table 5.54).

5.6.5.3 Governance Condition of Air and Water Pollution

In case of governance on air pollution, respondents could not give opinion. So, the respondent's perception was not considered on air pollution aspect.

But in case of water pollution of Lauhajong River, respondents were asked does authority take steps to free from dumping waste in the river? 79 percent respondents were 'disagreed' and 7 percent were 'agreed. They said that in 2016, the steps were taken by the Deputy Commissioner Tangail (District administration) to free from pollution of the

river but after 8 to 9 month later this activity became stopped due to transfer of the Deputy Commissioner. The overall governance condition of the river pollution was ‘poor’.

Table: 5.54 Perceived views of Households on Governance of other Problems in Tangail Paurashava

Indicators	Statements	Responses					WAI	OA
		Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Responsiveness	Take steps for better electricity supply	0	0	10	78	12	0.24	Poor
	Launch awareness building campaign to mitigate noise	0	4	7	80	9	0.26	Poor
Rules and Regulation	Applying rules and regulation like fine on vehicles loud horn	0	0	6	85	9	0.24	Poor
Responsiveness	Take steps to free from dumping waste in the river	0	7	9	79	5	0.29	Poor
	Made and maintenance play ground or park properly	0	25	5	62	8	0.36	Poor
	Take steps to reduce mosquito problem	0	5	7	76	12	0.26	Poor

Source: author’s fieldwork (2022), N= 396

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N): 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

5.6.5.4 Governance Condition of Making and Management of Open Spaces and Recreational Facilities

In case of sufficiency of open space and recreational facilities, one children park was made by the district administration. But there is lack of proper maintenance by the

authority. On this aspect 25 percent respondents said as 'agreed' and 62 percent respondents mentioned as 'disagreed'. They said the park is no maintained properly by the authority. The overall governance condition was 'poor' (Table 5.54).

5.6.5.5 Governance Condition of Mosquito and Security Problem

To know the governance condition of mosquito problem, respondents were asked does authority take steps to reduce mosquito problem? 76 percent respondents were 'disagreed'. The WAI value is 0.26. They said that authority did not clean drains and neighbourhood regularly, that's why mosquito was spreading excessively. The overall governance condition of the mosquito problem of the authority was 'poor' (Table 5.54).

The police administration is responsible for the security problem of the Paurashava. Paurashava authority is indirectly related with this management.

5.7 Conclusions

The findings of the household survey revealed that inhabitants of the Tangail Paurashava faced many environmental problems and which were not solved fully and these were prevailing from long time. From the study it was seen that many environmental problems like inadequate water supply, waste management problem, drainage management and water logging problem, narrow and broken road network, traffic jam, noise pollution, excessive dust in air, river pollution, limited open space, recreational space, playground, mosquito and security problems were faced by the city dwellers from many years ago to present. Some problems were interlinked to one another like drainage congestion created water logging and mosquito problems and odor pollution and all those problems are increasing gradually. Respondents identified many causes behind these problems such as lack of skill manpower, monitoring, improper responsibility, accountability, transparency

and corruption of Municipality. As population density was very high, there was mismatch between demand and supply of services facilities and there was lack of peoples' awareness of environmental problems and they were used to with their problems.

Moreover, respondents were asked according to environmental governance indicators and sub-indicators how authority governs these environmental problems in Tangail Paurashava. In case of governance of water supply facility, the condition was 'poor' as per respondent's opinion. The condition of almost all the indicators was 'poor', WAI values of transparency, responsiveness, peoples' participation, rules and regulations, leadership, effectiveness was 'low' except financial and accountability (moderate) condition on water supply management in the Paurashava. The governance of waste management in this city was also 'poor' where WAI values of almost all of the indicators were poor except finance (moderate).

Moreover, the governance of drainage and water logging management was also 'poor'. The indicators, transparency, responsiveness, peoples' participation, leadership, effectiveness were poor in condition. In case of roads and traffic jam management, the governance condition was poor where WAI values of maximum indicators were 'poor' except finance. The respondents said that authority had financial ability to mitigate problems but they had lack of commitment and responsibility to the people.

The governance of other problems such as electricity crisis, noise pollution, air and river pollution, open space maintenance, mosquito problems was also very poor. The Paurashava had lack of concern to govern these issues properly.

CHAPTER SIX

**ENVIRONMENTAL GOVERNANCE CONDITION
OF TANGAIL CITY PERCEIVED BY KIS**

CHAPTER SIX

Environmental Governance Condition of Tangail City as perceived by KIs

6.1 Introduction

Environmental governance is one of the most essential tools for environmental management. Quality of governance is being considered as the principal precondition for solving many problems and for the socio- economic development in the developing countries. Moreover, in spite of having plentiful resources, skilled manpower and institutions etc., the major objective of economic growth and social improvement could not be achieved in some countries to tackle some issues like poverty, social conflict, community development and proper combine between supply and demand of basic services for human wellbeing of society (Hasan et al, 2014).

In Bangladesh like other developing countries, the public sector is identified as inefficient, ineffective, cannot meet the demand of citizens, leadership crisis, lack of accountability and transparency, unfavorable condition to grow properly the private sectors, unstable political condition and so on (Hasan et al, 2014).

In this section environmental governance condition of Tangail Paurashava has described on the basis of environmental governance indicators (See Table 5.18, Chapter 5) according to Key Informant Interviewee's perceptions. The comparison between household's perception and KI's perception about environmental governance in Tangail Paurashava is included in other part of this chapter.

6.2 The Structure of Tangail Paurashava

Tangail Paurashava is the institution of urban local government system in Bangladesh. Paurashavas of Bangladesh can be categorized in to three types according to their collection and expenditure of tax and development of infrastructure. Those are given below-

Table: 6.1 Classification of the Paurashavas in Bangladesh

Categories of Paurashavas	Numbers	Characteristics (Currency: 1 USD = 68 BDT, 2010)
A class	83	Municipality that earns more than 6.0 million BDT per month through revenue/ tax
B class	65	Municipality that earns 2.5 to 6.0 million BDT per month through revenue/ tax
C class	156	Municipality that earns less than 2.5 million BDT per month through revenue/tax

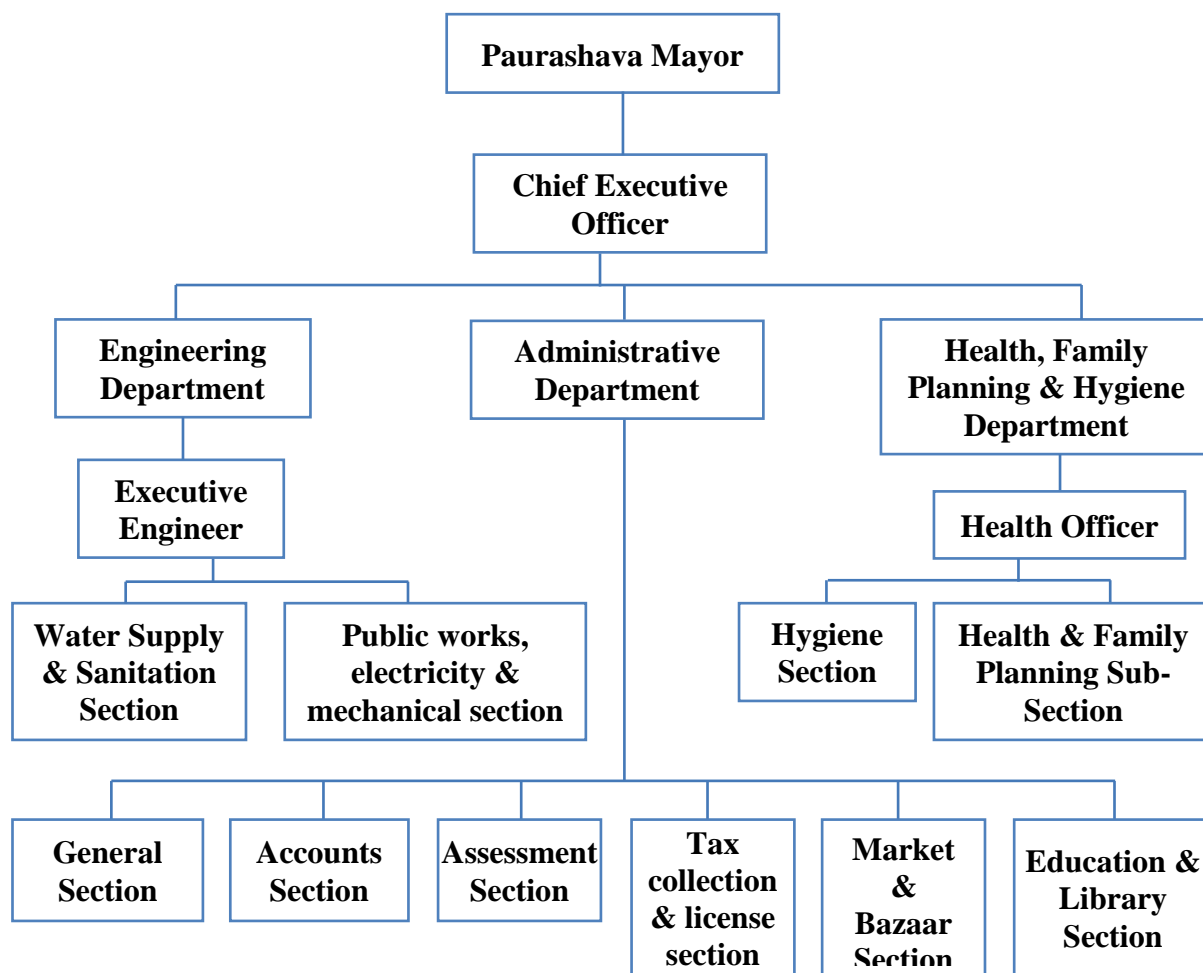
Source: Bangladesh Municipality Development Fund (BMDF), 2010 and Rahman, Dhar & Hossain, 2014

According to this classification, Tangail Paurashava is ‘A’ category Paurashava consists of:

- I. **Mayor**- One person
- II. **Councilor**- (General seat)- One person from each ward
- III. **Female Councilor**- (Reserved seat) One person for three wards

The mayor and councilors are elected through direct vote by the adult voters and the Mayor of the Paurashava is treated as a Councilor. The council of a Paurashava is shaped with the Mayor and Councilors and there is a government- approved organogram for each class of Paurashava (LGD, 2018). The organogram of Tangail Paurashava is given below-

Figure: 6.1 The Organogram of Tangail Paurashava



Source: Tangail Paurashava, 2022 and LGD, 2018

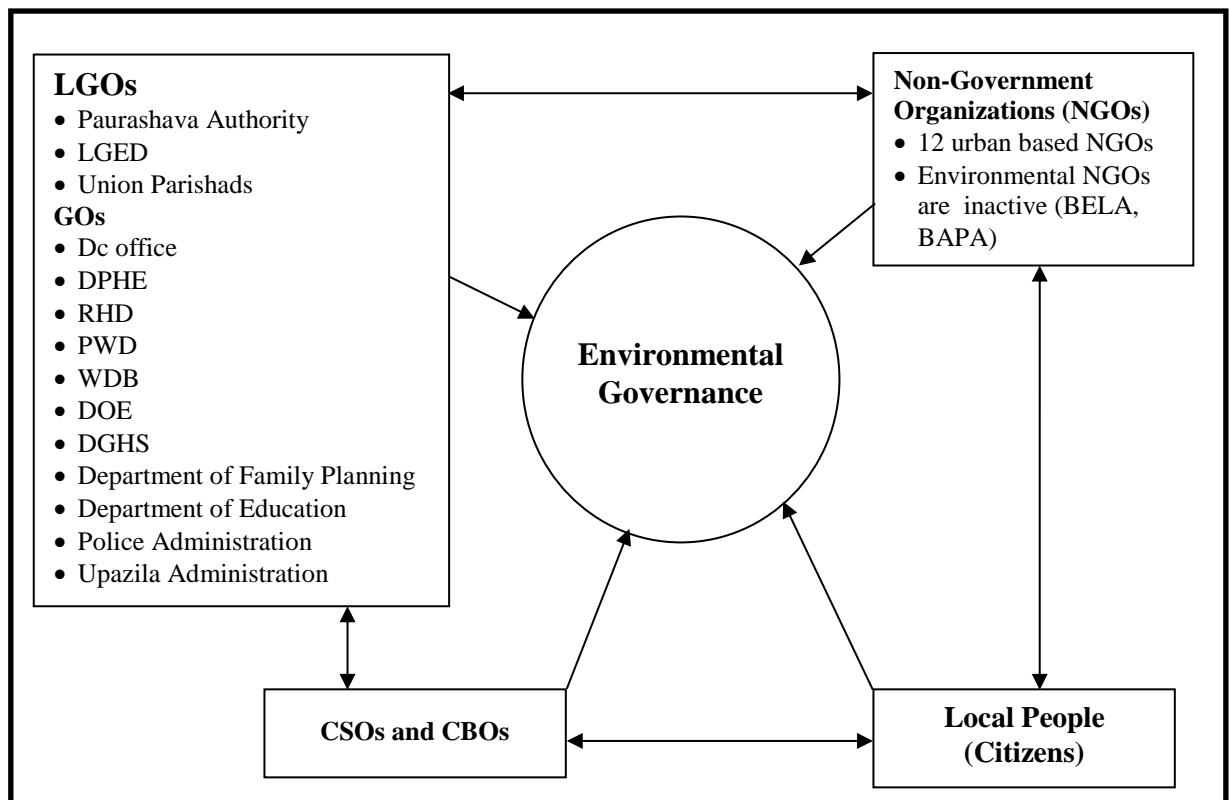
The Paurashava is involved in several types of activities: these are regulatory activities and major development activities which are controlled by the central government. Tangail Municipality also maintains overall responsibility for the development of Paurashava like collection of taxes, providing pipe water supply, drainage system and street lighting, public toilets arrangement, register of births, marriages and death, build up and repairs of roads, bridges and culverts, waste management, management of graveyard and cremation grounds, development of Hat Bazar, tree plantation programme, mosquitoes abolition, certificates giving; development of parks and gardens etc (Paurashava Office Tangail, 2019 and Siddique, 1994: 146–147).

6.3 The Organizations Involved in Environmental Governance of Tangail Paurashava

The Paurashava authority is the main institution for governing environmental problems in Tangail. Other organizations such as GOs, NGOs, CSOs, CBOs and local people are also responsible to govern environmental problems.

According to section 95 of Local Government (Paurashava) Act 2009, Bangladesh, a Paurashava can conduct with other government and private organizations, other service providers for implementing, maintaining and operating of services related activities and mitigating environmental problems, development related projects, programmes (Field Survey, 2022).

Figure: 6.2 The Organizations Involved in Environmental Governance of Tangail Paurashava



Source: author’s fieldwork, 2022

Therefore, Tangail Paurashava is directly and indirectly connected with some government organizations, non- governmental organizations and private organizations such as District Administration (DC office), Department of Health and Family Planning, Local Government Engineering Department (LGED), Department of Public Health and Engineering (DPHE), Department of Health and Department of Family Planning, Police Administration, District Administration, Roads and Highway Department (RHD), Public Works Department (PWD), Department of Environment (DOE), Water Development Board (WDB), Education Department, Upazila Administration and NGOs, CBOs and CSOs organizations to provide and maintaining different services facilities and mitigate environmental problems (Field Survey, 2022). The relation of Tangail Paurashava authority with other organizations in solving environmental problems is shown in the Table 6.2.

Table: 6.2 The Relation of Tangail Paurashava with other Organizations

Organizations	Scope of the relations with Paurashava
Local Government Engineering Department (LGED)	Involves with Tangail Paurashava in financing, planning, implementation, monitoring and evaluation of development projects and infrastructure of the Paurashava area. LGED also arranges training for capacity building of the Paurashava and provides technical assistance to the Paurashava in implementation of its own projects, also tender evaluation.
Department of Public Health and Engineering (DPHE)	DPHE participates in financing, planning, jointly implementation and assessment of water supply and sanitation projects together with Tangail Paurashava. It also provides technical assistance to the Paurashava in implementation of its own projects.
Roads and Highway Department (RHD), Public Works Department (PWD), Water Development Board (WDB), Department of Environment (DOE), Education Department	These government service providers are not directly related with the Tangail Paurashava. If any assistance needs, these service providers help or support the Paurashava.
Department of Health and Department of Family Planning	The health service activities like Extended Programme on Immunization (EPI) which is carried out by Paurashava, Department of Health and Family Planning coordinate by its local office.

District Administration	District administration is involved in overall coordination of Paurashava authority as well as whole district. The Mayor of the Tangail Parashava is a valuable member of the Law and Order Committee of DC office District Development Coordination Committee headed by Deputy Commissioner. District administration acts as an important actor in coordination of improvement activities and avoid overlapping of services activities of different government service providers like RHD, WDB, LGED, PWD, DPHE, DOE , DGHS and others.
Police Administration	There is a direct and important relationship Paurashava with Police Administration on public safety and management.
Upazila Administration	The Paurashava and Upazila administration jointly perform some public service activities like mobile court, giving Vulnerable Group Feeding (VGF), Test Relief (TR), Food for Work, Money for Work, old allowance, widow allowance, maternity allowance, distribution of warm cloths etc.

Source: Author's field works, 2022 and LGD, 2018

There are many government organizations, local government organizations, non-governmental organizations, community based organizations, civil society organizations which are involved in governing environmental problems of Tangail Paurashava. The Table 6.3 shows the responsible organizations which are involved in dealing particular environmental problems in the study area.

Table: 6.3 Responsible Organizations Involved in Governing Environmental Problems

Environmental Governance	Responsible Organizations
Water supply management	<ul style="list-style-type: none"> • Tangail Paurashava Authority (water supply and sanitation section directly involved) • DPHE (financing, planning, technical assistance, jointly implementation and evaluation of water supply and sanitation projects together with Paurashava authority)
Waste management	<ul style="list-style-type: none"> • Tangail Paurashava Authority (hygiene section directly involved) • CBOs (authority provide all support like carrying vans, dump trucks, some labors)
Drainage and water logging management	<ul style="list-style-type: none"> • Tangail Paurashava Authority (Public works section directly involved)

	<ul style="list-style-type: none"> • LGED (funded, planning, implemented jointly through LGED)
Road construction and maintenance	<ul style="list-style-type: none"> • Tangail Paurashava Authority (Public works section directly involved) • LGED (funded, planning, implemented jointly through LGED)
Traffic management	<ul style="list-style-type: none"> • Traffic police mainly (occasionally like in Eid, Puja Paura-authority give Support)
Electricity supply	<ul style="list-style-type: none"> • Mainly PDB, REB (electricity connection, wearing) • Tangail Paurashava Authority (Electricity and mechanical section directly involved in street lighting)
Pollution control (air, water, noise)	<ul style="list-style-type: none"> • DOE mainly • Tangail Paurashava Authority
Open space, park, recreational facilities maintenance	<ul style="list-style-type: none"> • Tangail Paurashava Authority mainly
Mosquito problem management	<ul style="list-style-type: none"> • Tangail Paurashava Authority mainly
Ensure security	<ul style="list-style-type: none"> • Police administration mainly • Tangail Paurashava Authority

Source: Field survey, 2022

Under the Local Government (Paurashava) Act (section 57), 2009, there are some committees such as council, standing committees or any other committees such as the Town Level Coordination Committee (TLCC) and the Ward Level Coordination Committee (WLCC) in Tangail Paurashava for participating specialist or any citizens. In TLCC committee, more than 50 members like Mayor, other Ward councilors and representatives of general people are included and Paurashava authority is responsible for organizing this meeting. This meeting is a great opportunity to share peoples' opinion and participate in discussion. Every three months interval this meeting is supposed to be held.

In the WLCC committee, 11 members such as Ward Councilor (as it's Chairman) and the women councilor of respective Wards are compulsorily included in every Ward of the Paurashava and peoples have the opportunity to participate on the meeting. (LGD, 2018 and Tangail Paurashava, 2022).

6.4 Bangladesh Environmental Protection Law, Policy and Paurashava Act

Environmental Protection Laws and Policies of Bangladesh are very recent one. Environmental laws of Bangladesh basically originated from Common Laws of British India spanning from 1757 to 1947 (Pervez, 2015:1).

The constitution of Bangladesh does not refer directly of any right to a sound environment as fundamental right. However, protection of any citizen has been ensured by incorporating article 31-32 by saying: “...action detrimental to the life, liberty, body, reputation or property unless these are taken in accordance with law, and no person shall be deprived of life or personal liberty save in accordance with law” (The Constitution of the People’s Republic of Bangladesh, 2011: Article 31-32. These two articles are named as ‘right to life’. The appellate Division of the Supreme Court of Bangladesh recognized the right to “ecological balance” linked to fundamental right.

There are nearly 200 statutes connected to environment among which the BECA (Bangladesh Environment Conservation Act, 1995) is a pioneering one. The act had reflection of Rio Summit principles regarding Polluter’s Pay and ‘People’s Participation’. The BECA, came into existence replacing Environmental Pollution Control Ordinance 1977. The act focused on better environmental management by incorporating Environmental Impact Assessment (EIA) and Clearance certificate prerequisite for setting up industry and housing. Moreover, BECA 1995 also stated that no industry shall be established and no project shall be undertaken anywhere without obtaining environmental clearance from the DG (Director-General) of DOE (Department of Environment), in the manner prescribed by the Rules” (BECA, 1995: Section 12). The DG of DOE was empowered to stop any building /foundation harmful for environment and penalize fine

and impose compensation (BECA, 1995: Section 4.3). Anyone polluting water or land can be required to clean it up at their own expense.

Law enacted in the parliament named 'Urban Water Body Conservation Act, 2000' was passed to protect many ponds. Filling up of urban water bodies is strongly prohibited without the permission of concerned authority. The illegal doers are required to restore the water bodies at their own cost (Mega City...Water Reservoir Conservation Act, 2000: Section 6). In 2000, Parliament also passed an Environment Court Act for ensuring special and expeditious resolution of lawsuits and prosecutions regarding environmental issues.

In 2009, the Local Government (Paurashava) Act, section 50 and 51 mentioned the responsibility and functions of the Paurashava like public health, water supply and drainage, food and beverage, livestock, town planning, building control, streets, public safety, trees, parks, gardens and forest development etc. In order to govern these responsibilities and development works effectively, there have some acts. According to section 112, any citizens of the country have equal right to access any information on the Paurashava. The Paurashava Act 2009 has some provisions (section 14, 57 and 115) regarding the citizens as well as women's participation in any TLCC and WLCC meeting, development activities and projects. Even in formation of budget in Paurashava, citizens opinion is needed through 'open budget meeting' (section 92 Of Paurashava Act, 2009). To ensure transparency and accountability, each Paurashava has to prepare and publish citizen charter, notice board, sign board about provided services according to section 53 of Paurashava Act 2009 (LGD, 2018)

In the Local Government (Paurashava and City Corporation) Act, 2009 empowered the local bodies to control public nuisance, disposal of waste, by providing public toilets and taking other actions related indirectly to environmental protection (LGCCA, 2009: Article 1).

Additionally, Government has made many rules and made a number of policies to use these statutes, including the National Environment Policy, 1992 (amended). For example, Government has set standards for emissions into air and water, categorized certain types of development as dangerous, less dangerous and least dangerous to the environment. Government has also set goals for solid waste management in the light of SDGs. It is strongly expected If they are truly followed, there will be no development without having the environmental impact assessment and clearance certificate.

6.5 The Governance Condition of Water Supply Management Activities in Tangail Paurashava as Perceived by Key Informants (KIs)

To know the governance condition of water supply management activities in Tangail Paurashava, Key Informant's perception was considered for data collection.

The Paurashava authority of Tangail (Water supply and sanitary section) and DPHE (Department of Public Health and Engineering) Tangail, are responsible to provide piped water supply according to Paurashava Act, section 50 to 61, Bangladesh 2009. Mainly Paurashava authority is directly responsible for supplying water. The arrangement of water supply line has to maintain Paurashava. But, when Paurashava needs big assistance such as establishment of overhead tank, water treatment plant, the Paurashava submits project proposal to the Government and then government sanctions that project through

the DPHE. After that, DPHE implements those projects successfully and after finishing that activity DPHE hands over to the Paurashava authority. Moreover, if any needs technical assistance of Paurashava, DPHE helps them. However, Paurashava authority has to maintain all water supply related activity by alone.

6.5.1 Nature of Financial Support for Water Supply Management Activities as Perceived by KIs

Financial support is indispensable part of the management system of the Paurashava. There are three main sources of municipal income; internal (municipal tax, other own sources and water bill), government (ADP, project grants, project assistance loan) and other sources (LGD, 2018).

Insufficient collection of taxes, fees, lease, tolls and also inadequate government funding accelerate poor management capability and inadequate service delivery in the Paurashava. Only 28-30 percent of total financial capacity covers from own revenue source of Paurashavas and City Corporations and 65-70% from government grants (Uddin, 2013). Moreover, Municipal authorities experience very limited fiscal autonomy and it is another obstacle to implement effective environmental governance (Sohini and Pooja, 2010, and Mittal et al., 2015).

Table: 6.4 Perceptions of KIs of Financial/ Resources Support for Water Supply Maintenance in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate fund for water supply connection	1	9	15	60	15	0.30	Poor
Adequate fund for establishment water Treatment Plant	0	1	6	70	23	0.21	Poor
	Average					0.25	Poor

Source: author’s fieldwork (2022)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

From the KII interview, it was observed that the financial support of the Tangail Paurashava for water supply connection was not adequate as 60 percent respondents were ‘disagreed’ about the adequacy of financial support for water supply. The WAI value of adequate fund for water supply connection support was 0.30.

In terms of the statement of ‘adequate finance for establishment water Treatment Plant’, 70 percent respondents perceived as ‘disagree’ (see Table 6.4). The WAI value for the adequate finance for establishment water treatment Plant is 0.21 and overall assessment of the situation was ‘Poor’.

Tax Inspector of Tangail Paurashava said that

“Financial condition is poor to build or maintenance infrastructural facilities like water supply where 85% of the total taxes were spent for giving salary of Municipality staffs and office establishment expenses. There was hardly small amount of money to maintain water supply related activity. Central government grant was very limited and project grants were irregular”.

From the Budget of the Paurashava it was seen that about 13.72% of total budget were spent to pay salary of water supply office staffs, maintenance of piped water supply facilities and others in year 2020-21. Only 3.54% of the total budget was spent in water supply and maintenance related activities (Municipal Budget Book, 2021-2022 see Appendix 4).

The major source of finance of Tangail Paurashava is tax collection. According to tax inspector of Tangail Paurashava and Assistant Engineer of water supply and sewerage section, Municipality,

“Tax was not collected as per expectation (70 percent collect from total) on the other side; tax was not collected properly due to poor economic condition of some city dwellers, political and personal relationship. Without getting any projects, we cannot facilitate a good portion of people under water supply coverage.

One prominent officer of NGO and leader of CBOs said that,

“Paurashava should collect proper amount of tax, fees, bills, according to rules without any compromising of people, authority should convince to the people for giving tax, bills, then they can provide services facilities to the citizens as per demand”

6.5.2 Nature of Accountability of the Authority on Water Supply Activities

Four sub-indicators were selected to assess the accountability of the authority on water supply activities in Tangail Paurashava. The parameters are: ‘proper utilization of income in Paurashava for water supply purpose’; ‘proper utilization of government fund in

Paurashava for water supply purpose’; ‘proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose’ and ‘invite stakeholders on water supply related meeting in initial period of the project’.

Table: 6.5 Perceived views of KIs on Accountability for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA	
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)			
Proper utilization of income in Paurashava for water supply purpose	15	30	2	45	8	0.50	Moderate	
Proper utilization of government fund in Paurashava for water supply purpose	12	32	2	46	8	0.49	Moderate	
Proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose	13	31	2	47	7	0.48	Moderate	
Invite stakeholders on water supply related meeting in initial period of the project	4	34	3	52	7	0.43	Moderate	
			Average				0.47	Moderate

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

The Table 6.5 shows that 45 percent respondents were ‘agreed’ and ‘disagreed’ on the behalf of the statement ‘proper utilization of income in Paurashava for water supply purpose’. The WAI value is 0.50. The overall condition of proper utilization of income for water supply was ‘moderate’.

In case of another statement, when asked to the respondents whether authority utilize government fund properly in Paurashava for water supply purpose or not, 44 percent respondents were 'agreed' and 'disagreed' and in case of the statement 'proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose', 44 percent respondents are also 'agreed' and 'disagreed'. The WAI values are 0.40 and 0.48. The overall condition in both cases was 'moderate'.

When interviewee asked about the authority invite stakeholders on water supply related meeting in initial period of the project, 52 percent respondents were 'disagreed'. The overall situation of this sub-indicator is also 'moderate' where the Local Government Act (Paurashava), 2009 section 14, 57 and 115 has some good provision in regarding citizen's participation. But it is seen that, this act cannot be complied properly by the Paurashava authority. The overall condition of accountability on water supply purpose was 'moderate'.

Assistant Engineer of water supply and sewerage section, Paurashava and Executive Engineer of DPHE explained about the proper utilization of fund of water supply related project, Assistant Engineer of Paurashava office said that

“Budget which is allocated for water supply purpose, uses properly though we have very low fund to spend for water supply. When we get any project funded by government or other donor, these funds are also used properly like the project fund of Municipal Governance and Services Project (MGSP) were used properly which was started at 2018 and completed in 2020. In 2018 the Paurashava had 3 overhead tanks, 8 deep tube wells, 173 hand tube wells, 21

pump houses and 83.01 km. pipe line but in 2021 it has increased by 3 overhead tanks, 10 deep tube wells, 243 hand tube wells, 21 pump houses and 93.01 km pipe line for supplying drinking through implementing the project and 25% household are covered by pipe water supply now”.

In addition when asked, does authority invite all stakeholders in water supply connection related meeting according to rules? He said that

“It does not happen regularly, sometimes meetings are irregular, we does not call meeting for water supply purpose, when big development activity like establishment of overhead tanks, water treatment plant become constructed then the information conveys through TLCC meeting.”

6.5.3 The State of Transparency of the Authority on Water Supply Activities

To assess the transparency of the authority about water supply activity in Tangail Paurashava, six sub-indicators were considered such as; does the information of people's water supply related right and choice are remain in website, does the authority share expenditure of water supply projects with mass people, does the detail information of water supply projects and development work available in website, does the authority invite various stakeholders before implementing water supply project, does the authority set up signboard with detail information of water supply projects of those projects area and does the authority publish information of water supply project are available in notice board.

Table: 6.6 Perceived views of KIs on Transparency for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Available information of people's water supply related right and choice are remain in website	0	0	6	80	14	0.22	Poor
Share information of expenditure of water supply projects with mass people	2	28	2	58	10	0.31	Poor
Detail information of water supply projects and development work available in website	0	4	5	78	13	0.25	Poor
Invite various stakeholders before implementing water supply project	8	33	3	50	6	0.45	Moderate
Set up signboard with detail information of water supply projects of those projects area	10	32	2	48	8	0.47	Moderate
Information of water supply project are available in notice board	2	25	2	62	9	0.38	Poor
Average						0.34	Poor

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When respondents were asked about the information of people's water supply related right and choice are available in website and detail information of water supply projects and development work available in website, 80 percent and 78 percent respondents were 'disagreed' successively. The WAI values are 0.22 and 0.25 accordingly. In case of the statement whether authority share expenditure of water supply projects with mass people or not, 58 percent respondents were 'disagreed'.

In case of the question does the authority invite various stakeholders before implementing water supply project, 50 percent respondents were ‘disagreed’ and 33 percent respondents were ‘agreed’. The WAI value is 0.45 and the overall condition in this aspect was moderate. When people asked the question, does the authority set up signboard with detail information of water supply projects of those projects area and are the information of water supply project available in notice board? 32 percent and 25 percent were ‘agreed’ respectively. The WAI values are 0.47 and 0.38 though it is mentioned in the Paurashava Act, 2009 (section 112) that any citizen has equal right to get access any information about the Paurashava.

The overall condition of transparency of Tangail Paurashava on water supply activity was ‘poor’ according to key Informants.

When asked question to the Assistant Engineer of water supply and sewerage section that whether does authority of water supply section share the information expenditure of water supply related activities? He said that,

“Sometimes we share if anyone asks personally, but cannot share in any meeting.”

The leader of CSOs, prominent personnel of NGO and a lawyer said that,

“Transparency is very poor in the Paurashava authority; there is no any update and detail data or information about the Paurashava activity, projects, programmes which are ongoing. Even, sometimes TLCC meeting holds without knowing stakeholders. They do not want to share information about development activities, projects related information, expenditure etc”

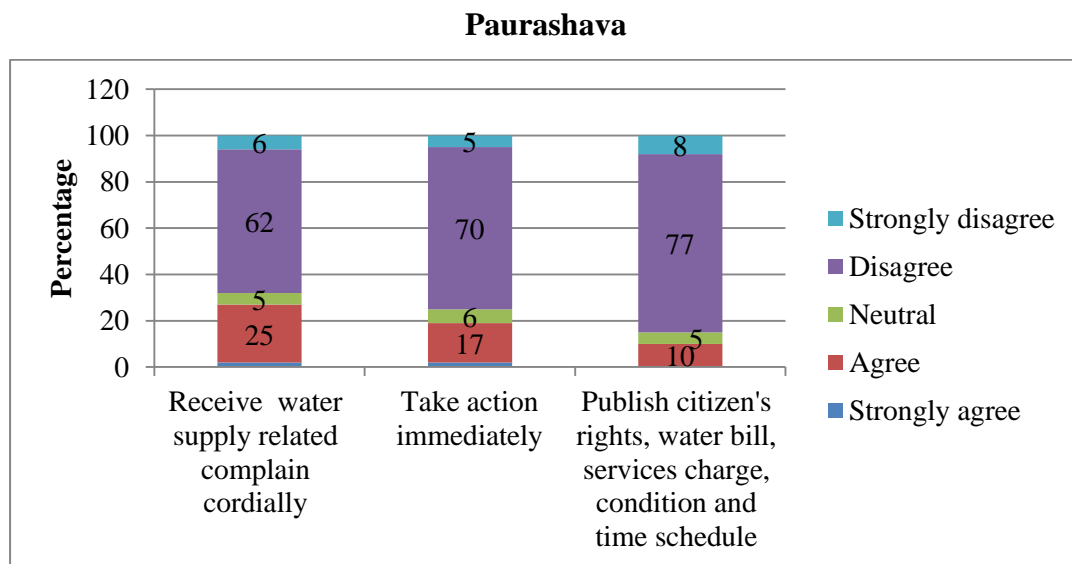
Another interviewee, honorable ADC (Additional Deputy Commissioner) of DC office Tangail claimed that

“Sometimes we are not informed when Paurashava calls meeting”.

6.5.4 Nature of Responsiveness of the Authority on Water Supply Activities

Interviewees were asked three questions to know the responsiveness of the authority on water supply activities. These are does the authority receive water supply related complain cordially from the public?, does the authority take action immediatly when problems occurs in supply? Are citizen's rights, water bill, services charge, condition and time schedule of water supply publish? (Figure 6.3)

Figure: 6.3 Perceived views of KIs on Responsiveness for Water supply in Tangail



Source: author’s fieldwork (2022),

When respondents were asked, does the authority receive water supply related complain cordially from the public, 62 percent respondents were ‘disagreed’. The WAI value is 0.39 and the overall condition was poor. In case of whether the authority take action immediatly or not when problems occurs in supplying, 70 percent respondents were ‘disagreed’. The overall condition was also poor.

Table: 6.7 KI's perception on Responsiveness for Water supply by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Receive water supply related complain cordially from the public	0.39	Poor
Take action immediately	0.35	Poor
Publish citizen's rights, water bill, services charge, condition and time schedule of water supply	0.29	Poor
Average	0.34	Poor

Source: author's fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

Moreover, when asked citizen's rights, water bill, services charge, condition and time schedule of water supply are published, 77 percent respondents were 'disagreed'. The WAI value is 0.29 and the overall condition was poor. The overall responsiveness of the authority was 'poor' on water supply activity (Table 6.7).

Respected person from NGO named BELA and the Journalist of 'The Daily Progotir Alo' explained that,

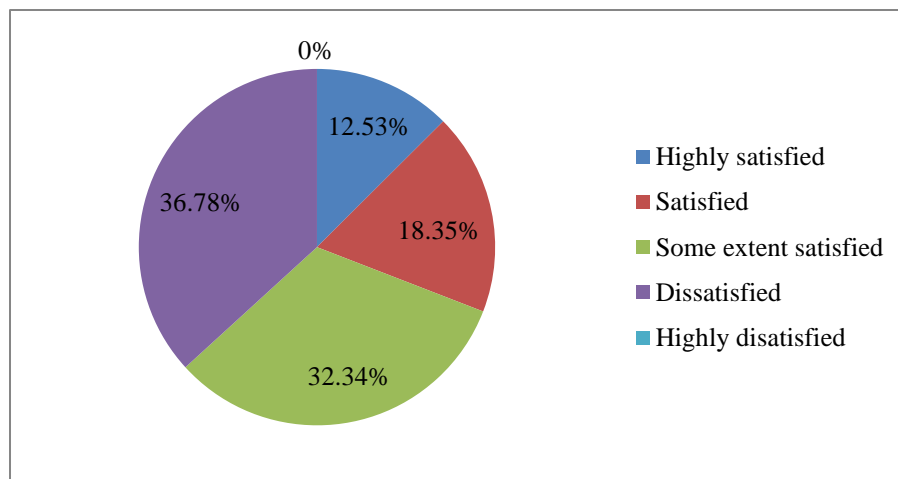
“Paurashava authority sometimes takes complain of mass people cordially or sometimes not if any problem occurs in supplying water, authority takes initiatives to solve the problem according to relationship of those people, if the personnel of authority have good relation with that people, they try to solve problem quickly”.

In Tangail Municipality, citizen's rights, water bill, services charge, condition and time schedule of water supply were not as published in notice board. One assistant teacher from Bindhubashini Govt. Boys High School said that,

“Municipality water supply related bills, condition and rules are not published in notice board, we know this kind of information by personally from the Municipality office”.

On the other hand, there was a question about interviewee’s satisfaction with the delivery of water supply service facilities. For this perspective, 24 respondents were considered (all service providers of Municipality office and different relevant officials of other departments of Paurashava (service providers group) and Public representative groups (without political leaders) (See Table 3.3) for interview.

Figure: 6.4 Interviewee’s Satisfaction with the Delivery of Water supply Service Facilities



Source: Field work, 2022

From the figure 6.4, shows that 18.35 percent respondents were ‘satisfied’ in providing water supply services facilities to the citizens, 32.34 percent were ‘some extent satisfied’

and 12.53 percent respondents were ‘dissatisfied’ to provide water supply facility in this city.

6.5.5 The Condition of Peoples’ Participation (Respondents) in Water Supply Activities

Four sub-indicators were considered to assess the peoples’ participation in water supply activities. The parameters are ‘does authority ensure participation of local people in preparation and implementation period of water supply related project? Does authority consider participants opinion in water supply related projects?, does authority ensure women participation in meeting of the Paurashava and ensure women participation in water supply project.

Table: 6.8 Perceived views of KIs on Peoples’ Participation for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Ensure participation of local people in preparation and implementation period of water supply related project	5	26	2	62	5	0.40	Weak
Consider participants opinion in water supply related projects	5	27	3	58	7	0.41	Medium
Women participation in meeting of the Paurashava	0	3	4	76	17	0.23	Weak
Women participation in water supply project	0	0	3	82	15	0.21	Weak
Average WAI						0.31	Weak

Source: author’s fieldwork (2022) , N= 40

Note: Very strong (VS): 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA; overall assessment

When asked question to the respondents does authority ensure participation of local people in preparation and implementation period of water supply related project, 62 percent respondents answered 'weak'. The WAI value is 0.40. The overall condition of this statement was 'poor'. In case of the statement does authority consider participants opinion in water supply related projects, 58 percent respondents answered 'weak'. The WAI value is 0.41 and the overall condition was 'moderate'.

In adding up, 76 percent and 82 percent respondents were answered negatively as 'disagreed' in the statements of women participation in meeting of the Paurashava and women participation in water supply project respectively. The WAI values are 0.23 and 0.21 accordingly. The overall assessment of the peoples' participation in water supply related activity was 'poor'.

In people's participation aspect, honorable Mayor and two councilors of two wards of the Paurashava said that

'It is difficult to ensure proper people's participation in water supply management as well as all development works in the municipality, we invite the stakeholders of various groups to join in the TLCC meeting and discuss with them. Sometimes maximum representatives of different stakeholders present sometimes absent in the meeting'.

In case of participation of local people in water supply related works, one honorable councilor of Ward no. 1 mentioned that

'By discussing with the local elites or informal discussion with some people we implement the water supply related projects. We cannot arrange open

meeting in the locality with local people due to having a number of opinions from different people which make it difficult to reach a concrete roadmap on the apprehension of happening unpleasant situation.

Women participation on water supply related meeting, works and projects was very poor sometimes it is absent. All of the key informants said that no women are invited and participated without women councilors in the meeting of the Paurashava.

6.5.6 The State of Coordination of Authority on Water Supply Activities

To assess the nature of coordination of authorities on water supply activities, two sub-indicators were considered to ask question of the respondents. These are; has the good coordination among DPHE and others authority in water supply activity and has good coordination among all wards of providing water supply services equally.

Table: 6.9 Perceived views of KIs about Coordination of Authority on Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Good coordination among DPHE and others	6	34	7	46	7	0.46	Moderate
Good coordination among all wards of providing water supply services	0	15	5	65	15	0.30	Poor
	Average					0.38	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of the statement, good coordination exists among DPHE and other authority with Purashava authority, 34 percent respondents were 'agreed' and 6 percent were 'strongly agreed'. The WAI value is 0.46. However, good coordination among all wards of providing water supply services is 'poor'. Only 15 percent respondents were 'agreed'. The WAI value is 0.30.

The overall condition of coordination among water supply services related authority with the Paurashava authority and the coordination among all Wards of supplying water was 'poor'.

Paurashava authority has to coordinate with DPHE (Department of Public Health and Engineering), LGED and Deputy Commissioner's office for implementing and managing water supply activity.

In the coordination aspect of the authority, Assistant Engineer (Water Supply and Sewerage Section, Municipality) said that

“Paurashava authority can manage to do small amount of water supply related work alone, but if we need big establishment like overhead tank, water treatment plant etc, we have to take assistance of DPHE for finance, technical support and training of operation of that establishment. Moreover, water supply related projects are operated through the DPHE and after that DPHE handed over the project to Paurashva by calling tender. In this activity we have good coordination with DPHE and DC office.”

The prominent interviewee of CSO and Ward commissioner explained that

“Development activity, providing water supply facilities does not take place equally or uncoordinated way. In some wards where water supply facilities are available, further supplying activities taken place again but where there is no water supply facilities that Wards are not in that coverage. Especially, periphery Wards are out of development activities”.

In case of coordination purpose Executive Engineer of DPHE mentioned that

“After executing the water supply related projects like making overhead tanks, water treatment plant, the maintenance of this establishments and system does not work properly. If the authority take assistance we try to give support, but sometimes Paurashava authority did not give importance”.

6.5.7 Rules and Regulations applied in Water Supply Activities

To know the rules and regulations responses in water supply services activities in Tangail Paurashava, four sub-indicators were selected to ask question of the respondents. When asked question about water supply activity is carried out according to municipality rules, 46 percent respondents were ‘agreed’. The WAI value is 0.53.

Table: 6.10 Perceived views of KIIs on Rules and Regulations Responses for Water supply in Tangail Paurashava

Statements	Responses					WA I	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Water supply activity is carried out according to municipality rules	11	46	2	32	9	0.53	Moderate
Take action against those who have not paid water bill on time	0	12	5	65	18	0.28	Poor

Monitor first to last implementation of water supply related work	14	38	4	38	6	0.55	Moderate
Assessment of households satisfaction after delivery water supply	0	0	2	82	16	0.21	Poor
Average						0.39	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of question ‘does authority take action against those who have not paid water bill on time?’ 65 percent respondents were ‘disagreed’. The WAI value is 0.28 and the overall condition was ‘poor’.

In case of to know the monitoring status the question was does authority monitor first to last implementation of water supply related work? 38 percent respondents were ‘agreed’ and the WAI value is 0.55 and the condition is ‘moderate’ and in case of whether the authority assesses household’s satisfaction after delivery water supply or not, only 2 percent respondents were ‘agreed’. The overall assessment of the rules and regulation responses on water supply purpose was ‘poor’.

Assistant Engineer of Water Supply and Sewerage Section in this Paurashava said that

“We talked with people who have not paid water bill on time; but can’t be rude against that people. We try to convince that person. As a result, more than half of the water bill is remain in due in every year.

He also said that

“Paurashava did not conduct any survey to know the stakeholder’s satisfaction or problems of supplying water at during and after projects”

In Paurashava act 2009, it is mentioned that Paurashava authority should arrange meeting by the standing committee in the Paurashava council on regular monitoring, evaluation, examination and problem identification of the provided services (LGD, 208). But it cannot be complied by the authority in regular basis.

6.5.8 Planning and Leadership Status for Water supply Activity

To know the planning status applied in water supply activity, the question does authority maintain planning and guideline to provide water supply in Paurashava was considered. In this question 38 percent respondents were ‘agreed’. The WAI value is 0.51 and the overall condition of maintaining planning of the authority was ‘moderate’.

Table: 6.11 Perceived views of KIs on Planning and Leadership Responses for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Maintain planning and guideline to provide water supply in Paurashava	9	38	9	36	8	0.51	Moderate
Committed, honest and dedicated public representatives to provide water supply in own Wards and overall Paurashava	0	12	3	78	7	0.29	Poor

Source: author’s fieldwork (2022), (N= 40 for Planning related statement and N=27 for Leadership related statement, public representatives were not considered)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

For leadership aspect 27 respondents (without all public representatives) were considered to know the view. To know the leadership quality of the Tangail Paurashava, the

question ‘is your public representatives committed, honest and dedicated to provide water supply in own Wards and overall Paurashava, 78 percent respondents were ‘disagreed’. The WAI value is 0.29. The overall condition of the quality of leadership of the leaders was ‘poor.

In case of planning aspect, maximum interviewee especially leader of CBOs and officials of NGOs explained in that way

“Paurashava hardly follow the planning like master plan to provide services facilities or solve any environmental problems. Even constructing high rise building, markets and any settlement, authority does not follow planning standard”.

One Businessman of the Paurashava said that,

“Mayor and ward commissioners promised many words to us and make mandate to facilitate water supply, drains making and many other facilities, but in reality it does not happens”

6.5.9 Nature of Effectiveness of Governance on Water Supply Activities

To assess the effectiveness of governance on water supply activities, a lot of sub-indicators were considered. For this purpose, the respondents were asked about does the Paurashava performs all the mandatory functions, 40 percent respondents were ‘agreed’. The WAI value is 0.55 and the overall condition is ‘moderate’.

Table: 6.12 Perceived views of KIs on Effectiveness for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	10	45	3	40	2	0.55	Moderate
Citizens are satisfied with the delivery of water supply services provided by the Paurashava	2	25	4	60	9	0.37	Poor
Authority has adequate fund for water supply connection	1	9	15	60	15	0.30	Poor
Proper utilization of government fund in Paurashava for water supply purpose	12	32	2	46	8	0.49	Moderate
Share information of expenditure of water supply projects with mass people	2	28	2	58	10	0.31	Poor
Invite stakeholders on water supply related meeting in initial period of the project	4	34	3	52	7	0.43	Moderate
Detail information of projects and development work available in website	0	4	5	78	13	0.25	Poor
Take action immediately	2	17	6	70	5	0.35	Poor
Good coordination among DPHE and others	6	34	7	46	7	0.46	Moderate
Take action against those who have not paid water bill on time	0	12	5	65	18	0.28	Poor
Participation of local people in preparation and implementation period of water supply related project	5	26	2	62	5	0.40	Poor
Women participation in meeting of the Paurashava	0	3	4	76	17	0.23	Poor
Average						0.36	Poor

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

To know citizens' satisfaction with the delivery of water supply services provided by the Paurashava respondents were asked and 60 percent respondents were 'disagreed'. The WAI value is 0.37 and the overall condition is 'poor'. When asked question does authority has adequate fund for water supply, 60 percent were 'disagreed' but in case of proper utilization of government fund, 44 percent respondents were 'strongly agreed' and 'disagreed'. The WAI value is 0.49 and overall condition was 'moderate'.

In case of dose authority invite stakeholders on water supply related meeting in initial period of the project, 52 percent respondents were 'disagreed' and the WAI value is 0.43 and the overall condition was 'moderate'. The condition of transparency was poor as 78 percent respondents were answered negatively as 'disagreed' in the statement of 'detail information of projects and development work available in website'. The WAI value is 0.25. In term of responsiveness of the authority in case of problem in supplying water, 70 percent answered negatively as 'disagreed'. The overall condition was also poor.

Coordination with other authorities and with other wards was 'moderate' in condition. The WAI value is 0.46 (Table 6.12). Application of rules and regulation was poor in condition and WAI value is 0.28. Participation of local people in preparation and implementation period of water supply related project is poor in condition and WAI value is 0.40 and women participation in meeting was also in poor condition. The overall assessment of the effectiveness of the governance in water supply in Tangail Paurashava was 'poor'.

6.5.10 Nature of Manpower and Technological Support in Water Supply Activities

To know the sufficiency of manpower and technological support in water supply in Tangail Paurashava, three questions were considered to ask the respondents.

Table: 6.13 Perceived views of KII on Manpower and Technological Support for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate manpower of authority for water supply	0	10	4	74	12	0.28	Poor
Adequate skilled manpower of authority for water supply	0	0	5	79	16	0.22	Poor
Sufficient technological support for water supply	0	5	4	79	12	0.25	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

To know sufficiency of manpower and sufficiency of skilled manpower, two questions were made. In case of adequacy of manpower and skilled manpower 74 percent and 79 percent respondents were ‘disagreed’ and WAI values are 0.28 and 0.22 respectively. The overall condition of both was ‘poor’.

In case or sufficiency of technological support in the Paurashava for water supply purpose was poor and 79 percent respondents were ‘disagreed’.

The Mayor of the Paurashava and Assistant Engineer in Water Supply Section in Tangail Paurashava said that

“We have overall manpower crisis, water supply section is also facing manpower crisis, and especially there is hardly skilled employee and technicians”.

Assistant Engineer in Water Supply Section in Tangail Paurashava said that

“We don’t have any high technical instruments and machineries to manage our works, we use simple instruments but it is also very limited, we have to help others.

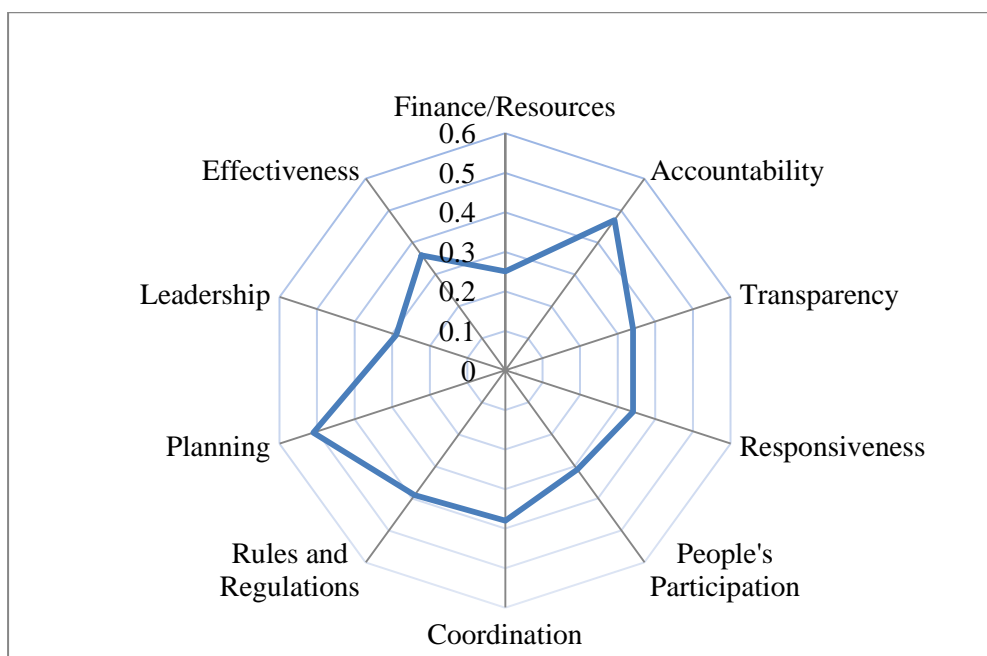
6.5.11 The Overall Governance Condition on Water Supply Activities in Tangail Paurashava Perceived by KIs

To know the governance condition of water supply management in Tangail Paurashava, key informant’s perception was considered which is shown in this figure (Figure 6.5).

In this aspect, financial support was ‘poor’ than the other indicators. The WAI value is 0.25.

The condition of accountability and planning on water supply management activity is moderate. The WAI values are 0.47 and 0.51 accordingly. In case of transparency, responsiveness and peoples’ participation condition on water supply purpose was poor; the WAI values are 0.34, 0.34 and 0.31 respectively.

Figure: 6.5 The Governance Condition of Water Supply Activities by overall WAI



Source: Field work, 2022

The coordination and rules and regulations condition are also ‘poor’ on water supply management activity in Tangail Paurashava. The WAI values are 0.38 and 0.39. The quality of leadership was also ‘poor’ and the WAI value is 0.29. The governance effectiveness was also ‘poor’ in condition and WAI value is 0.36. To sum up it can be said that, obtained WAI values of ‘accountability’ and ‘planning’ of the authority on water supply activities was better than the other indicators of governance.

6.6 The Governance Condition of Solid Waste Management as Perceived by KII

To know the governance condition of waste management activities in Tangail Paurashava, Key Informant’s perception was considered for data collection.

Under the Local Government Act (Paurashava), 2009, Tangail Paurashava is clearly responsible to manage solid waste within its jurisdictions.

From the household survey it was observed that from waste management activity, only waste collection activity existed in Tangail city and 44.68 percent households had waste collection facilities (See Table 5.4, Chapter 5).

The Paurashava authority of Tangail (Hygiene section) and Community Based Organizations (CBOs) Tangail, were involved in collecting of wastes from households and neighbourhood levels. Mainly Paurashava authority was directly responsible to manage overall process.

In Tangail Paurasha, solid wastes were collected from households and city wide from the Wards which were under the coverage of conservancy area. The conservancy area is the area which has connecting drains with main drainage. The conservancy area covered 13 Wards out of 18 Wards. Of these, nine Wards were under waste collection system and the cleaning activities of this Paurashava and other 4 had irregular waste collection and cleaning system. In some wards of conservancy area, Paurashava authority itself collected wastes from the city level and in other wards CBOs collected wastes through authority's assistance. Sometimes, authority provided some support to the CBOs like carrying vans, dump trucks; some labors to manage and collect wastes from the several Wards of the Paurashava and in some wards CBOs are managing all support like dumping truck, vans, labours for collecting waste. The conservancy inspector or supervisor of Paurashava authority supervised and monitored this collection process of CBOs.

In case of waste bill management, the Wards which were covered waste collection system by the authority of conservancy area, the waste bills were included in holding tax and the wards which were managed waste collection by the CBOs without any support of authority, CBOs collect waste bill 100 or 150 tk. per month from that area. After that, CBOs coordinated with Ward councilors of those Wards (Field work, 2022 and Municipality office, 2022).

6.6.1 Nature of Finance/Resource for Solid Waste Management Activities

To know the financial condition of authority on solid waste management of Paurashava, three sub-indicators were considered for asking the interviewee. When asked the question about authority has adequate fund for waste management purpose or not, 78 percent respondents were ‘disagreed’. The WAI value is 0.26 and the overall condition was ‘poor’ (Table 6.14).

Table: 6.14 Perceived views of KIs on Financial Support for Solid Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Authority has adequate fund for waste collection and manage	0	6	3	78	13	0.26	Poor
Authority has adequate fund for establishment of necessary dustbins	0	5	6	75	14	0.26	Poor
Adequate fund for buying waste dumping site	0	5	7	79	9	0.27	Poor
Average						0.26	Poor

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When asked question to the respondents, does authority has adequate fund for establishment of necessary dustbins and buying waste dumping site, 75 percent and 79 percent respondents were negatively answered as ;disagree'. The WAI values are 0.26 and 0.27 successively. The overall condition of adequacy of fund of the authority for waste management, making dustbin and buying dumping site was 'poor'.

According to budget of Municipality, 2021-2022 and Conservancy Inspector, waste management and cleaning section, Tangail Municipality said that,

“In the financial year 2020-2021, the fund was allocated 1,300,000 tk. for waste removal and management purpose. In every year, the budget for waste management is allocated more or less similar as F/Y 2021-2022. But the allocated amount is insufficient for waste management and cleaning purpose”.

In case of making dustbins and buying dumping site, Conservancy Inspector, waste management and cleaning section, Tangail Municipality said that,

“We have 60 structured city wide dustbins in the Paurashava, but these are not sufficient for the city. The budget allocation for dustbins making is very limited. So, we cannot make more dustbins whole the Paurashava as per need. On the other hand, we have not enough money to buy land for waste dumping. Without sanctioning any projects, the Paurashava has no ability to buy dumping site or acquire land. Moreover, people are unwilling to give land for waste dumping. He also said that we are trying to manage waste and submitted project proposal to the MGSP (Municipal Governance and Services Projects) government project for managing waste by modern waste management system.

6.6.2 The Status of Accountability of the Authority on Solid Waste Management

Activities

To examine the nature of accountability of authority on solid waste management, respondents were asked four questions. These are given in Table 6.15.

When respondents were asked about the proper utilization of income in Paurashava for waste management purpose, 50 percent respondents were ‘disagreed’ as negatively answered. The WAI value is 0.44 and the overall condition was moderate.

Table: 6.15 Perceived views of KIIs on Accountability for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Proper utilization of income in Paurashava for waste management purpose	3	36	3	50	8	0.44	Moderate
Proper utilization of government fund in Paurashava for waste management purpose	7	40	5	43	5	0.50	Moderate
Proper utilization of other fund of various projects and programmes of Paurashava for waste management purpose	9	43	6	34	8	0.53	Moderate
Invite various stakeholders on waste management related meeting	3	40	4	51	2	0.47	Moderate
Average						0.48	Moderate

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of statements whether the Paurashava utilize government fund properly for waste management purpose or not, 40 percent respondents were 'agreed'. The WAI value is 0.50 and the condition is 'moderate' and whether the Paurashava utilize other fund properly for waste management purpose or not, 43 percent respondents were 'agreed' and the WAI value is 0.53.

Moreover, when respondents asked does authority invite various stakeholders on waste management related meeting? 40 percent respondents were 'agreed'. The WAI value is 0.47. The overall assessment of the accountability of authority on solid waste management was 'moderate'.

Conservancy Inspector, waste management and cleaning section, Tangail Municipality mentioned that

“In spite of having limited fund for waste management purpose, funds are utilized properly for this purpose”.

Honorable leader of CSOs explained that in this aspect that

“Paurashava authority should be accountable to the citizen's in their every work. But, the authority has lack of accountability; they do not use their income, government fund and other funds properly. Because, wastes are not managed in whole Paurahava, as this is a big problem in this city and citizens. In some Wards wastes collection activity is seen. If Paurashava utilize their fund properly, they can increase waste collection coverage in all wards as well as manage wastes”

6.6.3 The Condition of Transparency of the Authority on Solid Waste Management Activities

Four sub-indicators were selected to assess the transparency of the authority on solid waste management. The Table 6.16 shows the parameters; available information of people's waste management related right and choice are remain in website, authority share expenditure of waste management related activity with mass people, detail information of waste management related activity available in website and authority invite local people to implement any waste management related works.

Table: 6.16 Perceived views of KIs on Transparency for Solid Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Available information of people's waste management related right and choices are remain in website	0	4	5	79	12	0.25	Poor
Share information of expenditure of waste management related activity with mass people	2	10	5	73	10	0.30	Poor
Detail information of waste management related activity available in website	0	2	6	79	13	0.25	Poor
Invite local people to implement any waste management related works	5	30	4	59	2	0.44	Moderate
	Average					0.31	Poor

Source: author's fieldwork (2022), N=40

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

In case of first statement, 79 percent respondents were disagreed on the availability information of people's waste management related right and choices are remain in website. The WAI value is 0.25 and the overall assessment on this condition was 'poor'. When asked to the respondent does authority share expenditure of waste management related activity with mass people?, 73 percent respondents answered negatively as 'disagreed'. The WAI value is 0.30. The overall situation was 'poor'.

However in case of invitation of local people to implement any waste management related works, 30 percent respondents were 'agreed' and WAI value is 0.44 and the overall condition of the statement was 'moderate'. The overall condition of transparency of authority on solid waste management was 'poor'.

Conservancy Inspector, waste management and cleaning section, Tangail Municipality mentioned that

"We don't feel to share information of expenditure for waste management purpose with mass people; sometimes we share in TLCC meeting of Paurashava when it is needed."

One lawyer of Judge Court of Tangail, said about the transparency of Tangail Paurashava authority is that,

"The Paurashava authority is not transparent of their any development activity, they are not accountable to the people, and they did not share about the expenditure of the expenses even their documents of development activities are not well organized".

Although in the Constitution of the Government of the People's Republic of Bangladesh and the Local government (Paurashava) Act, 2009 have ensured the citizen's right to

access to information of Paurashava, sometimes people cannot get proper services and information about any development and management related activities. Moreover, website of the Paurashava was not updated; detail citizen charter with the process of service delivery, responsible officer of that service, time for service delivery etc. were not published in regular basis in the Tangail Paurashava (section, 53 of Paurashava Act, 2009).

6.6.4 Nature of Responsiveness of the Authority on Solid Waste Management Activities

To understand the responsiveness of the authority for waste management in Tangail Paurashava, three sub-indicators were considered such as does authority receive waste collection related complain cordially from the public?, does authority take action immediately when any problem occurs in waste management? And is citizen's rights, waste bill, and services charge of waste collection publish?

Table: 6.17 Perceived views of KII on Responsiveness of Authority for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive waste collection related complain cordially from the public	5	28	4	58	5	0.42	Moderate
Take action immediately	0	35	3	60	2	0.42	Moderate
Publish citizen's rights, waste bill, services charge of waste collection	0	7	5	81	7	0.28	Poor
Average						0.37	Poor

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

The Table 6.17 shows that, 58 percent respondents were ‘disagreed’ on the authority receive waste collection related complain cordially from the public. The WAI value is 0.42 and the overall condition was moderate. When asked to the respondents that ‘authority takes action immediately in case of waste collection or management related problems’, 35 percent respondents were ‘agreed’ and the 60 percent respondents were ‘disagreed’. The WAI value is 0.42 and the overall situation was ‘moderate’.

In case of citizen's rights, waste bill, services charge of waste collection is published or not, 81 percent respondents said negatively as ‘disagreed’. The WAI value is 0.28. The overall assessment of responsiveness of the authority was poor in Tangail Paurashava.

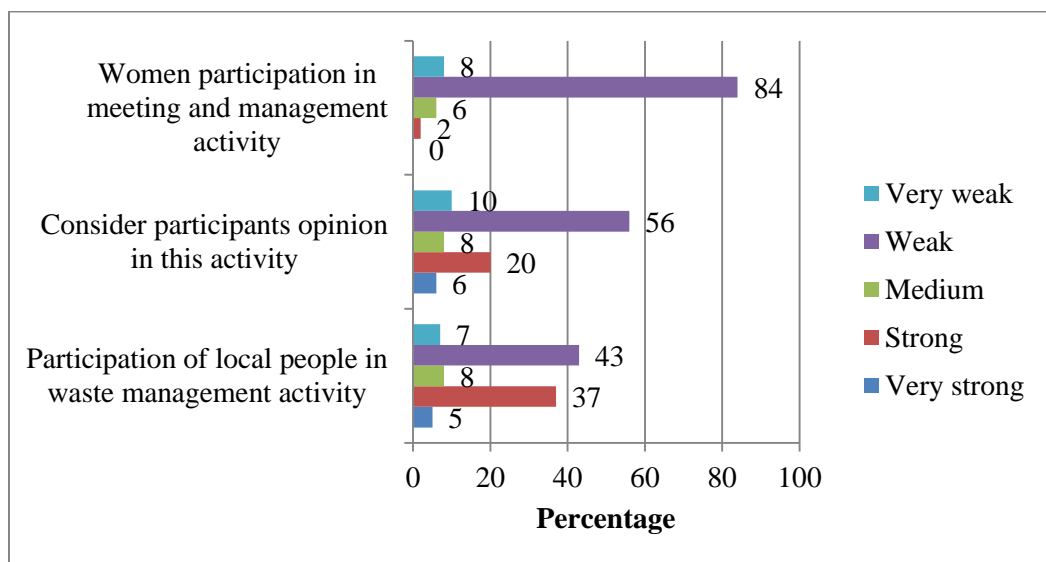
Honorable College teacher of Mawlana Mohammad Ali Govt. College, lived in near Baby Stand area has claimed that

“We, with our local people complained to the Paurashava authority in several times about the garbage dumping on the low land, near road side and into the Lauhajong River in the baby stand area which creates many problems us, but the authority did not take steps to manage garbage.”

6.6.5 The State of Peoples’ Participation (Local People) in Solid Waste Management Activities

The nature of peoples’ participation of waste management activity was assessed by the three parameters such as ‘participation of local people in waste management activity’ ‘consider participants opinion in this activity and women participation in meeting and management activity’. The Figure 6.6 shows that 37 percent respondents mentioned as ‘strong’ participation of local people in waste management activity. The WAI value is 0.47 and the overall condition was ‘moderate’.

Figure: 6.6 Perceived views of KIs on Peoples’ Participation for Waste Management in Tangail Paurashava



Source: author’s fieldwork (2022)

In case of consideration of participant’s opinion in this activity, 56 percent respondents demonstrated as ‘weak’. The WAI value is 0.38 and the condition is poor. Women participation is very limited where 84 percent respondents mentioned as ‘weak’. The overall assessment of the peoples’ participation was ‘poor’ (Table 6.18).

Table: 6.18 KI’s perception on Peoples’ Participation for Waste Management by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Participation of local people in waste management activity	0.47	Medium
Consider participants opinion in this activity	0.38	Weak
Women participation in meeting and management activity	0.26	Weak
Average	0.37	Weak

Source: author’s fieldwork (2022) , N=40

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA: overall assessment

Representative of CSOs expressed that

“Some people of CBOs are involved in waste collection activity in some Wards. But it did not cover whole Paurashava. Local people are not involved in collection activity. Paurashava authority invites various stake holders on the basis of personal relationship, sometimes we cannot know about meeting. Women are not involve in waste management activity even women are not visible to participate in authority’s meeting except women councilors”

According to the Local Government (Paurashava) Act, 2009, there is a provision for citizens in different committees where 40% of the member will be female. But in reality, sometimes meeting held in irregular, participants were invited on the basis of personal relations and women participation was very limited except women councilors. Even in this Paurashava, there were no standing committees for environmental development like on waste management in spite of the Paurashava Act, 2009 requires creating this type of standing committee.

6.6.6 Nature of Coordination of Authority on Solid Waste Management Activities

To assess the coordination of the authority in solid waste management in Tangail Paurashava, only one parameter was considered. Respondents were asked to know ‘does the authority have good coordination among CBOs and other authority? 54 percent respondents mentioned as ‘weak’ and 34 percent respondents said ‘strong’. The WAI value is 0.43 and the overall assessment of coordination of the authority with others in waste management was ‘moderate (Table 6.19).

Table: 6.19 Perceived views of KIs on Coordination for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Good coordination among Paurashava authority, CBOs and others	3	34	4	54	5	0.43	Medium

Source: author’s fieldwork (2022) , N=40

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA: overall assessment

The honorable councilor of Ward no. 17 said that, Tangail Municipality said that

“We have to coordinate with CBOs, NGOs which are involved with waste collection activity. Overall coordination with CBOs and NGOs is good but sometimes we face problems of coordination in supplying vehicles, instruments and labours as having crisis of this support system of Paurashava”.

6.6.7 Rules and Regulations Applied in Solid Waste Management Activities

Table 6.20 shows that, 34 percent respondents ‘agreed’ with the statement of ‘waste management activity is carried out according to municipality rules’. The WAI value is 0.44 and the condition is ‘moderate’. When asked to the respondents on ‘does authority take action against those who have not paid waste bill on time? 76 percent respondents were ‘disagreed’ and the WAI value is 0.26.

Table: 6.20 Perceived views of KIs on Rules and Regulations Responses for Waste Management in Tangail Paurashava

Statements	Responses						WA I	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)			
Waste management activity is carried out according to municipality rules	3	34	5	53	5	0.44	Moderate	
Take action against those who have not paid waste bill on time	0	8	5	76	11	0.26	Poor	
Authority monitor first to last waste management activity	4	26	3	63	4	0.40	Poor	
Authority assess household's satisfaction in this activity	0	0	4	82	14	0.23	Poor	
	Average					0.33	Poor	

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO: overall assessment

When asked to the respondents on does authority monitor first to last waste management activity? and does authority assess household's satisfaction in this activity? 62 percent and 82 percent respondents were 'disagreed' and the WAI values are 0.40 and 0.23 accordingly. The overall assessment of the rules and regulations responses on the waste management was 'poor'.

In the aspect of rules and regulation applications on wastes management activity, prominent NGO officer said that

“Paurashava authority should cover all of the wards under wastes collection; they are collecting waste partially from the Paurashava. But they are dumping wastes in the two entrances of the city and near people's settlement which crates many problems to the citizens. I think, it is in against

in rules to create hamper to the citizens as well as livability.”

Councilor of Ward no. 1 said that

“We cannot assess households and city level satisfaction on waste collection activity, sometimes we discuss with people informally”

6.6.8 Leadership Status for Solid Waste Management Activity

To assess the leadership status of public representatives and others, two sub-indicators were considered; does the public representatives are committed, honest and dedicated to manage waste in own Wards and overall Paurashva and does CBOs NGOs are dedicated to manage waste in this Paurashava?

Table: 6.21 Perceived views of KIs on Leadership Responses for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Committed, honest and dedicated public representatives to manage waste in own Wards and overall Paurashva	0	6	5	82	7	0.26	Poor
CBOs NGOs are dedicated to manage waste in this Paurashava	0	15	4	72	9	0.31	Poor
	Average WAI					0.28	Poor

Source: author’s fieldwork (2022), [For first statement N= 27 (without public representatives) and for second statement N=40]

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

In case of dedication, commitment and honesty of public representatives on waste management activity, 82 percent respondents were ‘disagreed’ and dedication of CBOs and NGOs to manage waste, 72 percent respondents were ‘disagreed’. The WAI values are 0.26 and 0.31 accordingly. The overall condition of the leadership on waste management was ‘poor’.

6.6.9 Nature of Effectiveness of Solid Waste Management Activities

A good number of parameters were considered from the other governance related sub-indicators to assess the effectiveness of the governance of solid waste in Tangail Paurashava. The Table 6.22 shows that, 45 percent respondents were ‘agreed’ in case of ‘the Paurashava performs all the mandatory functions’. The WAI value is 0.55 and the overall condition was ‘moderate’.

Table: 6.22 Perceived views of KIs on Effectiveness for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs al the mandatory functions	10	45	3	40	2	0.55	Moderate
Citizens are satisfied with the waste management by the Pauarashava	0	15	3	75	7	0.31	Poor
Adequate fund for waste management	0	6	3	78	13	0.26	Poor
Proper utilization of government fund in waste management purpose	7	40	5	43	5	0.50	Moderate
Share information of expenditure of waste management activities with mass people	2	10	5	73	10	0.30	Poor
Invite local people to implement any waste management related works	5	30	4	59	2	0.44	Moderate
Detail information of waste management related activity available in website	0	2	6	79	13	0.25	Poor
Take action immediately when waste related problems occur	0	1	7	75	17	0.42	Moderate
Participation of local people in waste management activity	5	37	8	43	7	0.47	Moderate

Women participation in meeting and management activity	0	2	6	84	8	0.26	Poor
	Average					0.37	Poor

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index. OA: overall assessment

In case of citizen’s satisfaction, 75 percent respondents answered negatively as ‘disagreed’. In case of adequacy of fun for waste management and proper utilization of government funds, 78 percent and 43 percent respondents were ‘disagreed’. The overall conditions of those statements were ‘poor’ and ‘moderate’ accordingly.

In case of transparency aspect, 73 percent respondents mentioned as negative as authority’s expenditure related information are shared with the mass people or not. The overall condition is poor. Detail information of waste management related activity is not available in website and the condition is ‘poor’. Participation of local people and women in waste management in Tangail Pourashava was ‘moderate’ and ‘poor’ respectively, The WAI values are 0.47 and 0.26. The overall assessment of effectiveness of governance on solid waste management was ‘poor’ and WAI value is 0.37.

6.6.10 Nature of Manpower and Technological Support of the Authority in Solid Waste Management Activities

To know the sufficiency of manpower, skilled manpower and technological support of the authority, three questions were asked to the respondents. The Table 6.23 shows that, 82 percent and 78 percent respondents were ‘disagreed’ with the state of ‘adequate manpower of authority for waste management and ‘adequate skilled manpower of authority for waste management’ The WAI values are 0.28 and 0.23. The overall condition was poor.

Table: 6.23 Perceived views of KII on Manpower and Technological Support for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate manpower of authority for waste management	0	7	5	82	6	0.28	Poor
Adequate skilled manpower of authority for waste management	0	0	7	78	15	0.23	Poor
Sufficient technological support for waste management	0	9	7	79	5	0.30	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of sufficiency of technological support, only 9 percent respondents were ‘agreed’ with the statement ‘sufficient technological support for waste management, the condition was also poor.

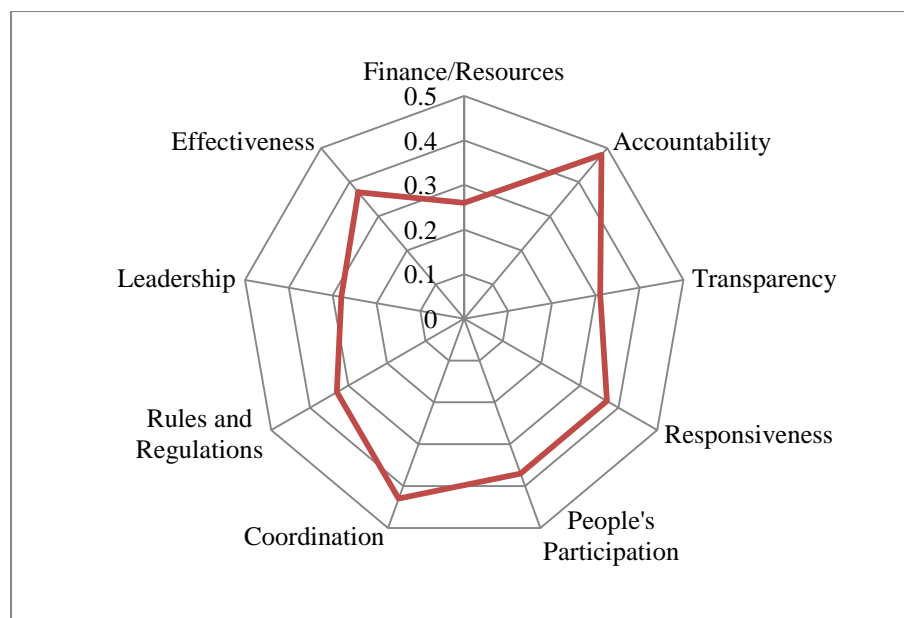
The Conservancy Inspector, Waste Management and Cleaning Section, Municipality said that,

“All section of the Municipality faces manpower, skilled manpower and technology or machineries crisis, especially in the waste management section. We have no any permanent labour, all are day basis or contract basis, and there are 123 lay labour to collect wastes, clean up city. We have only 10 truck, 10 van, insufficient excavator, loader etc but no any cover truck.

6.6.11 The Overall Governance Condition on Waste Management Activities in Tangail Paurashava as Perceived by KIs

The governance condition of waste management activity in Tangail Paurashava has shown in this 6.7 figure. Key informant’s perception was considered to assess the governance condition of waste management activity in Tangail Paurashava. In this aspect, financial condition is ‘poor’ than the other indicators. The WAI value is 0.26. The parameters accountability and coordination was ‘moderate’ than the other. The WAI values are 0.48 and 0.43 respectively.

Figure: 6.7 The Governance Condition of Waste Management Activities by overall WAI



Source: Field Work, 2022

In case of transparency, responsiveness and people’s participation, the WAI values are ‘poor’. The values are 0.31, 0.37 and 0.37 successively. The application of rules and regulation was also ‘poor’ in waste management activity in this city. The WAI value is 0.33. The leadership quality was very ‘poor’ as WAI value is 0.28. The effectiveness of

governance was also 'poor' in condition on waste management activity. So it is evident that all of the governance parameters were 'poor' except the accountability and coordination which were 'moderate' in condition.

6.7 The Governance Condition of Drainage and Water Logging Management in Tangail Paurashava Perceived by KIs

Key informant's perception was considered to assess the governance condition of drainage and water logging management in Tangail Paurashava.

From the household survey, it was evident that 80.80 percent respondents mentioned inadequate drains and management problem and 74.74 percent respondents claimed about water logging problem in the city (See Table 5.4, Chapter 5).

The Paurashava authority of Tangail is responsible for constructing, cleaning and maintaining drains and water logging management in the Paurashava. So, the Paurashava authority does not do coordinate with other organization to construct, maintain and cleaning drains. Coordination indicator was not considered here to collect data.

In case of drains construction, Paurashava authority (Public works section) has to construct drains through various projects which are funded by government and other donor like World Bank, Asian Development Bank etc and sanctioned through the LGED. The consultant of LGED monitors the overall development work of that project. The authority has no capability to construct drain by its own fund. In the Paurashava, the construction activity of 14.98 km. drains is ongoing through the project of 'Infrastructural Development Project of Tangail Paurashava' by the funding of government of Bangladesh.

But drainage maintenance, cleaning activity has to do by the authority's fund. The authority manages, maintains and cleans the drains of 13 Wards out of 18. Because, drains exists in 13 wards which is called as 'conservancy area'. Of these 13 wards, drains cleaning and maintenance activities 5 wards are done by frequently or when occur problem and rest 5 wards of conservancy areas drain cleaning activity is irregular due to lack of fund, labour and instruments (Field work, 2022 and Municipality office, 2022).

6.7.1 Nature of Finance/Resource of Authority for Drainage and Water Logging Management Activities

Two questions were considered; 'authority's adequacy of fund for drain cleaning and maintenance and adequacy of fund for making drains' to assess the authority's capability of financial support for drain management.

Table: 6.24 Perceived views of KIs on Financial Support for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate fund for drain cleaning and maintenance	0	7	4	74	15	0.25	Poor
Adequate fund for making drains	0	6	7	69	18	0.25	Poor
	Average					0.25	Poor

Source: author's fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

The Table 6.24 shows that 74 percent respondents were 'disagreed' on adequacy of authority's fund for drain cleaning and maintenance. The WAI value is 0.25 and the overall condition was 'poor'. In case of adequate fund for making drains of authority, 69

percent respondents answered negatively as ‘disagreed’. The WAI value is 0.25. The overall condition of authority’s fund was ‘poor’ for drain cleaning, maintenance and making purpose.

Honorable Executive Engineer, Public works section, Municipality noted that

“We need many drains in whole the Paurashava area, only few drains remains in the city. Without getting any projects, we cannot construct by our own due to insufficient fund.”

Conservancy Inspector in cleaning section of Municipality office said that

“Many drains of conservancy area are blockages, open and we are trying to clean and maintain these drains. But lack of fund, instruments, labour, sometimes we are unable to manage it”.

6.7.2 Nature of Accountability of the Authority on Drainage Management Activities

Four questions were asked to the key informant interviewees to assess the accountability status of authority on drainage management activities. The questions were does ‘authority utilize properly of income for drain maintenance and making purpose, proper utilize of government fund in Paurashava for drain maintenance and making purpose and proper utilize of other fund of various projects and programmes of Paurashava for this purpose ? and does the authority invite stakeholder’s on drain maintenance and making related meeting?

Table: 6.25 Perceived views of KIs on Accountability for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Proper utilization of income of Paurashava for drain maintenance and making purpose	3	31	5	52	9	0.40	Poor
Proper utilization of government fund in Paurashava for drain maintenance and making purpose	6	35	6	48	5	0.45	Moderate
Proper utilization of other fund of various projects and programmes of Paurashava for this purpose	8	37	5	46	4	0.49	Moderate
Invite stakeholder's on drain maintenance and making related meeting	4	28	7	50	11	0.39	Poor
			Average			0.43	Moderate

Source: author's fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of first question, 31 percent respondents were 'agreed' and the WAI value is 0.40.

In case of proper utilization of government fund in Paurashava for drain maintenance and making purpose and proper utilization of other fund of various projects and programmes of Paurashava for this purpose, 35 and 37 percent respondents were 'agreed' and WAI value are 0.45 and 0.49 respectively. The overall conditions of the both statements were 'moderate'.

When respondents were asked does authority invite stakeholders on drain maintenance and making related meeting, half of the respondents (50 percent) were 'disagreed' and the

WAI value is 0.39 and the overall condition was poor. The overall assessment of the authority’s accountability on drainage management in Tangail Paurashava was ‘moderate’.

One respective doctor from Sheikh Hasina Medical College Hospital, said that

“Drainage condition of this city is poor, maximum drains are blockages by garbage, open. As a result, germs of many diseases are spreading, getting unhygienic environment which creates risk to the citizen’s health. I think, the authority’s has lack of commitment and accountability to the people. If authority properly utilizes their income or others fund, this problem can be solved in many wards of the Paurashava.”

6.7.3 The Status of Transparency of the Authority on Drainage Management Activities

Five sub-indicators were considered to assess the transparency of the authority on drainage management activities. When asked to the respondents about the availability of information of people's drainage related right and choice are remain in website, 84 percent respondents were ‘disagreed’ and the WAI value is 0.22.

Table: 6.26 Perceived views of KIs on Transparency for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Available information of people's drainage related right and choice are remain in website	0	0	4	84	12	0.22	Poor
Share information of expenditure of drain management and making related activity with mass people	2	26	6	56	10	0.38	Poor

Detail information of drain construction and management related activity available in website	0	0	5	78	17	0.21	Poor
Set up signboard with detail information of drain construction projects of those projects area	5	35	6	46	8	0.45	Moderate
Invite local people to construct drains and management related works	4	31	5	57	3	0.43	Moderate
Average						0.33	Poor

Source: author's fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When asked to the respondents does authority share information of expenditure of drain management and making related activity with mass people? and is detail information of drain construction and management related activity available in website? 56 percent and 78 percent were 'disagreed' and the WAI values are 0.38 and 0.21 successively. The overall condition of both aspects was 'poor'.

In case of 'set up signboard with detail information of drain construction projects of those projects area', 35 percent respondents were 'agreed' and the overall condition was 'moderate'. The overall assessment of transparency of authority on drainage management was 'poor'.

The prominent CSOs and CBOs activists mentioned about transparency that

"There is problem of transparency in all works of Tangail Paurashava. The authority invites stakeholders in TLCC meeting according to the relationship and sometimes the meeting arranges irregular. But, they did not arrange any meeting in the Paurashava with local people to know the problems of those

areas, or the projects related areas where projects will be implemented. Sometimes authority set up signboard on constructing roads and drains but not detail with project name; “construction work is ongoing” this type of signboard is given by the authority.

The executive Engineer, Pubic Works section, Municipality office Tangail said that

“We share the information of expenditure of the drainage and roads construction related expenses in the TLCC meeting, not in local peoples meeting. If anyone wants to know, we convey him personally.”

6.7.4 The Condition of Responsiveness of the Authority on Drainage and Water Logging Management Activities

To assess the authority’s responsiveness on drainage and water logging management in Tangail Paurashava, two questions were considered. These are; does authority ‘receive drain blockage related complain cordially from the public and ‘take action immediately when water logged?

Table: 6.27 Perceived views of KII on Responsiveness for Drainage and Water Logging Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive drain blockage related complain cordially from the public	4	24	5	59	8	0.38	Poor
Take action immediately when water logged	0	27	6	63	4	0.38	Poor
	Average					0.38	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of first question, whether authority receives drain blockage related complain cordially from the public or not, 59 percent respondents were ‘disagreed’. The WAI value is 0.38 and the overall condition is ‘poor’. When asked to the respondent’s does authority taking action immediately when water logged? 63 person respondents answered negatively as ‘disagreed’. The WAI value is 0.38 and the overall condition was ‘poor’.

The overall assessment of the responsiveness of the authority was poor on drain and water logging management in Tangail Paurashava.

Respected University Teacher of Mawlana Bhashani Science and Technology University, Tangail described in this aspect that

“Though Tangail is large Paurashava, the drainage facilities and maintenance is very poor. Maximum drains in the city is blockages by the wastes, overflowed which is threat to the health as well as environment and in rainy season water logging occurred in many areas like, West Akur Takur Para, College Para, Par Dhighulia, Adalat Para, Bishawas Betka area. Paurashava authority does not clean the drains regularly. The take attempts to clean up in rainy season, dirty things are keep in the drain side and these things comes up again into the drain. The authority does not concern about it and irregular cleaning of drains properly. The local news papers cover the new of water logging problems in many times but it does not work.

6.7.5 Nature of Peoples’ Participation on Drainage and Water Logging Management Activities

Respondents were asked three questions to assess the peoples’ participation on drainage and water logging management activities in Tangail Paurashava. The questions were does the authority ensure participation of local people in drain management, making and water logging management activity? does authority consider participants opinion in this activity? and does authority ensure women’s participation in meeting?

Table: 6.28 Perceived views of KIs on Peoples’ Participation on Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Participation of local people in drain management, making and water logging management activity	3	22	6	64	5	0.38	Weak
Consider participants opinion in this activity	5	28	7	55	5	0.43	Medium
Women participation in meeting	0	18	9	67	6	0.35	Weak
Average WAI						0.38	Weak

Source: author’s fieldwork (2022) , N=40

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA: overall assessment

In case of participation of local people in drain management, making and water logging management activity, 64 percent respondents answered ‘weak’ and the WAI is 0.38. The overall condition was poor. But in case of consideration participant’s opinion in this activity, 55 percent respondents demonstrated as ‘weak’ and the WAI value is 0.43 and overall condition was ‘poor’.

Moreover, in case of women participation in meeting, 67 percent respondents answered as negatively as 'weak' and the WAI value is 0.35. The overall assessment of the peoples' participation on drainage and water logging management activity was 'poor'.

Executive Engineer of Public works section, Municipality said that

"We invite stake holders of the city in the meeting before implementing drainage projects, take opinion of participants. But we do not make involve local people for implementing projects without labours. Women participation in meeting is very low, only women councilors are present the meeting".

A prominent NGO worker explained that

"Paurashava authority call meeting with various stakeholders to implement any projects but participant's opinions are not given importance by the authority, they apply their own planning, decisions etc"

6.7.6 Rules and Regulation applied on Drainage Management Activities

To assess the rules and regulation applied in drainage management activities, three parameters were selected. These are is drain management and making activity is carried out according to municipality rules? does authority monitor first to last drain management and making activity? and does assess household's satisfaction in this activity?

Table: 6.29 Perceived views of KIIs on Rules and Regulations Responses on Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Drain management and making activity is carried out according to municipality rules	10	35	3	48	4	0.49	Moderate
Authority monitor first to last drain management and making activity	14	36	5	42	3	0.54	Moderate
Assessment of households satisfaction in this activity	0	2	7	78	13	0.25	Poor
	Average					0.42	Moderate

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of first question, 45 percent respondents were ‘strongly agreed’ and ‘agreed’. The WAI value is 0.49 and the overall condition was ‘moderate’. When respondents asked question about authority’s monitoring first to last drain management and making activity, 50 percent respondents were ‘strongly agreed’ and ‘agreed’. The WAI value is 0.54. The overall condition was ‘moderate’.

However, in case of authority assess household’s satisfaction in this activity or not, 78 percent respondents were ‘disagreed’. The WAI value is 0.25. The overall assessment of rules and regulations applications on drainage management in Tangail Paurashava was ‘moderate’.

6.7.7 Leadership and Planning Status for Drainage Management Activity

In case of leadership and planning aspect, two questions were selected to know the condition. For leadership aspect, 27 respondents (without public representatives) were considered to ask question.

Table: 6.30 Perceived views of KIs on Leadership and Planning Responses on Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Committed, honest and dedicated public representatives to manage drains in own Wards and overall Paurashva	0	10	5	77	8	0.29	Poor
Maintain planning and guideline to make drain in Paurashava	14	22	6	54	4	0.48	Moderate

Source: author’s fieldwork (2022), [For the first statement N= 27 (without public representatives) and for second statement N=40]

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

The Table 6.30 shows that, when asked question to the respondents is public representatives of your ward and the Paurashava is committed, honest and dedicated public to manage drains? 77 percent respondents answered negatively as ‘disagreed’ and the WAI value is 0.29. The overall assessment on leadership of Tangail Paurashava on the drainage management aspect was ‘poor’.

In case of maintaining planning and guideline to make drain in Paurashava, 36 percent respondents were ‘agreed’ and ‘strongly agreed’. The WAI value is 0.48 and the overall assessment of the maintaining planning and guideline to make drain in Paurashava was ‘moderate’.

Assistant teacher of Govt. High School mentioned that

“The Paurashava is facing many problems. The problems are not solved properly, sometimes reducing very slowly. If the public representatives like Mayor, councilors become dedicated to solve the problems in own Wards, committed to the people and be honest to their work, the problems like waste management, drainages and water logging problem can be minimized.”

6.7.8 Nature of Effectiveness of Authority’s Governance on Drainage and Water Logging Management Activities

To know the nature of effectiveness of governance on drainage and water logging management activities, some sub-indicators were selected from the other indicators of governance which are described before.

Table: 6.31 Perceived views of KIs on Effectiveness of Drainage and Water Logging Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	10	45	3	40	2	0.55	Moderate
Citizens are satisfied with the drain management by the Paurashava	0	24	5	65	6	0.37	Poor
Adequate fund for drain cleaning and management	0	7	4	74	15	0.25	Poor
Proper utilization of government fund in drain management purpose	6	35	6	48	5	0.45	Moderate
Share information of expenditure of drain management activities with mass people	2	26	6	56	10	0.38	Poor

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Invite local people to construct drains and management related works	4	31	5	57	3	0.43	Moderate
Detail information of drain construction and management related activity available in website	0	0	5	78	17	0.21	Poor
Take action immediately when water logged	0	27	6	63	4	0.38	Poor
Participation of local people in drain management, making and water logging management activity	3	22	6	64	5	0.38	Poor
Women participation in meeting	0	18	9	67	6	0.35	Poor
Average						0.37	Poor

Source: author's fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

The Table 6.31 shows that in case of citizen's satisfaction of drains management by the Paurashava is 'poor'. The WAI value is 0.37. In both cases, adequacy of fund for drain cleaning and management and sharing information of expenditure of drain management activities with mass people, the overall assessment of the condition was 'poor'. The WAI values are 0.25 and 0.38.

However, the condition of proper utilization of government fund in drain management purposes is 'moderate, the WAI value is 0.45. When asked to the respondents that 'does authority invite Proper utilization of government fund in drain management purpose? 57 percent people answered negatively and the overall situation was 'moderate'. But in taking action of authority immediately or not when water logged, the overall responses was 'poor'.

In case of local peoples’ participation in drain management, making and water logging management activity and women participation in meeting is ‘poor’ in condition. The overall assessment of effectiveness of governance on drainage and water logging management was ‘poor’ and the WAI value is 0.37.

6.7.9 Nature of Manpower and Technological Support in Drainage Management Activities

To know the adequacy of manpower, skilled manpower and sufficient technological support of authority for drain maintenance, respondents were asked three questions.

Table: 6.32 Perceived views of KIs on Manpower and Technological Support for Drainage Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate manpower of authority for drain maintenance	0	7	6	78	9	0.27	Poor
Adequate skilled manpower of authority for drain maintenance	0	0	8	85	7	0.25	Poor
Sufficient technological support for drain maintenance	0	0	9	86	5	0.26	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N): 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When asked questions to the respondents that is manpower of authority for drain maintenance adequate and is skilled manpower of authority for drain maintenance adequate, 78 percent and 85 percent respondents were negatively answered as ‘disagree’. The WAI values are 0.27 and 0.25. The overall conditions of both statements were ‘poor’.

In case of sufficiency of technological support for drain maintenance, 86 percent respondents were ‘disagreed’. The WAI value is 0.26. The overall assessment of this condition was ‘poor’.

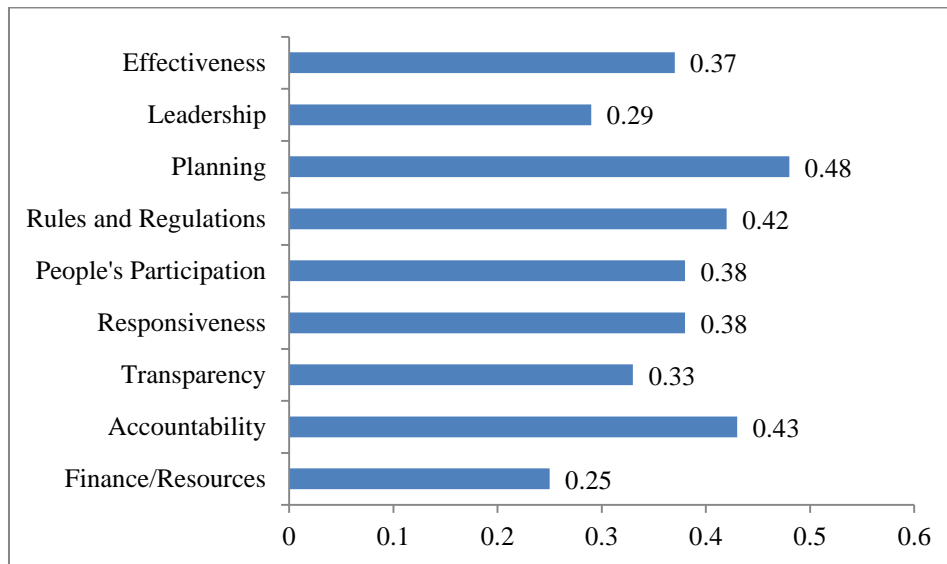
The Executive Engineer of Public Works section in the Municipality and Conservancy Inspector of Cleaning section, mentioned that

“We have limited manpower, employees in the cleaning section, especially no any skilled technicians, employees in this section. We have also lack of instruments, machineries support and fund also to maintain, clean drains. As a result, we cannot provide proper services to the people as per their demand”.

6.7.10 The Overall Governance Condition on Drainage and Water Logging Management Activities in Tangail Paurashava as Perceived by KIs

Key informants’ perceptions were considered to assess the governance condition of drainage and water logging management activities in Tangail Paurashava. The Figure 6.8 shows that the WAI value of financial support and leadership quality is low than the other indicators. The WAI values are 0.25 and 0.29 respectively. The governance conditions are poor.

Figure: 6.8 The Governance Condition of Drainage and Water Logging Management Activities by overall WAI



Source: Field Work, 2022

The values of three indicators; accountability, rules and regulations responses and application of planning are better than the other. The values of these indicators are 0.43, 0.42, and 0.48 accordingly. The governance condition of drainage and water logging on these parameters were ‘moderate’. The WAI values of transparency and responsiveness of authority were poor. The WAI values are 0.33 and 0.38 respectively.

The participation of local people and quality of leadership was also ‘poor’ in condition. The WAI values are 0.38 and 0.29 accordingly. The effectiveness of governance was also poor and WAI value is 0.37. So it can be concluded from the scenario is that ‘accountability’, ‘rules and regulations’ and ‘planning’ condition in drainage and water logging management is better than the other parameters. But the overall condition of all the parameters was ‘poor’.

6.8 The Governance Condition of Road and Traffic Jam Management in Tangail Paurashava as Perceived by KIs

To assess the governance condition of Road and traffic jam management in Tangail Paurashava, key informant's perception was considered.

The Paurashava authority of Tangail (Public works section) is responsible for constructing and maintaining roads but this authority does not control or manage traffic. Traffic police controls, monitors and manage traffic congestion in the city which is very limited and inadequate for the city. Signalized traffic management system is absent. The Paurashava authority gives support by providing some people as controller to manage traffic jam in the occasion of Eid and Puja.

In case of roads construction, Paurashava authority constructs roads in the Paurashava through various projects funded by government and other donor like World Bank, Asian Development Bank etc which is sanctioned through the LGED. The consultant of LGED monitors the overall road construction work of that project. The Paurashava authority cannot construct roads and foot path by their own fund due to having limited fund. The project 'Infrastructural Development Project of Tangail Paurashava' funded by government of Bangladesh is ongoing and under this projects 15.89 km. roads construction activity is continuing (Field work, 2022 and Municipality office, 2022).

6.8.1 The Status of Finance/Resource for Road Construction and Management Activities

To assess the financial support of the authority on road construction and management activity in Tangail Paurashava, two sub-indicators are considered. When respondents

asked the question whether the Paurashava has adequate fund for road construction and maintenance, 72 percent respondents were ‘disagreed’. The WAI value is 0.25. The overall condition was poor.

Table: 6.33 Perceived views of KIs on Financial Support for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Adequate fund for road construction and maintenance	0	6	8	72	14	0.25	Poor
Adequate fund for making foot paths	0	10	7	68	15	0.28	Poor
	Average					0.26	Poor

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When asked to the respondents that does Paurashava has adequate fund for making foot paths? 68 percent respondents were ‘disagreed’. The WAI value is 0.28. The overall assessment of the adequacy of fund of Paurashava was ‘poor’.

The honorable Executive Engineer, Public Works section, Municipality office Tangail said that

“The Paurashava authority has no adequate fund to construct any road and footpaths. Without getting any projects, we cannot construct or develop any roads and footpaths in the city.”

6.8.2 Nature of Accountability of the Authority on Road Construction and Management Activities

Four sub-indicators were considered to assess the accountability of authority on road construction and management in Tangail Paurashava. These are; ‘proper utilization of income in Paurashava for road construction purpose’, ‘proper utilization of government fund in Paurashava for road construction purpose’, ‘proper utilization of other fund of various projects and programmes of Paurashava for this purpose and ‘invite local people on road construction related meeting’ etc

Table: 6.34 Perceived views of KIs on Accountability for Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA	
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)			
Proper utilization of income in Paurashava for road construction purpose	12	25	6	49	8	0.46	Moderate	
Proper utilization of government fund in Paurashava for road construction purpose	8	29	7	51	5	0.46	Moderate	
Proper utilization of other fund of various projects and programmes of Paurashava for this purpose	7	28	6	50	9	0.43	Moderate	
Invite local people on road construction related meeting	3	25	5	64	3	0.40	Moderate	
			Average				0.43	Moderate

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

Respondents were asked about does authority utilize income properly? 37 percent respondents were 'agreed' and 'strongly agreed'. The WAI value is 0.46. In case of does the authority utilize government fund properly for road construction and management and does the authority utilize other funds properly for road construction and management purpose, 51 percent and 50 percent respondents said negatively as 'disagreed'. The WAI values are 0.46 and 0.43 respectively. The conditions of both cases were 'moderate'.

When asked to the respondents does the authority invite local people on road construction related meeting? 64 percent respondents were 'disagreed'. The WAI value is 0.40 and the condition was 'moderate'.

6.8.3 The Condition of Transparency of the Authority on Road Construction and Management Activities

To assess the transparency level of the authority on road construction and management activity, four types of questions were considered to data collect. The questions were does authority share information of expenditure of road construction related activity with mass people? Is detail information of road construction related activity available in website? Does authority make involve local people to road construction related works? And does authority set up signboard with detail information of road construction projects of those projects areas?

Table: 6.35 Perceived views of KIIs about Transparency on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Share information of expenditure of road construction related activity with mass people	5	25	7	57	6	0.41	Moderate
Detail information of road construction related activity available in website	0	2	6	78	14	0.23	Poor
Involve local people to road construction related works	0	22	8	65	5	0.35	Poor
Set up signboard with detail information of road construction projects of those projects areas	3	29	5	55	8	0.41	Moderate
Average						0.35	Poor

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA): 0.81-1; agree (A): 0.61-0.8, neutral (N): 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of first question, 57 percent respondents were ‘disagreed’ of authority’s sharing information of expenditure of road construction related activity with mass people. The WAI value is 0.41. In case of is detail information of road construction related activity available in website? 78 percent respondents were ‘disagreed’. The WAI value is 0.23. The overall condition was ‘poor’.

Moreover, in the statement ‘involvement of local people to road construction related works’ and ‘authority set up signboard with detail information of road construction projects of those projects areas’, 65 percent and 55 percent respondents answered negatively as ‘disagreed’ respectively. The WAI values are 0.35 and 0.41 accordingly.

The overall conditions of those statements were ‘poor’ and ‘moderate’. The overall assessment of transparency of the authority on road construction and management activity was ‘poor’ (Table 6.35).

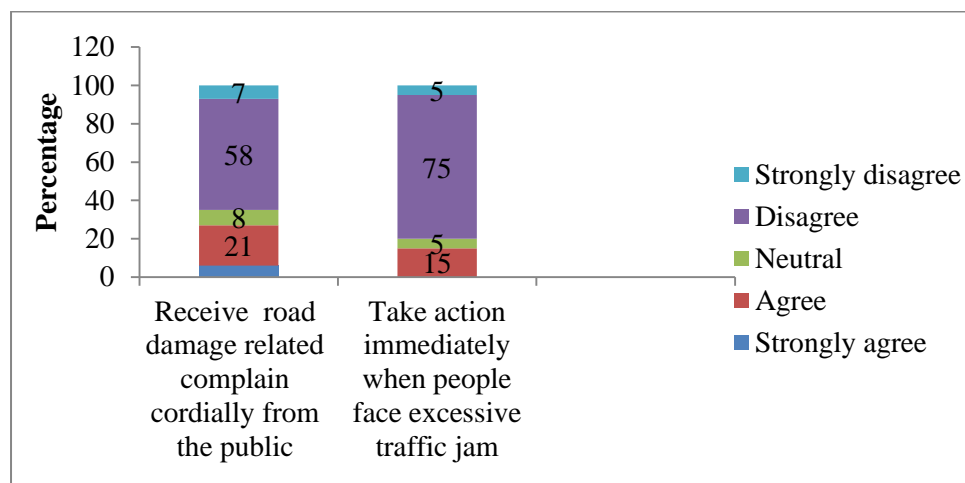
In this aspect leader of CSOs has said that

“The website of the Paurashava is not updated; detail information of ongoing and past project of the Paurashava is not given here only name of project available there. Paurashava authority does not want to share detail information of expenditure of the projects with mass people. When road construction is going on, they fix signboard but not detail”.

6.8.4 Nature of Responsiveness of the Authority on Road Construction and Management Activities

To measure the responsiveness of the authority on road construction and management activity, two types of questions were asked; does authority receive road damage related complain cordially from the public? And does authority take action immediately when people face excessive traffic jam?

Figure: 6.9 Perceived views of KIs on Responsiveness on Road Construction and Management in Tangail Paurashava



Source: author’s fieldwork (2022),

For the first question, only 27 percent respondents were ‘agreed’ and strongly disagreed’ on authority receive or not road damage related complains cordially from the public. The WAI value is 0.40. The overall condition was moderate.

Table: 6.36 KI’s perception on Responsiveness for Road Construction and Management by WAI

Statements	Weighted Average Index (WAI)	Overall Assessment (OA)
Receive road damage related complain cordially from the public	0.40	Poor
Take action immediately when people face excessive traffic jam	0.32	Poor
Average	0.36	Poor

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

On the other hand, only 15 percent respondents were ‘agreed’ on the authority take action immediately when people face excessive traffic jam. The WAI value is 0.32 and the

overall condition was ‘poor’. The Table 6.36, shows that the overall assessment of responsiveness of the authority on road construction and management activity was ‘poor’. The renowned Journalist of the local newspaper named “The Daily Paogotir Alo” discussed that

“Sometimes the Paurashava authority take complains from the people cordially, sometimes not. We have covered the news about the garbage management problems, water logging problems and pollution and illegal occupying of Laugajong River, traffic jam in the city in many times and talked with Paurashava, but the authority did not take steps or hardly take, but not working to mitigate these problems”.

6.8.5 The State of Peoples’ Participation (Respondents) in Road Construction and Management Activities

For measuring the peoples’ participation on road construction and management activity, three statements were considered (Table 6.37).

Table: 6.37 Perceived views of KIIs on Peoples’ Participation on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Participation of local people in road construction and repair activity	4	25	6	60	5	0.41	Medium
Consider participants opinion in this activity	5	24	7	61	3	0.42	Medium
Women participation in meeting	0	3	5	81	11	0.24	Weak
	Average WAI					0.35	Weak

Source: author’s fieldwork (2022) , N=40

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA; overall assessment

From the above Table it is observed that, 60 percent respondents answered ‘weak’ on behalf of the statement ‘ensure participation of local people in road construction and repair activity’. The WAI value is 0.41 and the overall condition was ‘moderate’. In case of consideration of people’s opinion in this activity, 61 percent respondents mentioned ‘weak’.

Moreover, on behalf of the statement ‘ensure women participation in meeting’, 81 percent respondents answered negatively as ‘weak’. The WAI value is 0.24. The overall assessment of peoples’ participation on road construction and management was ‘poor’.

One respected key person from NGO said that

“Some local people are involve in road construction, in construction of bridge as labour, news providers of the authority and those people are selected by the good relationship with commissioners, mayor etc. In case of considering people’s opinion, authority listens the people’s opinion but the authority apply their own decisions. Local women do not participate in roads construction related activity.”

6.8.6 Nature of Coordination in Road Construction and Management Activities

To know the nature of coordination of Paurashava authority with other authority, the question was made like this, has good coordination of Paurashava authority with LGED and others maintain? In case of this question 50 percent respondents demonstrated as positively ‘strong’. The WAI value is 0.54. The overall assessment of the coordination of the Paurashava authority and others was ‘moderate’.

Table: 6.38 Perceived views of KIs on Coordination of Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Good coordination of Paurashava authority with LGED and others	0	50	17	33	0	0.54	Medium

Source: author’s fieldwork (2022) , N=40

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, OA; overall assessment

In coordination aspect official of LGED said that

“Roads and drains construction related project comes through the LGED to the Paurashava authority funded by government or other foreign donor, the LGED handed over the Paurashava authority by calling tender and the development work is monitored by the supervisor of LGED. On that period, a good coordination with the authority exist”

6.8.7 Rules and Regulation applied in Road Construction and Management Activities

To assess the rules and regulation applied in road construction and management activity, three sub-indicators were considered as how rules are applied, how it’s monitoring and its evaluation.

Table: 6.39 Perceived views of KIs on Rules and Regulations Responses on Road Construction and Management in Tangail Paurashava

Statements	Responses				WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)		
Road repair, management and making activity is carried out according to municipality's rules	10	32	5	48	5	0.48 Moderate

Authority monitor first to last road management and making activity	12	34	6	43	5	0.51	Moderate
Authority assess households satisfaction in this activity	0	5	8	75	12	0.26	Poor
Average						0.41	Moderate

Source: author’s fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

When respondents were asked about does road repair, management and making activity is carried out according to municipality's rules? 42 percent respondents were ‘agreed’ and ‘strongly agreed’. The WAI value is 0.48. When asked question about does authority monitor first to last road management and making activity? 46 percent respondents were ‘agreed’ and ‘strongly agreed’. The WAI value is 0.51. The overall condition was ‘moderate’.

Moreover in case of evaluation of the consumer’s satisfaction the question was ‘does authority assesses household’s satisfaction in this activity, 75 percent respondents answered as ‘disagree’. The WAI value is 0.26. The overall assessment of the rules and regulations responses of the authority was ‘moderate’.

One college teacher said that

“I think, Paurashava authority constructs roads, drains according to the municipalities rules, but after constructing roads and drains are not managed or maintained properly, after few times later construction becomes broken down, quality are not ensured. I think it occurs due to dishonesty and corruption. After making roads and drains, authority does not assess the satisfaction of the people”.

6.8.8 Leadership and Planning Status for Road Construction and Management Activity

To know the leadership quality of the Paurashava, respondents were asked ‘Are public representatives committed, dedicated and honest to manage roads in own Wards and overall Paurashva?. For this purpose, 27 interviewees (without public representatives) were considered.

Table: 6.40 Perceived views of KIs on Leadership and Planning Responses on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly (%)		
Committed, honest and dedicated public representatives to manage roads in own Wards and overall Paurashva	0	2	6	82	10	0.25	Poor
Maintain planning and guideline to construct road in Paurashava	7	31	7	45	10	0.45	Moderate

Source: author’s fieldwork (2022), [For first statement N= 27 (without public representatives) and for second statement N=40]

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

In case of leadership aspect, 82 percent respondents were ‘disagreed’ in the question ‘Are public representatives committed, dedicated and honest to manage roads in own Wards and overall Paurashva? The WAI value is 0.25 and the overall condition was poor. When respondents were asked does Paurashava Maintain planning and guideline to construct road in Paurashava? 45 percent respondent was ‘disagreed’. The WAI value is 0.45 and the overall assessment of maintaining planning and guideline was ‘moderate’.

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One prominent Engineer of private sector said that

“May be Paurashava authority follow master plan, but the planning does not executed properly, sometimes they modifies. The quality of development activity is poor. Moreover, public representatives are not committed, dedicated and honest to keep the citizen’s promises. Consequently, citizens cannot get proper services.”

6.8.9 Nature of Effectiveness of the Authority on Road Construction and Management Activities

For assessing the effectiveness of the authority on road construction and maintenance of the Paurashava, some parameters were selected from the other governance parameters which are discussed before.

Table: 6.41 Perceived views of KIs on Effectiveness of Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
The Paurashava performs all the mandatory functions	10	45	3	40	2	0.55	Moderate
Citizens are satisfied with the road management by the Paurashava	0	36	6	50	8	0.43	Moderate
Adequate finance for road construction and management	0	6	8	72	14	0.25	Poor
Proper utilization of government fund in road construction and management purpose	8	29	7	51	5	0.46	Moderate
Share information of expenditure of road construction and management activities with mass people	5	25	7	57	6	0.41	Moderate

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Involve local people to road construction related works	0	22	8	65	5	0.35	Poor
Detail information of road construction related activity available in website	0	2	6	78	14	0.23	Poor
Take action immediately when people face excessive traffic jam	0	15	5	75	5	0.32	Poor
Participation of local people in road construction and repair activity	4	25	6	60	5	0.41	Moderate
Women participation in meeting	0	3	5	81	11	0.24	Poor
Average						0.38	Poor

Source: author’s fieldwork (2022), N=40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA; overall assessment

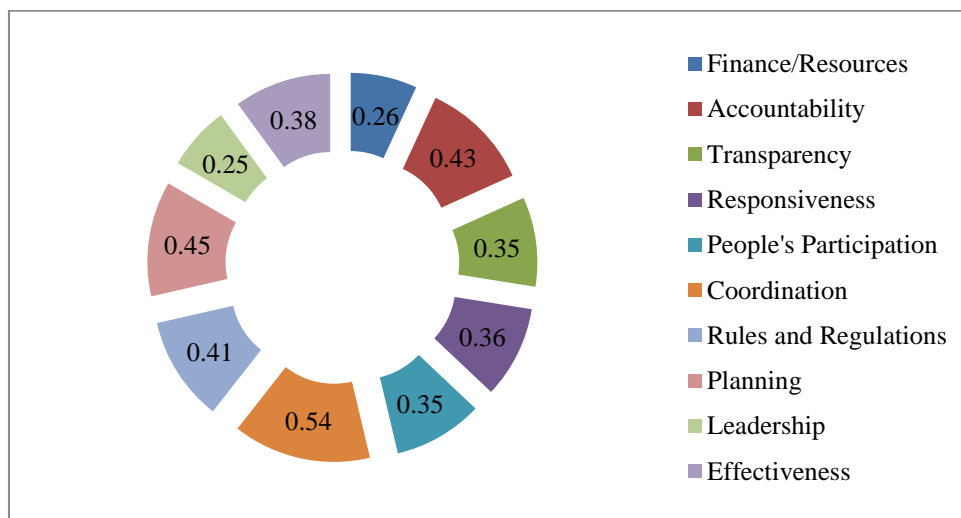
When asked to the respondents that, ‘are citizens satisfied with the road management by the Paurashava? Half of the respondents (50 percent) were ‘disagreed’ and 36 percent were ‘agreed’. The WAI value is 0.43. The overall condition is moderate. In case of, adequacy of financial support of the Paurashava was ‘poor’. But in proper utilization of government fund and others was ‘moderate’ condition.

The condition of sharing information of expenditure of road construction and management activities with mass people is also ‘moderate’. The WAI value is 0.41. The availability of detail information of road construction related activity in website was ‘poor; and the WAI value is 0.23. In case of responsiveness aspect, the condition was also ‘poor’ and the WAI value is 0.32. In case of peoples’ participation on road construction and management activity was ‘moderate’ but women participation was ‘poor’. The overall assessment of the effectiveness of the authority on road construction and management activity was ‘poor’ (WAI 0.38).

6.8.10 The Overall Governance Condition of Road Construction and Traffic Jam Management Activities in Tangail Paurashava

To assess the governance condition of road construction and traffic management activity, key informants perceptions were considered. From the Figure 6.10, it is evident that financial support is poor where WAI value is 0.26. The transparency condition of the authority is also poor and WAI value is 0.35. Moreover, the conditions of authority’s responsiveness and participation of local people on road construction and traffic jam management in the Paurashava were also ‘poor’. The WAI values are 0.36 and 0.35.

Figure: 6.10 The Governance Condition of Road Construction and Traffic Jam Management Activities in Tangail Paurashava by overall WAI



Source: Fieldwork, 2022

However, the conditions of accountability, coordination and rules and regulation application are better than the other parameters. The WAI values are 0.43, 0.54 and 0.41 respectively. The governance conditions of these parameters were moderate. The leadership quality was poor in condition and WAI value is 0.25. The effectiveness of the governance was also poor and WAI value is 0.38. Maximum governance indicators of WAI values were low. So it can be said that the overall governance condition of road construction and traffic jam management in Tangail Paurashava was ‘poor’.

6.9 The Governance of other Problems in Tangail Paurashava as Perceived by KIs

6.9.1 The Governance Condition of Electricity Crisis

Half of the respondents (53.03 percent) respondents faced electricity crisis; inadequate electricity supply and frequent cuff in the Paurashava (See Table 5.4, Chapter 5). To know why the problem is unsolved or solved very slowly, Key informants were considered to know about this problem. For this purpose, respondents were asked does the authority have taken steps for better supply? 76 percent responded answered negatively as ‘disagree’. The WAI Value is 0.21. The overall governance condition of the electricity crisis was ‘poor’ (Table 6.43).

Deputy Assistant Engineer (electricity section) of Municipality said that

“Electricity supply of PDB for Tangail Paurashava is very limited than the demand. PBD officials said that this Paurashava gets less electricity supply or allocation is low than the others in Nation grade scale. That’s why electricity cuts off several times a day. The quality of electricity connection like voltage, wearing is not maintained properly”

6.9.2 The Governance Status of Noise Pollution

Among different types of pollution, respondents mentioned noise pollution first which is faced by the people in daily life. Respondents were asked ‘does authority have taken any steps to mitigate noise in the city like by campaigning and by applying fine on high volume of vehicles? 74 percent respondents answered negatively on behalf of the question of campaigning, and 84 percent respondents were answered negatively as ‘disagree’ on behalf of the question applying fine on high volume of vehicles. The WAI

values are 0.28 and 0.22 accordingly. The average WAI value is 0.25. The overall condition of the governance on noise pollution was ‘poor’ (Table 6.42).

In pollution control aspect, Paurashava authority and Department of Environment (DoE) are responsible for taking measures of pollution control. For this purpose, Paurashava authority were asked that they have taken any steps or not, they said that they have not taken any steps to reduce noise pollution in Paurashava, because Paurashava could not provide necessary services facility as per citizen’s demand due to many challenges.

The Deputy Director of DoE, Tangail was asked that whether they has taken any steps to reduce noise pollution or not, he explained that

“We did not work with Paurashava directly except in providing clearance of establishing any high rise buildings and institutions. In case of noise pollution, we launched campaign several times in the school with school student’s teachers to build up awareness for reducing loud sound. We have also submitted proposal on the strategy of reducing noise pollution to the government.”

6.9.3 The Governance Condition of Air and Water Pollution

In case of governance on air pollution, The Deputy Director of DOE, Tangail was asked that do they monitor air of Tangail Paurashava in some time intervals. He said that

“Air quality measuring machine has sat up on the roof of the office, but maximum time it’s not working. Moreover, we have limitation of skilled technicians. That’s why we cannot analyze air quality”.

The brick field which was established in 9 no. Ward in the Paurashava has closed by taking proper steps and enforcing laws of the DOE authority.

In case of water pollution of Lauhajong River, respondents were asked does authority take steps to free from dumping waste in the river. 63 percent respondents were 'disagreed' and 18 percent were 'agreed'. The WAI value is 0.40. The overall governance condition of the River pollution was 'poor'.

The prominent leader of CSOs mentioned in this aspect that

“Lauhajong river has become a waste dumping site and almost dead. River water is polluted due to waste dumping, waste water discharge etc. But authority has not taken any steps now days. In year 2016, good steps were taken by the deputy commissioner to free from pollution and unoccupied the bank of the river from illegal settlements. But the steps were became stopped due to transfer of the Deputy Commissioner. Now the steps are being stopped or sometimes very slow’.

Key person of DoE, Tangail expressed in this way

“When we get complain of any environmental degradation related activities, then we go there and make fine to that person or institutions. We give notice to stop pollute Lauhajong River of those industries.”

Chief of the Bangladesh Environmental Lawyers Association (BELA) and Representative of Civil Society Organizations (CSO) mentioned that

“In this Paurashava, there had no any implementation of environmental laws due to many barriers and political obstacles. They also said that environmental problems became more extreme due to no enforcement or hardly enforcement of environmental laws and regulations in this city”

In practice, the Urban Water Body Conservation Act, 2000 has little or no effect in the Paurashava. Illegal settlements and shops have constructed by encroaching Lauhajong River, though this act prohibits the construction of any structure by grabbing water bodies. The river has become garbage dumping site. Sometimes, little or no any steps to conserve the water body from pollution and illegal grabbing at present.

Table: 6.42 Perceived views of KIs on Governance of others Problemsin Tangail Paurashava

Indicators	Statements	Responses					WAI	OA
		Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Responsiveness	Take steps for better electricity supply	0	0	6	76	18	0.21	Poor
	Launch awareness building campaign to mitigate noise	3	5	7	74	11	0.28	Poor
Rules and Regulation	Applying rules and regulation like fine on vehicles loud horn	0	0	3	84	13	0.22	Poor
Responsiveness	Take steps to free from dumping waste in the river	8	18	6	63	5	0.40	Poor

Made and maintenance play ground or park properly	10	22	5	60	3	0.44	Moderate
Take steps to reduce mosquito problem	3	30	5	56	6	0.41	Moderate

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, OA: overall assessment

6.9.4 The Governance Status of Making and Management of open space and recreational facilities

In this aspect 32 percent respondents said as 'strongly agreed' and 'agreed' and 60 percent respondents mentioned as 'disagreed'. The WAI value is 0.44. The overall governance condition of creating and maintaining open space and park was 'moderate' (Table 6.42). Maximum respondents mentioned that a park has created by district administration, in recent time another park is developing by Paurashava authority. But the maintenance of the parks, play ground is very poor.

6.9.5 The Governance Condition of Mosquito and Security Problem

Respondents were asked the question "does the authority takes any steps to reduce mosquito problem? to know the governance condition of mosquito problem. In this case, 30 percent respondents were 'agreed' and 56 percent respondents were 'disagreed'. The WAI value is 0.41. The governance condition of mosquito problem was moderate (Table 6.42).

The education officer of Tangail said that

“Paurashava authority sometimes applies mosquito spray to reduce but it does not reduce because authority does not spray regularly. Moreover, many drains of the Paushava are open, full of dirt, waste and overflowed. Mosquito breeds in that condition massively. Without cleaning the drains properly, mosquito would not reduce from the Paurashava.

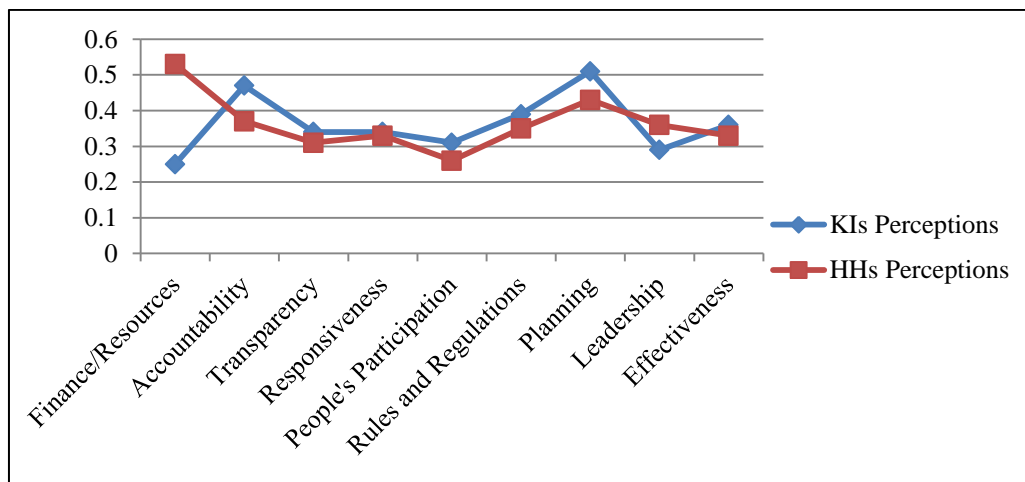
The police administration is responsible for the security problem of the Paurashava. Paurashava authority is not directly related with security management. The authority works together with the police administration for the problem and tries to solve it.

6.10 Comparison between Household’s and Key Informant’s Perception on the Governance Condition of Water Supply Management in Tangail Paurashava

The figure 6.11 shows the comparison between the households and Key Informants perception on the governance condition of water supply management in Tangail city. From this figure, a good difference is identified in finances or resources management in water supply management. In terms of authority’s financial condition to govern the water supply problem, household’s responses was moderate or better than the key Informants where the WAI value for households on availability of finance of the authority is 0.53 and the KIs is 0.25 which is poor. In household’s level, people thought and said that Paurashava authority has sufficient money to serve them but they have lack of dedication and responsiveness but KIs have knowledge about the finance of the authority.

In case of indicator accountability on water supply management, KIs perceptions was ‘moderate’ not so good not so bad where as the perception of household levels was 0.37 which is ‘poor’ in condition. The household respondents said authority has lack of accountability on solving water supply problem.

Figure: 6.11 Comparison between Household’s and Key Informant’s Perception on Governance Condition of Water Supply Management by WAI



Source: authors’ fieldwork, 2022

In case of transparency and responsiveness of authority, households and key informants perception is nearly similar. The WAI value of transparency on water supply management of households and KIs are 0.31 and 0.34 respectively and the WAI value of responsiveness on water supply management of households and KIs are 0.33 and 0.34 respectively. The transparency and responsiveness in both households and KIs levels was poor. The governance parameter, peoples’ participation on water supply management in both levels was poor but not similar. The WAI values are in KIs level is 0.31 and in household levels is 0.26.

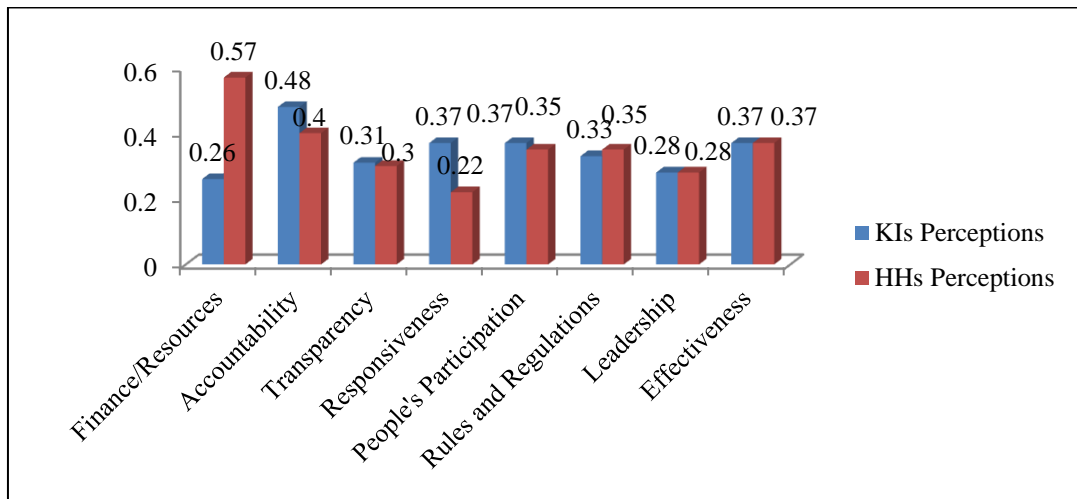
In case of rules and regulation responses, KIs and households perception is 'poor' where as in planning aspect, the KIs and households perception is 'moderate'. The KIs and households perception on leadership quality was 'poor'. The WAI value of household's perception for leadership is 0.36 and of KIs is 0.29. The household's and KI's perception in overall effectiveness of governance was also 'poor' and the WAI values are 0.33 and 0.36. So it can be said that the governance condition of water supply related problems in Tangail Paurashava was 'poor'.

6.11 Comparison between Household's and Key Informant's Perception on the Governance Condition of Wastes Management in Tangail Paurashava

The figure 6.12 shows that, the difference between key informant's perception and household's perception is seen on financial condition of authority on wastes management in the Paurashava. The WAI value of KIs perception on finance is 0.26 and the condition is 'poor' while the household's perception is 0.57 and the condition was 'moderate' on financial capability of the authority.

In case of the indicators, transparency and peoples' participation, the perception level of households and KIs are near about same. The WAI values for transparency of KIs on waste mangement is 0.31 where at household level is 0.3. The transparency condition on waste management according to KIs and HHs perception was 'poor' by WAI. The peoples' participation condition on waste management according to KIs and HHs perception was also 'poor' by WAI. Where WAI values for KIs perception is 0.37 and HHs perception is 0.35on peoples' participation.

Figure: 6.12 Comparison between Household’s and Key Informant’s Perception on Governance Condition of Wastes Management by WAI



Source: authors’ fieldwork, 2022

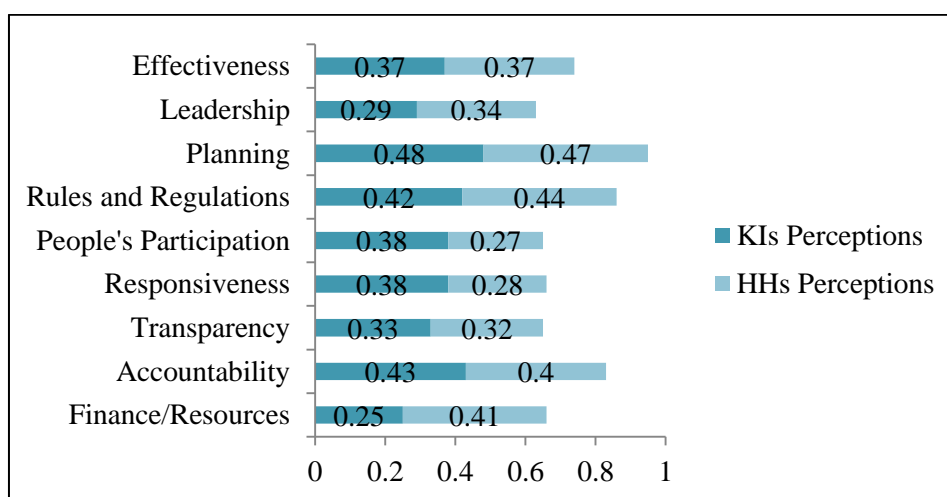
However, differences are observed in case of accountability and responsiveness indicators. The WAI value for accountability of KIs perception is 0.48 where as 0.4 for household level perceptions. According to WAI value, KIs perception denotes as ‘moderate’ and household’s perception was ‘poor’. In case of the parameter responsiveness, the WAI value of KIs is 0.37 where as 0.22 for households. The overall condition of both perceptions indicates as ‘poor’ on responsiveness of authority on wastes management activities.

In case of leadership and effectiveness governance parameters, The WAI value of leadership quality of both, HHs and KIs are same (0.28 and 0.28). Leadership condition was poor on waste management activity. The effectiveness governance was also ‘poor’ because the WAI values of HHs and KIs perception was ‘poor’ (0.37 and 0.37).

6.12 Comparison between Household’s and Key Informant’s Perception on the Governance Condition of Drainage and Water Logging Management in Tangail Paurashava

From the figure 6.13 it is observed that, there is difference between key Informant’s perception and household’s perception of availability financial support. The WAI value of KIs is 0.25 and 0.41 for HHs perception. According to Key Informants, the financial condition of the authority was ‘poor’ where as household’s perception was ‘moderate’ on drainage and water logging management. There is no any remarkable difference between KIs and HHs perception on other indicators. The accountability condition is ‘moderate’ for KIs where WAI values are KIs for 0.43 and HHs for 0.43, the overall condition was poor.

Figure: 6.13 Comparison between Household’s and Key Informant’s Perception on Governance Condition of Drainage and Water Logging Management by WAI



Source: authors’ fieldwork, 2022

The condition of transparency, responsiveness and peoples’ participation was ‘poor’ according to KIs and HHs perception. In those cases the WAI Values were poor. In case of rules and regulations application, the overall condition of KIs and HHs perception by WAI is moderate in drainage and water logging management. The WAI values are 0.42

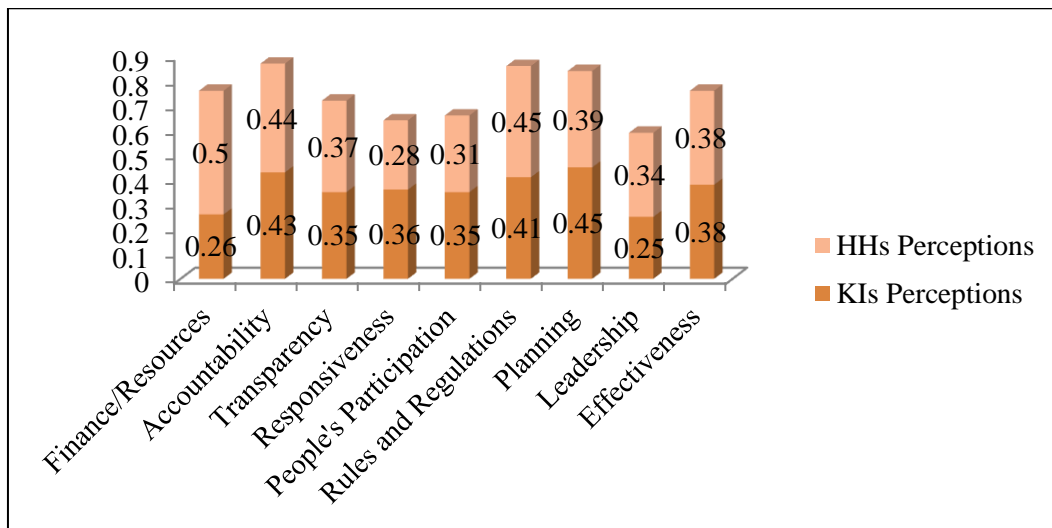
for KIs and 0.44 for HHs. The leadership and effectiveness of governance condition was also 'poor' according to WAI values.

6.13 Comparison between Household's and Key Informant's Perception on the Governance Condition of Road Construction and Traffic Management in Tangail Paurashava

From the Figure 6.14 it is observed that, there is also difference between key Informant's perception and household's perception of authority's financial support. The WAI value of KIs perception is 0.26 while household's perception is 0.5. The overall condition of financial support of the authority according to KIs was 'poor' but according to household's perception was 'moderate'.

The accountability and transparency of the authority on roads construction and traffic jam management are 'moderate' and poor as per KIs and HHs perceptions. The WAI values for accountability as per KIs and HHs are 0.43 and 0.44. On the other hand, the WAI values for transparency according to KIs and HHs are 0.35 and 0.37.

Figure: 6.14 Comparison between Household’s and Key Informant’s Perception on Governance Condition of Road Construction and Traffic Management by WAI



Source: authors’ fieldwork, 2022

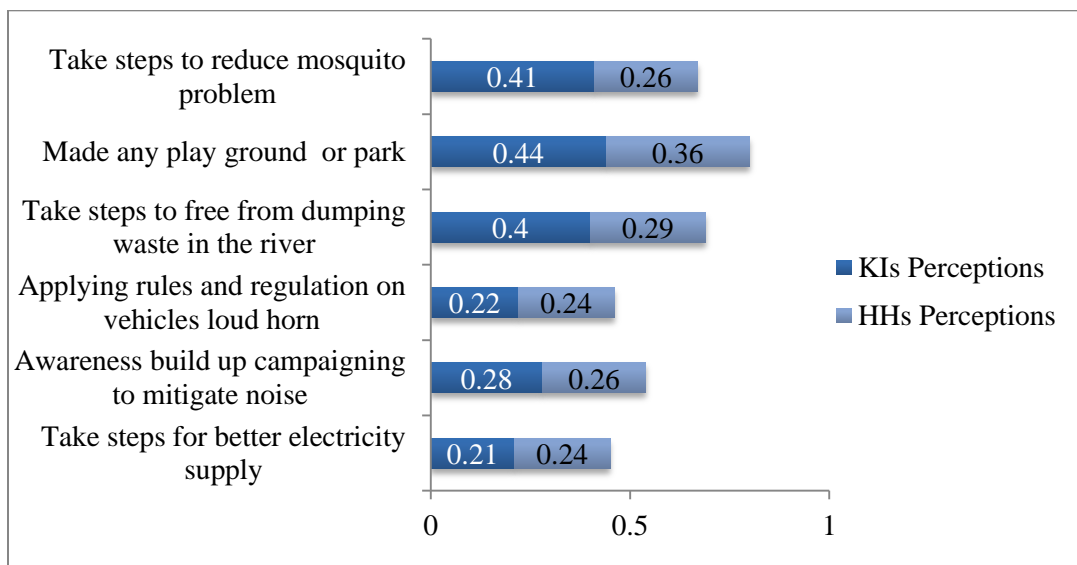
In case of responsiveness and peoples’ participation, the overall condition of these indicators were ‘poor’. The perception on transparency of KIs and HHs are near about similar, the WAI values are 0.38 and 0.28 respectively. The WAI values of KIs and HHs on peoples’ participation of road construction and management are 0.35 and 0.31. Other indicators, rules and regulations, leadership quality and effectiveness of governance were ‘poor’ in road construction and management in Tangail Paurashava. There is no any remarkable difference between KIs and HHs perception on those parameters.

6.14 Comparison between Household’s and Key Informant’s Perception on the Governance Condition of other Problem in Tangail Paurashava

The Figure 6.15 shows the comparison between the Household’s and Key Informant’s Perception on governance of other problems in Tangail Paurashava. In case of electricity crisis, respondents were asked does authority take steps for better electricity supply. Key Informant’s and household’s perception was similar as ‘poor’. The WAI values are 0.21

and 0.24. In case of governance condition of noise pollution, respondents were asked two question; does authority take steps to build up awareness by campaign and does authority apply rules and regulation, like make fine on vehicles loud horns to mitigate noise pollution, Key Informant’s and household’s perception was similar on these two questions. The perception of both respondents was ‘poor’ on governance of noise pollution.

Figure: 6.15 Comparison between Household’s and Key Informant’s Perception on Governance Condition of Other Problems by WAI



Source: authors’ fieldwork, 2022

However, difference is seen on governance condition of river pollution where the WAI value of KIs perception was 0.4 and the HHs perception was 0.29 on the question of does authority take steps to free from dumping waste in the river? Another difference has seen in governance of open space and recreational facilities. The WAI of KIs perception is 0.44 which indicate ‘moderate’ on making play ground or park and the household’s perception is 0.36 which indicated ‘poor’. In case of taking steps to reduce mosquito problem, KIs perception was moderate and HHs perception was ‘poor’.

6.15 Conclusions

The standard living of the inhabitants of a Paurashava depends on its proper governance. For this purpose, sustainable use of local limited resources, committed leadership and people's engagement in all levels of the development work should be ensured in environmental governance system of a city although the Paurashavas are loaded with many responsibilities. Then the existing problems of the city can be minimized. Limited financial capacity worsens the environmental condition and availability of services in Tangail Paurashava though every municipality get central government grant by various projects.

From the findings of this chapter it is seen that the governance condition of water supply problem in Tangail Paurashava was 'poor' where the perception of households and key informants were 'poor' in case of the indicators transparency, responsiveness and peoples' participation, rules and regulations, leadership and effectiveness. Here, household' and KIs perception was more or less similar, but difference is observed in case of the indicator 'finance'. Accountability was also poor in water supply management. Moreover, the governance of waste management problem is also 'weak' in this Paurashava as all the measured indicators which were perceived by households and KI's shows the 'poor' condition without accountability (Moderate) as perceived by KIs. There is no any noticeable difference between households and KI's perceptions except the indicator finance. Household's perception was moderate in this indicator and KIs perception was 'poor'.

The drainage and water logging management condition was poor according to both types of respondents except in case of the indictors such as accountability, rules and regulations

and planning which are moderate according to KIs perceptions. In case of roads and traffic management, all indicators of governance were poor except the accountability and application of rules and regulations. The perceptions of households and KIs both were moderate in this aspect. There was also difference in households and KIs perceptions in other indicators.

In addition, the governance of other problems such as electricity crisis, noise pollution, water pollution, air pollution, open space management, and mosquito and security problem in Tangail Paurashava was also poor. There was very limited or sometimes no initiatives to govern these problems. Interviewee of the study area said that there was limited participation of stakeholders and that's why accountability and transparency of authority was limited. Weak monitoring system, weak enforcement of laws has degraded the quality of provided services in the Paurashava.

Under the Local Government (Paurashava) Act, 2009, Tangail Paurashava is clearly responsible to provide and manage water supply, solid waste, drainage and roads, safety, disaster and pollution control for all citizens. But in reality, the Paurashava did not maintain their responsibility properly. A maximum portion of citizens are out of water supply, drainage, pucca road connection and garbage management facilities. Even, the authority did not follow the Paurashava Act, 2009 properly in maintaining accountability, transparency, peoples' participation, rules and regulation application in governance of water supply provision, waste management, drainage and water logging management, road and traffic jam management, river, air and noise pollution etc. As a result, citizen could not get proper services from the Paurashava authority, environmental problems were remained and governance effectiveness was poor in the city.

CHAPTER SEVEN

**CHALLENGES BEHIND THE ENVIRONMENTAL
GOVERNANCE**

CHAPTER SEVEN

Challenges Behind the Environmental Governance

7.1 Introduction

In spite of, many initiatives and efforts have been taken in Bangladesh in recent to upgrade the quality of governance, it is still in misery of numerous and various governance related scarcities and complications both organizational and non-organizational (Hossen and Anwar, 2011). Similar scenario seems in the secondary cities in Bangladesh. Secondary cities in Bangladesh are suffering from many complexities and problems of governance system which have lost the cities livability and become environmentally poor.

7.2 Challenges behind Environmental Governance as Perceived by KIs

7.2.1 Limited Central Government Grants

Despite municipal governance in Bangladesh is based on democratic electoral system, the urban local governments (City Corporations and Pourashavas) are not privileged enough to exercise desired power, authority or autonomy. These also largely rely on the central government for budget. Although Municipalities being consists of Wards but they don't have financial authority and power (Islam, 2013).

When asked the question 'why environmental problems are unsolved or solved in slowly?', all public representatives, six service providers of Municipality and Five professional and policy makers (25) mentioned about the limited grants got from the central government which was very poor for the development activity according to peoples demand for the authority (Field Survey, 2022). Honorable Mayor and

Commissioners said that

“the fund came with various projects or programmes in several times was very limited for this type of large Paurashava, that’s why many wards like W 5, W 8, W 9, W 11, W 13 were under developed, they had no any utility services facilities” .

7.2.2 High Population Density

The population density of Tangail Paurashava is 4953 (persons) per sq. km (BBS, 2011). So the demand of utility services facilities was so high and mismatched between supply and demand was prevailing here. Paurashava could not able to facilitate amenity services with its sufficiency. All public representatives, six service providers and other interviewees of different department and policymakers group (36) said that authority could provide minimum services sometimes nothing due to high population and limited resources (Field survey, 2022).

7.2.3 Insufficient Manpower of Municipality

All City Corporations and Paurashavas in Bangladesh have seriously lack in personnel and are also mostly depend on the central government for recruiting manpower (Islam, 2013).

Insufficient manpower can hamper proper maintenance of services and take measures to reduce problems. All public representatives and service providers (50 percent interviewees) of Tangail Municipality office revealed that authority had severe crisis of

manpower especially they had no any personnel allotted in ward wise (Field Survey, 2022).

The honorable Mayor and councilors of 1, 4, 6 no. Wards also motioned that

“We could not properly manage wastes, drainage cleaning and maintenance and proper response and monitoring in case of environmental problems of the city. They thought that this is the one reason of remaining problems and ineffective governance in the city”.

7.2.4 Unskilled and Untrained Manpower of Municipality

Skilled and trained manpower can make possible the plans or programmes successful. Almost all respondents said that there were no any training, workshop programmes for the municipal personnel on utility services maintenance, budget management, urban planning, environmental management etc. All (40) respondents (100%) mentioned that municipal people did not have any practical training on wastes management, project management overall municipality maintenance and this is the one reason for mismanagement in services facilities, weak environmental governance in this Paurashava (Field Survey, 2022).

7.2.5 Lack of Training of Public Representatives

There were very rare training programmes about municipal governance maintenance for public representatives in Tangail. Sometimes they got one or two days workshop on different phenomena like urban planning, climate change and disaster management, rescue and relief of disaster etc. But they did not get long time like for one week, two week, one month or any fundamental training on how municipal governance works or

how it can be managed in planning way. From all interviewees, 29 interviewees (72.50 percent) mentioned that lack of training of all mayors and councilors hampered providing quality services facilities and others environmental management in this Paurashava (Field Survey, 2022).

Four Ward councilors of Tangail Paurashava revealed that

“Government training programme is very limited for us. Only two workshops were organized by the local government on earthquake and causes and impact of climate change. If government arrange more training programme on proper governance of services facilities, mitigate environmental problems, we will know about how can be manage problems with our limited resources properly”.

7.2.6 Lack of Peoples’ participation

Lack of local peoples’ participation was another challenge in effective governance applying in Tangail Paurashava. There is an opportunity remains in the city on attending TLCC meeting of the authority. But, the meetings were organized irregularly and the stakeholders were selected as per authority’s choice. Moreover, local people sometimes are not invited on the meeting and women did not attend on the meeting. Among all the KIs, 70.40 percent respondents identified lack of people’s participation was the barrier of effective environmental governance in the study area.

7.2.7 Lack of knowledge and awareness of Authority about Environmental Governance

There is limited knowledge and awareness of environmental governance like how good governance can be maintained, how Paurashava authority can manage services activity, environmental problems through limited resources. They have limited knowledge to match between demand and supply. As they get limited or no opportunity to gather knowledge through training and workshop programmes, they have limited awareness about good governance system. Among all of the interviewees 67.50 percent said that as authority got limited opportunity to gather knowledge about proper maintenance of Paurashava, they also had limited awareness. As a result weak governance system was prevailing in this Paurashava (Field Survey, 2022).

7.2.8 Lack of awareness and knowledge of Mass People about Environmental Governance

Peoples are not aware and don't have enough knowledge about their citizen's right and responsibility. A very limited people who were conscious about their rights and responsibilities but it did not work to solve any kind of environmental problems of city. Half of the interviewees (50 percent) said that mass people did not want to raise their voice or move for solving any kind of common problems, they avoided hassle in their personal life. One respected interviewee of CSOs said that

“There is communication gap between public representatives and people. They don't want to go near local representatives because public representatives give commitment to solve the problems but in reality that is remain unsolved. Public representatives do not arrange any dialogue or meeting about achievement and problems of the locality” (Field Survey, 2022).

**Table: 7.1 Challenges of Environmental Governance in the Study Area
perceived by KIs**

Challenges	Frequency (n=40)*	Percentage (%)
Limited Central Government Grants	25	62.50
High Population Density	36	90.00
Insufficient Manpower of Municipality	20	50.00
Unskilled and Untrained Manpower of Municipality	40	100.0
Lack of Training of Public Representatives	29	72.50
Lack of Peoples' participation	28	70.40
Lack of Knowledge and Awareness of Authority about Environmental Governance	27	67.50
Lack of Knowledge and Awareness of Mass People about Environmental Governance	20	50.00
Lack of Responsiveness of Authority	17	42.50
Lack of Commitment and Responsiveness of Public Representatives	22	55.00
Corruption	14	35.00
Lack of Accountability and Transparency	22	55.00
Improper and Non-applicable of the Rules of Law	18	45.00
Nepotism	20	50.00
Unplanned and Uncoordinated Development Work	26	65.00
Biased Journalism	13	32.50
Lack of Public Unity	22	55.00

Source: Field Survey, 2022 * Multiple responses are considered

7.2.9 Lack of Responsiveness of Authority

Municipal authority should be committed to the people and should be responsible to the works. But in practice, responsibility of authority to the people is too little in this city. From all interviewees, 17 interviewees of service providers, professionals and policy makers (42.50 percent) revealed that many problems of this Paurashava were remaining or unsolved due to lack of responsiveness of the municipal authority (Table 7.1).

Two Key Informants of NGOs and CSOs explained that

“Paurashava authority does not pay attention properly to solve environmental problems like water pollution, air pollution, garbage disposal

problem and utility service related problems. Sometimes they do not give importance people's complains or problems, sometimes try to solve according to the relationship of citizen”.

7.2.10 Lack of Commitment and Responsiveness of Public Representatives

All public representatives are legally committed and responsible to the people as they become elected by the peoples' vote. They come with lots of commitment or mandate or planning to achieve to goal but in reality it is no happening. Similar condition appeared in Tangail Paurashava. Among 40 interviewees, 8 interviewees from service providers and 14 interviewees from professionals and policy makers (55 percent) said that public representatives like Mayor and Councilors were not that much committed and responsible to fulfill their election mandate and solve people's problems and provide facilities. They did not think about people's welfare, right and problems. They also thought that, it is the reason for weak governance in this Paurashava (Field, Survey, 2022).

7.2.11 Corruption

Governance, ethics, honesty and corruption are interconnected to each other which are the outcome of multifaceted social, political, economic and psychological issues and forces (Westra, et.,al 2000). In case of Bangladesh, Rashid and Johara argued that this country faces honesty-governance-corruption issues of which all the sectors of government are suffering from corruption (Rashid and Johara, 2018).

There are several types of political corruption that occur in local government like bribery, extortion, nepotism and patronage systems. Among all of interviewee, 14 interviewees (35 percent) mentioned that corruption of authority; political nepotism and

patronage system were prevailing in this Paurashava and this is the reason for weak governance system in this city (Field, Survey, 2022). They also said that authority of public representative gave attention to the people's problems according to their personal relationship.

Respected Journalist of 'Progotir Alo' said about corruption of authority that

“when any project or programme of Paurashava is going on or funded for any development work, mayor, councilors and whole authority take contract of this work and a small amount of fund spends for that development work and rest of them are enjoyed by themselves”.

7.2.12 Lack of Accountability and Transparency

Authority and public representatives are to be accountable to the Municipal people. People's participation, accountability, transparency and corruption are interrelated to each other. When a authority can make sure to participate people in financial matter, budget making, various infrastructural projects and programmes, accountability and transparency can be achieve and corruption will not exist.

In Tangail Paurashava, authority could not share or engage peoples to make budget, arrange any dialogue or development projects and programme related expenditure (Field, Survey, 2022). In this perspective, 55 percent respondents (22 interviewees) in different groups explained that there was lack of accountability and transparency in governance system and they also thought Municipality should increase accountability and transparency in all sector of the system through peoples' participation in Tangail (Field, Survey, 2022).

7.2.13 Improper and Non-applicable of the Rules of Law

In reality, rules or laws exist in our country but these are not applicable equally for all classes of people. Consequently, people who are innocent cannot get proper justice and it is a vital element of good governance. Among all interviewees, 45 percent respondents of professionals and policymakers group and other relevant office of the Paurashava mentioned that people did not get similar services facilities in the Paurashava, the rules and laws were there in the city but were applied in favor of privileged people.

7.2.14 Nepotism

Nepotism is the one kind of political corruption. It becomes spread in all sectors in Bangladesh. Among all interviewees, 50 percent respondents revealed that nepotism is increasing day by day in this Paurashava even many respondents said that Paurashava authority charged very little amount holding tax than the reality due to personal or political relationship with that people. They also said that if anyone had a good relationship with Mayor's or Councilor's, the problem of that people was solved quickly. Here there was little consideration of neutrality to solve people's household or neighbourhood related problems (Field, Survey, 2022).

7.2.15 Unplanned and Uncoordinated Development Work

The population of urban areas in Bangladesh is growing rapidly. Tangail Municipal population has also increased by the year 1974 to 2011. In the year 1974, the population of Tangail was 5.24% of total urban population and in 2011, this urban population has increased by 15.08% of total urban population of Bangladesh (BBS, 2011).

As the urban population is increasing rapidly in Tangail, urbanized activities like making settlement, commercial activities, and road and transport system are developing rapidly. But this development is taking place in unplanned way. All of the interviewees said that unplanned urbanization and development work could hamper the environmental governance system of Tangail Paurashava. They also said that people did not obey the rules and regulation of construction and there was no coordination between the development works of previous and present public representative's works. Key person of CSOs said that

“If any Mayor, Councilor or Deputy Commissioner has done half or completed any development work in his or her tenure, that half done activities and development works are not become completed or maintained by the present person”.

7.2.16 Sometimes Biased Journalism

We think that neutral, unbiased journalism is the mirror of society. But in recent years, sometimes journalism and media has become biased and acting like on behalf of any party. About 32.50 percent respondents of professionals and policy makers said that journalist and media people were not sometimes neutral; they maintained good relationship with the administration and worked on behalf of authority. But they should be neutral in their profession so that administration or authority could not do any illegal, corrupted or unfair activities and people could know the real picture of that problem. They also said that it is one of the challenges to implement the proper governance system of the Paurashava.

7.2.17 Lack of Public Unity

In recent time, it seems that there is a lack of unity among peoples to solve any problem. They don't have proper knowledge and awareness about the governance system of the Paurashava. Among all respondents, 22 interviewees said that there was lack of public unity and bonding to solve any environmental problems in the city and it is one of the factors of weak governance system of Tangail Paurashva. One prominent interviewee of NGOs said that

“People become more selfish, they are always busy to solve their personal problems but there are limited people to come forward or speak out to solve any neighbourhoods’ environmental problem. That’s why environmental problems are prevailing in this city”.

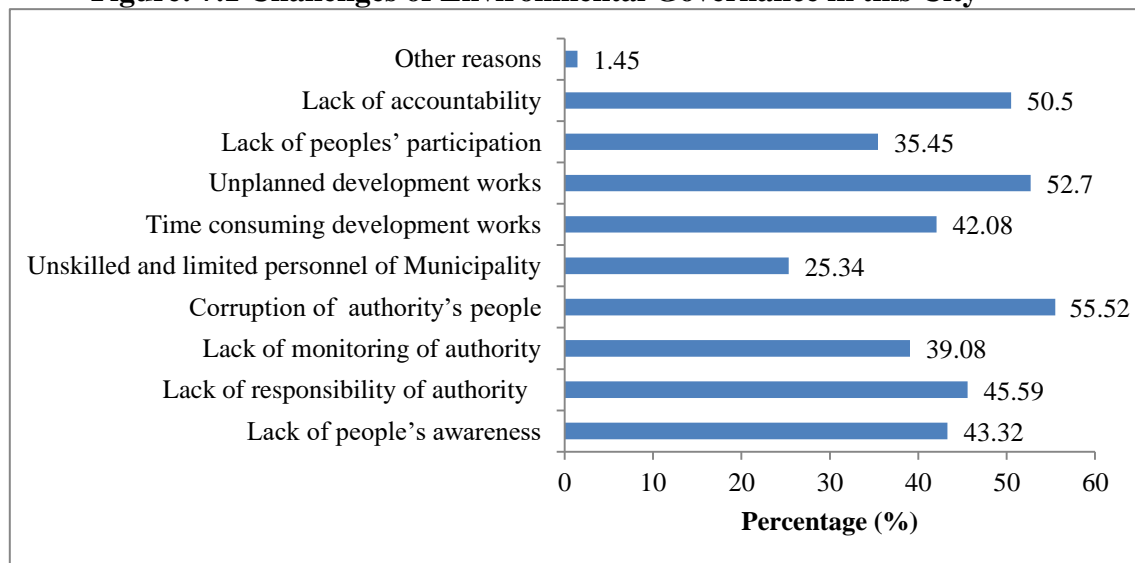
7.3 Challenges behind Environmental Governance of Tangail Paurashava as Perceived by Households

There were many environmental problems in Tangail Paurashava, some environmental problems were unsolved and some were solving very slowly. In this study respondents were asked that why environmental problems of this city were unsolved and solving very slowly?

From this Figure 7.1 it is evident that most of the people (55.52 percent) mentioned that authority people like personnel of municipality and public representatives were sometimes corrupted; they do discrimination and misuse political power and that's why many environmental problems were not solved. About 50.50 percent respondents claimed about the lack of accountability as governance problem of Paurashava and 52.7 percent respondents said about unplanned development works occurred in this city which caused

many environmental problems. About 45.59 percent respondents identified lack of responsibility of authority and 43.32 percent respondents said that lack of people’s awareness were the challenges of environmental governance in this Paurashava. Less than half of the respondents (42.08 percent) mentioned as challenges of environmental governance that the development work which are very time consuming and lengthy process to finish. About 39.08 percent and 35.45 percent people identified lack of monitoring of Municipality and lack of peoples’ participation as the challenges of environmental governance in Tangail Paurashava (Household Survey, 2022).

Figure: 7.1 Challenges of Environmental Governance in this City



Source: Household Survey, 2022, *N=396 (multiple responses were considered)

7.4 Conclusions

Like other developing countries, city corporations, municipalities and other small town is struggling with various kind of environmental governance problems in Bangladesh. The top- down decision making process is suffering from various challenges in executing and implementing plans and policies where central government makes policy and local government and administration implements that policy. Moreover, there creates

communication gap or shows less interest in implementing the policies among decision makers, implementing bodies, the people and the related actors like, representative of civil society, NGOs and the media (Islam, 2020 and Islam, 2018).

On the other hand, there are many challenges of environmental governance problem in Bangladesh. To sum up the chapter, many challenges were identified that accelerated the problems of environmental governance in the Tangail Paurashava. There was deficiency and inadequacy of services facilities and unhealthy environment due to high population density, limited development fund, insufficient and unskilled manpower of municipality and public representatives in the Paurashava. Environmental governance related knowledge and awareness of authority and inhabitants was limited and there was hardly little responsiveness and commitment of authority and public representatives also made worst situation of the study area. Moreover, corruption, nepotism, biased media and political biasness has spread in all sectors of the country and Tangail Paurashva was not different from these.

In the Paurashava, there was lack of accountable and transparent governance, improper and limited implementation of environmental laws and unplanned and uncoordinated development work created problems of executing proper environmental governance. However, public unity is the most crucial factor of maintaining proper governance. But, in the city, there was lack of public unity, people were self-centered and did not give concentration in common interest and environmental aspect.

CHAPTER EIGHT

**ROLE OF NGOs, CBOs AND CSOs IN
GOVERNANCE OF TANGAIL PAURASHAVA**

CHAPTER EIGHT

Role of NGOs, CBOs and CSOs in Governance of Tangail

Paurashava

8.1 Introduction

Civil society is considered as a serious contributor in the process of environmental decision-making and a valuable partner in executing and examining the policies of environment at the neighbourhood, countrywide and global levels. Civil Society Organizations (CSOs) and Non-Governmental Organizations (NGOs) can serve by helping the community's people, development plans and programmes and overall environment at the local level. They act as a facilitator or representative of mass people (UNDP, 2016).

Civil society acts as a prominent role in linkage, dissemination and sharing the information and policy among general people. It can also support in developing and implementing policy, policy advocacy, as well as evaluation and supervising by considering environmental challenges. NGOs also encourage various stakeholders to buildup network and tackle all kind of problems including environmental in a collective manner and assist to build up skills and attitude regarding sustainable organization of resources. Apart from consultative and supportive functions, CSOs are able to perform straight responsibility in environmental management as well as governance (UNDP, 2016).

In Bangladesh, Non-governmental organizations like BELA, Proshika, BRAC, WTB, BAPA etc are trying to play a significant role at national level. They are working for policy inputs, programs, international negotiations, governance and management and

research etc. As a whole these NGOs are trying to establish environmental governance in Bangladesh.

8.2 Role of NGOs, CBOs and CSOs in Governance of Tangail

Paurashava

In Tangail Paurashava, NGOs like BELA (Bangladesh Environmental Lawyers Association), BAPA (Bangladesh Paribesh Andolon), CSOs and CBOs played active role in various environmental phenomenon like advocacy of garbage management, garbage collection, helping the administration in making free from illegal structures of Lauhajong River, environmental loss assessment of flood action plan project 1999, implement action oriented programme like FAP-20 project on the behalf of unemployment and evicted boatmen, take steps to conserve open space and water body such as lakes and river, raising voice to implement good governance under right to life programme which was funding by Canadian government etc. But at present the activity of BELA, BAPA and CSOs in this Paurashava are not exists actively since 2018 due to the changes of working nature of BELA, becoming the work of BELA as Court based, unavailability of getting projects of BELA and BAPA.

8.2.1 Assessing Environmental Loss by Implementing Project of Flood Action Plan

Tangail as well as Bangladesh was destroyed by extensive flood which created severe damage to agriculture and infrastructure in 1987 and 1988. After that period, the Government of Bangladesh (GoB) along with foreign partners has developed a five year plan called the Flood Action Plan (FAP). In 1989, the World Bank and GoB decided to coordinate various existing proposals in the area of flood control.

Within this plan government took initiative to build Sluice gate in the Jamuna River. As a result the flow of Lauhajong river of Tangail was decreased and nearly dead, the town became dry, drainage condition was hampered. Then BELA took action oriented programme and did study in 1995 on behalf of the boatmen, fishermen who were evicted and unemployed from the bank of the Jamuna River where sluice gate was built. BELA did a case in the high court against eviction in 1996 and the last of 1997 the case was win on behalf of the evicted people and it was said that the project of FAP-20 should be continued by the laws and regulations of Bangladesh like according to embankment and drainage act 1952 and should be compensate of evicted people. Then BELA also made a comprehensive assessment of loss of evicted people and environment of Tangail (Field Study, 2022).

8.2.2 Raising Voice to Conserve Open Space and Water Body

There are 6 lakes in Tangail Paurashva and these lakes were polluted by the dumping wastes and others. BELA made voice against lake pollution and talked to the authority, Civil Society and mass people to save these lakes. Then, authority took initiatives to free from pollution of lakes by the advocacy of BELA. BELA also raised voice to conserve open space, open field in Tangail Paurashava (Field Study, 2022). Representative of CSOs also raised voice against Paurashva's negative activities like building market by filling up lake and making shop by breaking down public toilets in the Paurashava. But that movement was not successful by the force of political power (Field Study, 2022).

8.2.3 Trying to Implement Good Governance under the act of ‘Right to Life’ Programme

In 1998 BELA worked on the good governance funding by Canadian government. BELA raised voice and motivated people to free the Lauhajong River from illegal encroachment of Tangail Paurashava. Finally people, civil society worked with BELA under the act of ‘Right to Life’ and made a movement and the movement was successful after three years. The Lauhajong River was free from the illegal settlements and structures of Tangail Paurashava (Field Study, 2022).

8.2.4 Implementing Collection System of Garbage

Along with that activity, BELA made a voice and took initiatives with the help of Civil Society Organizations (CSOs) and authority to manage garbage in Tangail Paurashava under the good governance project. Then Paurashava authority took steps by the advocacy of BELA to collect garbage from the households through the Community Based Organizations (CBOs) and authority managed garbage truck and van to collect and at present maximum Mahollah’s has garbage collection system which are managed by the CBOs (Field Study, 2022).

8.2.5 Raising Voice of Making Sufficient Drains and Public Toilets

Representative of Civil Society along with mass people raised voice in ‘laws and discipline meeting’ of Paurashava to maintain and clean clogged drain properly, build connecting drains, sufficient outlets of waste water and public toilets in the Paurashava. But it did not get importance to the Paurashava (Field Study, 2022).

8.2.6 Launched Training Programme of Rickshaw Puller on Traffic Law

By the funding of good governance, BELA launched a training programme and trained up 1000 rickshaw puller, 1000 auto drivers to minimize traffic congestion on traffic law in Tangail Paurashva. BELA also launched training programme of traffic police on traffic law (Field Study, 2022).

8.3 Conclusions

Though having political barriers and insufficient cooperation of authority, Civil Society, mass people, other NGOs, DOE and other organizations of Tangail Paurashava helped BELA to take initiatives environmental governance and conservation related activities such as assessment environmental loss of FAP evicted people, starting collection system of wastes, water body and open space conservation, trying to implement good governance, campaign and awareness programmes in Tangail Paurashava. NGOs and CBOs act as pressure groups in governing and managing environmental problems and circumstances in an area. However, the activity of environmental NGOs such as BELA, BAPA which were worked in the Paurashava area has become inactive since 4 years. As a result, the movement of environmental governance, management activities has been stopped.

CHAPTER NINE

SUMMERY, FINDINGS AND CONCLUSIONS

CHAPTER NINE

Summery, Findings and Conclusions

9.1 Introduction

The prime goal of this research is to investigate the environmental problems which are remaining in the Tangail Paurashava and its governance system. For this purpose, various research related literatures, knowledge and field observation and understanding of the situation was the helpful part of the study. This study is based on contemporary literatures on environmental problems of cities in Bangladesh, theoretical concept of ‘Environmental Governance’, ‘Good governance’, ‘Sustainable Development’ and other literatures where suitable.

The literature of the city’s environmental problems implies that third world countries including in the cities of Bangladesh are facing many environmental burdens which creates environmental hazard, hampered to the peoples heath and losses the livability of the city (Mc Granahan and Songore. 1994; Mc Granahan et al. 2001; Mc Granahan, 2007). The ‘Environmental Governance’ theory suggests that how people (government, private sector, businessmen, community people, farmers, civil society etc) make environmental decision or exercise their power over natural resources (WRI, 2002 and Ortolano) and ‘Good governance’ highlights the manners such as sensitivity, administrative quality, responsiveness, efficiency, effectiveness, equity, transparency and accountability etc which are also the components of environmental governance to meet the peoples need and solve environmental problems of the public by implementing laws and policies (Hasan, Sultan & Hasan, 2014 and Bilney, 1994). The aim of ‘Sustainable Development’ is to attain the long term social, economic and environmental stability

through effective choice making procedure which is also the aim of environmental governance system (Emas, 2015; Dernbach, 2003; Stoddart, 2011).

The first, second and third chapter of the thesis highlights the aims, justification, theoretical and conceptual basis of the literature and the procedure of the research. Data were collected on the basis of the different types of methods (Chapter-3) which are discussed in the chapter 5, 6, 7, and 8. The results of the study which are the opinions, statements, consent of the inhabitants, public representatives, service providers, professionals and policy makers of Tangail Paurashava about the environmental problems and environmental governance are included in those chapters.

9.2 Summery and Findings

9.2.1 Summery

Large and other city's environmental problems have been identified from many environmental problems of urban areas in Bangladesh. After that, the problems of Tangail Paurashava have been separated and identified from the background study such as by informal meeting with citizens, key persons, from local newspapers preliminary. Then, household survey was conducted to know the environmental problems, nature of the problems and causes of those problems. In Tangail Paurashava, some major problems have explored like very limited water supply, solid waste management problem, inadequate drains and management problem, water logging, insufficient, broken and narrow road network, traffic Congestion, electricity crisis, noise pollution, excessive dust in air, water pollution (Lauhajong River), limited open space and recreational facilities, mosquito Problem and others etc from a lot of problems.

In the study area, people were not satisfied with availability of services facilities. According to household survey, 2022 (see Table 5.2), only 20 percent respondents had municipal piped water supply, 15.56 percent had gas supply. But, in case of electricity connection 100 percent respondent's had this facility in Tangail Paurashva. But, Municipal Street lighting facilities was limited, 28.57 respondents' had this facility. In case of waste management purpose, only waste collection system remains in the study area and only 44.68 percent respondents had this collection facility. In case of drainage management facilities, only 42.64 percent respondents had connecting drains with main drain and 57.46 percent respondents had access road connection system in Tangail Paurashava.

To explore the environmental problems of households and neighbourhood level which are linked with governance condition in the city, (see Chap.5) household survey was conducted. According to the household survey it was observed that 87.12 percent respondents identified 'inadequate water supply' is the major problem in Tangail Paurashava (See Table 5.3). The rank of the environmental problem was made as per highest perception of households. From this aspect, inadequate water supply problem got first ranking. In case of Municipal water supply facilities, maximum Wards (Ward No. 4, 5, 8, 9, 10, 11, 12, 15 and 17) were deprived of supplied water and most of them used personal pipe or tube well for drinking, cooking, bathing, washing etc (described in chapter 5). As there was limited water supply facility in the Paurashava, most of the respondents (68 percent) were dissatisfied and only 10 percent were satisfied with this service.

Waste management problem is another environmental problem in Tangail Paurashava which was identified by 85.10 percent respondents and got second ranking position. The facility of wastes collection is not available in all Wards and Municipality and CBOs collected wastes from in Wards no. 1, 6, 9, 11, 13, 14, 16 and 17 (Municipality Office and household Survey, 2022). From the household survey, 29.75 percent and 14.93 percent respondents said that Municipality and community organization collected their wastes respectively. More than half of the respondent's wastes were not collected by any authority and people threw their household wastes in open space, nearby low lands, road side and into the drains. On the other hand, solid wastes which were collected by the CBOs or Municipality dumped into the two parts of the Paurashava; 'Rabna By Pass' and 'Baby Stand' which are the road side low lying and crowded areas. This dumping activity creates pollution like air, water, soil pollution, odor smell, spreads germs, diseases, insects and mosquitoes and harms to the nearby people as well as citizens of the Paurashava.

Inadequate drains and management problem is third environmental problem which was perceived by 80.80 percent respondents and the water logging problem is another problem interrelated with drainage management which was perceived by 74.74 percent respondents. The quantity of drains in this city was not adequate only 49.91 km. of pucca and katcha drains were available (Paurashava Master Plan, 2013). From the household survey it was seen that 42.64 percent of the respondents said that they had connecting drains with main drains. Most of the respondents (68 percent) faced severe drainage congestion and water logging in some Wards such as Ward no. 3, 6, 7, 11, 13, 14, 15, and 18 in the Paurashava which created environmental degradation, flooding, problems of

sanitation and traffic movement, spread of diseases, mosquito problem etc in the study area (Latif et. al. 2016 and Field Survey, 2022).

Another problem was identified by respondents (66.91 percent) as insufficient, broken and narrow road network and traffic congestion problem (65.65 percent) as 6th problem in Tangail Paurashava. The road network system in this Paurashava is not good. There were three types of roads like pucca (174.32 km.), semi pucca (13.76 km.) and kutchha (121.27 km.) which were very limited for this city (Paurashava Master Plan, 2013 and Field Survey, 2022). According to respondent's opinion, 57.46 percent of the respondents had access road connection but these were very narrow, muddy and broken in type. There was no any signalized traffic management system in Tangail Paurashava. As a result, 40.5 percent of the respondents faced traffic congestion in peak hour of a day.

Though electricity connection covers 100 percent of the study area, 53.03 percent respondents mentioned that electricity crisis has become a major problem due to insufficiency, frequent cut off. As a result, 40.85 percent respondents were dissatisfied with the electricity connection in the city.

Environmental pollution like noise pollution, excessive dust in air (air pollution) and river pollution were explored as environmental problems in this city. From this three pollution, 46.71 percent respondents mentioned noise pollution problem as highest, 30.30 percent said about excessive dust in air and 25.75 percent mentioned as Lauhajong River pollution in the city. Others problems were also identified by the respondents as limited open space and recreational facilities (26.76 percent), mosquito Problem (37.87 percent) and security Problem (20.20 percent).

Some causes were identified behind the environmental problems in the Paurashava among those, lack of monitoring and improper responsibility of Municipality got highest percentage. Respondents mentioned other major causes also like lack of skilled manpower, high population density, unequal development in periphery wards, corruption and careless attitude of public representatives and municipal officials etc.

To assess how environmental problems are governed by the authority in the Tangail Paurashava, some environmental governance indicators and sub-indicators were used. According to household's opinion, the governance condition of water supply facility was poor. The condition of accountability, transparency, responsiveness, leadership, peoples' participation, planning and effectiveness of supplied water was 'poor' except finance and accountability which were moderate in condition.

The effectiveness of waste management condition of the Tangail Paurashava was poor. The indicators accountability, transparency, peoples' participation, responsiveness and governance effectiveness were poor except finance (moderate) as per households perception.

Furthermore, the overall assessment of governing drainage and water logging management was also 'poor' as the condition of all of the indicators of environmental governance was poor.

In case of roads and traffic jam management, the WAI values of all indicators were 'weak' except finance (moderate) and governance condition of other problems such as electricity crisis, noise, air, water, open space maintenance, mosquito problem was also

very poor. The Paurashava authority did not pay attention properly to mitigate these problems.

To fulfill the second objective **“investigating the existing condition of governance which is related to environmental problems in the city”**, Key Informant Interview (KII) were carried out from three types of group of people (See Chapter 6). Here, in this part the perception of Key Informants were considered to assess the indicators of environmental governance.

The Paurashava authority of Tangail (Water supply and sanitary section) directly involved in providing water supply facilities. DPHE (Department of Public Health and Engineering) Tangail, is also responsible in financing, planning, implementing water supply projects.

Financial support, transparency, coordination, responsiveness and peoples’ participation for water supply were ‘poor’ as per key informant’s perceptions. The governance condition of other indicators such as accountability and planning for water supply activity was ‘moderate’. The governance effectiveness was also ‘poor’ in condition and WAI value was 0.36.

From the comparison between household’s and KI’s perception on governance of water supply activity, it is observed that the governance condition was ‘poor’ according to both respondent’s perceptions in the study area. Here, household’s and KIs perceptions on the governance indicators were more or less similar, but difference was observed in case of

the indicator 'finance', households perceived as 'moderate' and KIs perceived as 'poor' financial condition of the authority.

The Paurashava authority of Tangail and Community Based Organizations (CBOs) Tangail, involved collecting of wastes from households and neighbourhood levels. Mainly Paurashava authority was directly responsible to manage overall process. The governance condition of waste management was 'poor' where the indicators such as finance, transparency, responsiveness, peoples' participation, rules and regulation applied shows the poor WAI. But the condition of accountability and coordination was better as 'moderate' than the other.

Moreover, the governance of waste management problem was also 'weak' in this Paurashava as per households and KI's perceptions. The perception on all the indicators of households and KI's was poor except 'finance' and 'accountability'. The household's perception on financial condition of the authority of waste management was 'moderate' where as KI's perception was 'poor'. In case of accountability indicator, household's perception was 'poor' where as KI's perception was 'moderate'. There is no any noticeable difference between households and KI's perceptions on other indicators.

In case of drains construction, Paurashava authority (Public works section) mainly responsible in constructing drains funded by government and other donor like World Bank, Asian Development Bank etc through the LGED. The governance condition of drains construction and management was poor where the indicators such as finance, local peoples' participation, transparency, responsiveness, governance effectiveness are poor in

condition as per KIs perceptions. On the other hand, the condition of accountability, rules and regulations applied and planning were better (moderate) than the other indicators.

The condition of all of the indicators on drainage and water logging management was poor according to both types of respondents (HHs and KIs) except in case of accountability, rules and regulations and planning which were moderate according to KIs perceptions.

The Paurashava authority of Tangail (Public works section) is mainly involved in constructing and maintaining roads but this authority does not control or manage traffic congestion. Traffic police controls, monitors and manage traffic congestion in the city which is very limited and inadequate for the city. According to KIs perception, the financial condition, responsiveness and participation of local people, transparency, effectiveness of road construction and traffic jam management in the Paurashava was 'poor' where as accountability, coordination and rules and regulation application were better (moderate) than the other indicators. The overall governance condition of road construction and traffic jam management in Tangail Paurashava was 'poor'.

In case of roads and traffic management, all indicators of governance were poor except the accountability and application of rules and regulations. The perceptions of households and KIs both were moderate in this aspect. There was also difference in households and KIs perceptions in other indicators.

Other governance condition of electricity crisis, noise pollution, control of excessive dust, river pollution, open space and recreational facilities maintenance, mosquito and security problem were 'poor'. The household's and KIs perceptions were similar 'poor' on the

governance of other problems except the perception of KIs was ‘moderate’ on open space management and mosquito problem management in the Paurashava.

To **‘find out the challenges behind environmental governance’**, KIs were asked relevant questions. In this perspective, 62.50 percent interviewees identified budget problem or limited central government grants as challenges of proper governance in Tangail Paurashava (See Chapter: 7). All of the interviewee mentioned that unskilled and untrained manpower of the authority, 70.40 percent revealed lack of peoples’ participation and 72.50 percent respondents identified that there was no training of public representatives which were other challenges of governance.

In Tangail Paurashava population density was high and interviewees (90%) said that there was mismatch between services delivery and the demand of the citizens due to high population density. Other challenges like insufficient manpower of Municipality (50 percent opined), lack of awareness and knowledge of authority and mass people about environmental governance (50 percent), lack of responsiveness and commitment of authority and public representatives (67.50 percent), were identified by the interviewees. They mentioned that public representatives gave a lot of words to fulfill their election mandate but in reality sometimes they were not committed and dedicated to people’s welfare as a result environmental problems were unsolved for a long period.

Corruption and nepotism were other two challenges of effective environmental governance which was identified by 35 percent and 50 percent interviewees respectively. Other challenges like lack of accountability and transparency, unplanned and uncoordinated development work, inappropriate and non applicable of the rules of law

and biased journalism were identified by the KI interviewees. About 55 percent interviewees said that people are becoming more self centered, they have lack of unity to solve any community's problem and it is responsible for environmental governance problem in Tangail Paurashava (Field Survey, 2022). Finally, 39.08 percent and 35.45 percent people identified lack of monitoring of Municipality and lack of peoples' participation as the challenges of environmental governance in Tangail Paurashava.

To assess the role of different actors like NGOs, Civil Society Organizations (CSOs), Community Based Organizations (CBOs) of resolving environmental problems in Tangail Paurashava, personnel and chief of these institutions were interviewed. In this city, at present environmental NGOs activity like BELA, BAPA are absent but three years ago these institutions were actively involved in many environmental phenomena. BELA, BAPA, CSOs and CBOs played an important role in various environmental movements like the advocacy of BELA, BAPA's in garbage collection through CBOs, helping the administration of making free from illegal structures of Lauhajong River, assessment of environmental loss of Flood Action Plan, 1999, implement action oriented programme (FAP 20 project) of unemployed and evicted boatmen, taking steps to conserve open space and water bodies like lakes and river, raising voice to execute good governance under right to life programme.

9.2.2 Findings

Many environmental problems (social and physical) were identified from the household survey, of them inadequate water supply, garbage management were the major problems in this city. Moreover, drainage, water logging, insufficient access road and the Lauhajong River pollution were others problems which were faced by the inhabitants of

the city. Environmental problems of the city were severe and citizens became more dissatisfied with these problems. The authority could not govern these problems properly and effectively though the Paurashava authority is responsible to provide all kinds of services and mitigate problems according to Paurashava Act, 2009.

The governance indicators finance, accountability, transparency, coordination, peoples' participation, rules and regulation, leadership, planning and effectiveness were poor or moderate in some indicators (finance, accountability, planning). It is mentioned in the Local Government (Paurashava) Act, 2009 that, each citizen has equal right to access information about Paurashava, authority should become transparent by updating website, publish citizen charter and sign board about services and projects, citizens' participation as well as women participation in meeting of Paurashava should be ensured. But, these acts are not complied properly by the authority.

In case of accountability and transparency status of the governance condition of selected problems like in water supply management, waste management, drainage and water logging management, road and traffic jam management, river water pollution, air pollution, noise pollution and other problems management was moderate or poor. Citizens could not get proper access to have any information about development and service related projects and programmes in the Tangail Paurashava although it is clearly noted in the constitution of the Government of the People's Republic of Bangladesh and Local Government (Paurashava) Act, 2009, (section 112) that any citizen has right to get access any information about Paurashava. Furthermore, website of the Paurashava is not updated, no any detail information about projects, citizen's rights and choices etc. Citizen's charter of the process of services delivery, respective person of the services,

time for that service etc were not published sometimes published but not detail where as it is said in the Paurashava Act, 2009, section 53 that Paurashava should publish detail citizen charter and publish detail information in notice board (LGD, 2018).

In case of citizen's participation in the management of selected environmental problems was poor though the Paurashava Act, 2009 section 14, 57 and 115 has given good provision of citizen's participation in any development and management related activities. Even in case of women participation, there is a provision where 40 percent of the member of different committees will be female. But in practice, the TLCC, WLCC or standing committees meeting did not held regularly, sometimes held without informing some stakeholders and participants were invited on the basis of the personal relationship of the authority, women participation was very limited due to awareness, only women councilors attended those meetings. Even in the Paurashava, there is no standing committee on waste management for environmental development though the Paurashava Act, 2009 requires this type of standing committee.

In terms of rules and regulations applied in the Paurashava, it cannot be complied by the authority properly in regularly where it is mentioned in the Paurashava Act, 2009 that authority should arrange meeting by the standing committee in the Paurashava council on regular monitoring, evaluation, examination and identification of the problems of provided services (LGD, 2018).

Moreover, in this Paurashava there is no or hardly little effect of environmental rules and regulations. Here, the Urban Water Body Conservation Act, 2000 has not followed properly. Though in 2016, a good initiative was taken by the Deputy Commissioner of

Tangail to make free Laugajong River from illegal grabbing and dumping garbage. But it did not continue long time only 7 or 8 month, after transferring the DC, this initiative was stopped or become very slow.

Moreover the authority or the governance of Paurashava faced different challenges such as insufficiency of trained manpower and technological support, limited access of information of people, lack of coordination, lack of women and people's participation, limited accountability and transparency, lack of commitment and responsibility of public representatives, limited or no proper implementation of laws, insufficient monitoring and no evaluation of any development work etc. As a result, poor environmental condition and poor services delivery was prevailing in the city.

9.3 Priorities and Recommendations

Finally, respondents were asked about priorities and possible way out of the environmental and environmental governance problems of Tangail Paurashava. Respondents of households and KIs such as public representatives, service providers, professionals and policy makers identified some priorities by which the environmental and governance related problems can be minimized and some recommendations can be considered. These are described in below-

1. Giving Priorities to Improve Water Supply, Garbage Management, Drainage Maintenance of the City

In Tangail Paurashava, there had insufficient provision of water supply, irregular drainage maintenance, limited collection and mismanagement of garbage which were noticed earlier in previous chapter. Water supply facility should be delivered in all household of

all wards of the Paurashava. Authority should take initiatives to increase coverage of waste collection in all wards, select waste dumping site far away from the city or locality as well as increase waste management activities and improve drainage condition by construction and maintenance of drains regularly especially in 8 wards (W- 3, 6, 7, 11, 13, 14, 15 and 18) which are affected by water logging. So these essential facilities should be improved by the authority for the citizens that were prioritized by the citizens, public representatives, service providers, professionals and policy makers.

2. Improving Road Network and Transport Management

Recently, traffic congestion has becoming a problem due to absent of signalized traffic management system and private transports, vehicles are increasing in uncontrolled way. Moreover, the road networks were narrow, broken and sometimes muddy in some wards. Interviewees and respondents were emphasized of improving and widening road network and transport management system, developing parking system of each market, shopping mall etc in Tangail Paurashava to mitigate citizen's problem.

3. Taking Steps to Minimize Lauhajong River Pollution and Noise Pollution

Lauhajong River has become garbage dumping site and polluted. But authority did not take proper steps to free from pollution and illegal activities. Now days, citizens are facing more noise pollution in this city. Authority (Paurashava authority, District Administration and DoE collectively) should take steps to minimize river water pollution and noise pollution through launching awareness programmes like campaign, workshop, doing fine and enforcing environmental laws and regulations.

4. Developing Accountability and Transparency of Authority

By developing accountability in all plans, programmes and development activities of the Paurashava through proper utilization of income, government and other funds in development activities, present annual budget in front of citizens through open budget meeting, effective governance can be implemented and environmental problems can be mitigated. Moreover, by ensuring participation of stakeholders in TLCC and WLCC meeting and share detail information of ongoing projects if citizens want to know, effective governance can be ensured.

Authority should improve transparency through updating detail information of every development projects of the Paurashava in website and notice board, publish citizen charter, setting up signboard with detail information in project area, sharing allocation and expenditure of projects with citizens.

5. Increasing People's Awareness

Respondents were highlighted about people's awareness of environmental problems, protection and conservation to create better environment of the city. They said that if people are aware about the environmental problems, the environmental condition will be better. They also said that through meeting, workshops by the collaboration of CBOs, NGOs, CSOs with mass people participation especially women participation can increase people's awareness.

6. Increasing Peoples' Participation

In Tangail Paurashava, citizen's participation was low in governing environmental problems. To mitigate environmental problems and implement effective environmental

governance in the city, local people's participation should be improved in TLCC and WLCC meeting during project preparation to implementation period, considered participants opinions. Not only local people, women participation should be increased meeting and project related activities. Peoples' participation can also ensure transparency of authority in all development activities.

7. Increasing Responsibility and Commitment of Authority and Public Representatives

Authorities and public representatives should be more responsible and committed to the people's right, demand and problems by receiving any services related complain cordially and taking action immediately. If the respective authority and public representatives become responsible, committed to the people, environmental problems and governance problems can be minimize.

8. Improving Proper Coordination among different Services and Departments

Respondents of the Paurashava mentioned that if implemented proper coordination among different services and departments, environmental problems and governance related problems can be resolved.

9. Facilitating Periphery Wards of the City

In Tangail Paurashava, the wards (W-5, 7, 8, 9, 11) which were situated far from the core city of periphery areas, infrastructural facilities as well as urban facilities were absent. People were deprived from all citizen facilities. Maximum respondents emphasized that

authority should concentrate of giving urban facilities of periphery wards to ensure effective governance and equal priority of the people.

10. Proper Enforcement of Environmental Rules and Regulations

Respondents of the Tangail Paurashava claimed that, environmental laws and policies are not implemented properly. Sometimes, it cannot be implemented by the influence of political power and nepotism. So, if the environmental laws and policies can be enforced properly, noise pollution, river pollution will be minimized and governance and management system of the Paurashava will be more effective.

11. Increase Financial Capacity

Tangail Paurashavas has financial or budget problems and it has no other financial sources without taxes, fees, tolls and central government grants were also very limited. If financial capability can be increased by collecting tax, fees, tolls properly from all the citizens without biasness, infrastructural and utility facilities condition can be improved with collecting revenue in the Paurashava.

12. Become Active of Environmental NGOs, CBOs and CSOs

In Tangail Paurashava, NGOs like BELA (Bangladesh Environmental Lawyers Association), BAPA (Bangladesh Paribesh Andolon), CBOs and CSOs played vital role in several environmental phenomenon and management. But, at present BELA, BAPA and CSOs in the Paurashava were not working actively since 2018. It is necessary to play more active role again in minimizing environmental problems in the city.

13. Developing Effective Plans and Steps to Solve the Problems

To improve the environmental condition and betterment of environmental governance, authority should take effective and efficient plans and programmes, said by the interviewees and household respondents. They also said that at first authority should recognize the most serious issues of the citizens and governance related problems, then they will take initiatives to mitigate those problems.

9.4 Conclusions

Though Tangail Paurashava is old and large in type, struggling with many environmental burdens especially insufficiency of services facilities like limited municipal water supply, extreme problem of waste management, drainage maintenance problems, water logging, limited open space and recreational facilities, air, water and noise pollution which created negative impacts on citizen's livability or standard of living. The governance condition of the city was not effective to mitigate the prevailing environmental problems. Financial condition was very inadequate to build or maintenance infrastructural facilities like water supply, waste management, drainage maintenance, water logging management etc. Moreover, the condition of governance indicators such as transparency, accountability, peoples' participation, responsiveness, leadership, application of rules and regulation condition was poor. It is mentioned in the Local Government (Paurashava) Act, 2009 that how authority will maintain and regulate transparency, accountability, ensure citizens' participation, rules and regulation in the Paurashava for achieving good governance, but the acts and rules are not followed properly in Tangail Paurashava.

Furthermore, the authority faced many challenges in applying effective governance. The poor condition of governance was responsible for poor environmental services delivery

condition. If NGOs, CBOs and CSOs play an investigative role in governance system, the governance system may become effective. Before 3 years ago, these organizations (BELA, BAPA, CSOs, CBOs) were active, played a vital role in many environmental management related phenomenon but now these organizations are inactive in the Paurashava.

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APPENDICES

APPENDICES

APPENDIX- 1

Table: 1 Demographic, Educational and Occupational Statuses of Respondents

Age (Years)	Frequency	Percentage (%)	Sex		Education	Frequency	Percentage (%)	Occupation	Frequency	Percentage (%)
			Male	Female						
20-29	20	5	Male (317)	Female (79)	Illiterate	20	5	House wife	69	17.5
30-39	178	45	80%	20%	Primary (class 1-class 5)	79	20	Businessmen	172	43.5
40-49	142	36			Secondary Level (class 6-S.S.C)	123	31	Service holder	110	27.75
50-59	36	9			Higher Secondary Level (H.S.C)	87	22	Farmer	9	2.25
60-69	16	4			Graduation	55	14	Day labourer	8	2.0
70+	4	1			Post Graduation	32	8	Do no job	23	5.75
Total	396	100	100		Total	396	100	Overseas People	5	1.25
								Total	396	100

Source: Household Survey, 2022

Table: 2 Monthly Household Incomes and Expenditure (Percentage of Sample) (in TK)

Tk	Monthly Income		Monthly Expenditure	
	Frequency	Percentage (%)	Frequency	Percentage (%)
5000-20,000	180	45.42	239	60.36
21,000-35,000	147	37.16	123	31.06
36,000-50,000	44	11.1	28	7.05
51,000-65,000	15	3.8	4	1.02
66,000-80,000	6	1.52	2	0.51
81,000-95,000	1	0.25	0	0
96,000-1,10,000	2	0.5	0	0
1,10,000+	1	0.25	0	0
Total	396	100.0	396	100.0

Source: Household Survey, 2022

Table: 3 Major Municipal Services Facilities Available in the Household

Municipal Services Facilities	Households	Percentage of Households
Water supply	79	20
Gas supply	62	15.56
Electricity connection	396	100
Municipal Street lighting	113	28.57
Waste collection	177	44.68
Access road	228	57.46
Connecting drain with main drain	169	42.64

Source: Household Survey, 2022 (multiple responses were considered)

Table: 4 Household's Major Source of Water by Use

Use of water	Sources of Water			Total
		Personal pipe/well	Municipal Pipe Water	
Drinking	Households	344	52	396
	Percentage (%) of HHs	86.9	13.1	100
Cooking	Households	334	62	396
	Percentage (%) of HHs	84.34	15.66	100
Bathing	Households	301	95	396
	Percentage (%) of HHs	76.01	23.99	100
Washing	Households	301	95	396
	Percentage (%) of HHs	76.01	23.99	100

Source: Household Survey, 2022

Table: 5 Level of Satisfaction with the Provision of Water Supply Service Facilities

Level of Satisfaction	Households	Percentage of HHs
Highly Satisfied	0	0
Satisfied	40	10
Some Extend Satisfied	28	7
Dissatisfied	269	68
Highly Dissatisfied	59	15
Total	396	100

Source: Household Survey, 2022

Table: 6 Storage System of Waste before Taking Outside from Home

Storage system	Households	Percentage of HHs (%)
Don't store, dump at the corner of house	77	19.44
Throw outside from house	49	12.37
Keep into open container	186	46.95
Keep into closed container	53	13.38

Keep into plastic bag	25	6.35
others	6	1.51
Total	396	100

Source: Household Survey, 2022

Table: 7 Secondary Transfer Station/ Site

Secondary Transfer Station	Households	Percentage of HHs
road side	11	2.82
through into low-lying areas	237	59.90
through into water bodies	148	37.28
Total	396	100

Source: Household Survey, 2022

Table: 8 Types of Drain in Respondent's Neighborhood

Type of Drain	Households	Percentage of HHs (%)
No Drain	227	57.36
kutchra: naturally made with mud	45	11.39
semi-pucca: constructed by brick and mud	50	12.63
pucca: constructed by brick linked with main drainage network	74	18.62
Total	396	100

Source: Household Survey, 2022

Table: 9 Causes of Water Logging in Study Area (n=269 who faced the problem)

Causes of Water Logging	Households	Percentage of HHs (%)
Low- laying area	70	26
Excessive rainfall	59	22
Drainage blockage with garbage	124	46
Don't know	16	6
Total	269	100

Source: Household Survey, 2022

Table: 10 Severity of the Congestion Occurred in Neighborhood

Severity	Households	Percentage of HHs (%)
Not very severe	32	8.1
Not severe	67	16.81
Some extent severe	99	25.13
Severe	165	41.66
Very severe	33	8.3
Total	396	100

Source: Household Survey, 2022

Table: 11 Opinions about the Adequate Responsibility of Municipal Authority in Managing Disaster

Opinions	Households	Percentage of HHs (%)
Yes	139	35
No	257	65
Total	396	100

Source: Household Survey, 2022

Table: 12 Types of Access Roads in respondents' neighborhood

Type of Access Roads	Households	Percentage of HHs (%)
kutchha	57	14.39
Semi-pucca	52	13.13
Pucca	45	11.36
Pitch	242	61.12
Total	396	100

Source: Household Survey, 2022

Table: 13 Types of Electricity Crisis

Types of Electricity Crisis	Households	Percentage of HHs (%)
Cut off frequently	275	69.5
Very limited supply in summer time	251	63.34
Sometimes excessive electricity bill	20	5

Source: Household Survey, 2022, (multiple responses)

Table: 14 Level of Satisfaction with the Provision of Electricity Service Facilities

Level of Satisfaction	Households	Percentage of HHs
Highly Satisfied	2	0.5
Satisfied	115	29.03
Some Extend Satisfied	103	26.11
Dissatisfied	162	40.85
Highly Dissatisfied	14	3.51
Total	396	100

Source: Household Survey, 2022

Table: 15 Major Causes of Environmental Problems in this City

Causes	Households*	Percentage of Sample (%)
Lack of monitoring and improper responsibility of Municipality	175	44.26
Economic inability to take municipal services	20	5.01
Lack of people's awareness	140	35.35

Unequal development in periphery wards	134	33.85
Corruption of Municipal officials	113	28.52
Corruption and Careless attitude of public representative	143	36.08
Lack of accountability of Municipal officials	105	26.5
Lack of personnel of Municipality	9	2.25
Lack of maintenance of services	131	33.04
Limited resources	9	2.05
Unwilling to take services	11	2.78
High population density	127	32.07
Lack of skill manpower	147	37.03
Other reasons	4	1.01

Source: Household Survey, 2022 *N=396 (multiple responses were considered)

Table: 16 Perceived views of Households on Responsiveness for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive water supply related complain cordially from the public	3	18	8	65	6	0.36	Poor
Take action immediately	0	10	5	74	11	0.28	Poor
Publish citizen's rights, water bill, services charge, condition and time schedule of water supply	3	20	5	68	4	0.37	Poor
	Average					0.33	Poor

Source: author's fieldwork (2022), N= 79 (who had water supply connection)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 17 Perceived views of Households on Responsiveness for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive waste collection related complain cordially from the public	0	2	9	65	24	0.22	Poor
Take action immediately	0	1	7	75	17	0.23	Poor
Publish citizen's rights, waste bill, services charge of waste collection	0	0	11	73	16	0.23	Poor
	Average					0.22	Poor

Source: author's fieldwork (2022), N= 177 (who was in waste collection coverage)

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 18 Perceived views of Households on Peoples’ Participation for Waste Management in Tangail Paurashava

Statements	Responses						WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)			
Participation of local people in waste management activity	4	33	9	45	9		0.44	Medium
Consider participants opinion in this activity	1	25	11	53	10		0.38	Weak
Women participation in meeting and management activity	0	2	10	68	20		0.23	Weak
Average WAI							0.35	Weak

Source: author’s fieldwork (2022) , N=396

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 19 Perceived views of Households on Peoples’ Participation on Drainage Management in Tangail Paurashava

Statements	Responses						WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)			
Participation of local people in Drain management, making and water logging management activity	0	12	6	65	17		0.28	Weak
Consider participants opinion in this activity	0	10	8	72	10		0.29	Weak
Women participation in meeting	0	0	18	67	15		0.25	Weak
Average WAI							0.27	Weak

Source: author’s fieldwork (2022) , N=396

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 20 Perceived views of KIs on Responsiveness for Water supply in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive water supply	2	25	5	62	6	0.39	Poor

related complain cordially from the public							
Take action immediately	2	17	6	70	5	0.35	Poor
Publish citizen's rights, water bill, services charge, condition and time schedule of water supply	0	10	5	77	8	0.29	Poor
	Average					0.34	Poor

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 21 Perceived views of KIs on Peoples' Participation for Waste Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Very strong (%)	Strong (%)	Medium (%)	Weak (%)	Very weak (%)		
Participation of local people in waste management activity	5	37	8	43	7	0.47	Medium
Consider participants opinion in this activity	6	20	8	56	10	0.38	Weak
Women participation in meeting and management activity	0	2	6	84	8	0.26	Weak
	Average WAI					0.37	Weak

Source: author's fieldwork (2022) , N=40

Note: Very strong (VS); 0.81-1; strong (S): 0.61-0.8, medium (M); 0.41-0.6; weak (W):0.21-0.4; very weak (VW):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 22 Perceived views of KIs on Responsiveness on Road Construction and Management in Tangail Paurashava

Statements	Responses					WAI	OA
	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)		
Receive road damage related complain cordially from the public	6	21	8	58	7	0.40	Poor
Take action immediately when people face excessive traffic jam	0	15	5	75	5	0.32	Poor
	Average					0.36	Poor

Source: author's fieldwork (2022), N= 40

Note: strongly agree (SA); 0.81-1; agree (A): 0.61-0.8, neutral (N); 0.41-0.6; disagree (D):0.21-0.4; strongly disagree (SD):0.01-0.2, WAI: weighted average index, AO; overall assessment

Table: 23 Challenges of Environmental Governance in this City as perceived by HHs

Challenges	Frequency*	Percentage of Sample (%)
Lack of people's awareness	172	43.32
Lack of responsibility of authority	180	45.59
Lack of monitoring of authority	155	39.08
Corruption of authority's people	220	55.52
Unskilled and limited personnel of Municipality	100	25.34
Time consuming development works	167	42.08
Unplanned development works	209	52.70
Lack of peoples' participation	140	35.45
Lack of accountability	200	50.50
Other reasons	6	1.45

Source: Household Survey, 2022 *N=396 (multiple responses were considered)

Questionnaire for Broad Spectrum Household Survey PART A

Personal and Household Information

1. Identification of Respondent

i) Name: ii) Age: iii) Education:
 iv) Occupation: v) Work:
 vi) Address: House or street No:
 Ward No: Neighbourhood Name:

2. Demographic Information of Respondents

No	Name	Sex (Male/Female)	Age	Education	Occupation	Income(H/H, P/M)
1						
2						
3						
4						
5						
6						
7						

3. How long have you been living at this house/address? :

4. How long have you been living at this neighbourhood?

5. Have you considered moving due to environmental problems?

Codes: 1 = yes, 2 = no,

if 1 causes of leaving:

... ..

6. Do you prefer your present locality?

Codes: 1 = yes, 2 = no

If yes, why?.....

If no, why?.....

7. What is your per month total household income?... .. (in TK)

8. What is your per month total household expenditure?... ..
(in TK)
9. What are the main Municipal facilities and problems in your household?
(According to respondent's perception)

Utility facilities	Yes	No	Major Environmental Problems	Yes	No
Municipal water supply					
Gas supply					
Electricity connection					
Municipal light					
Waste management					
Connecting road					
Connecting drain with main drain					

10. What are the main reasons or factors of environmental problems of this city?
11. Why are environmental problems unsolved or solving very slowly in this city?
12. How these problems can be solved?

Environmental condition and Problems

Water Supply

13. What is your household's principal source of drinking (), cooking (), bathing () and washing () water?
Codes: 0 = Don't have any specific source,
1 = Private Pipe/ Well,
2 = Municipal water supply,
3 = Others (Specify:)
14. If you depend on Municipal piped water connection for all purposes with meter: (yes/no); please answer the following questions...
- a). Number of Households sharing one connection... ..
- b). Do you pay for this water?
Codes: 0 = no,
1 = pay directly to the authority,
2 = to landlord,
3 = to other sharer,
4 = don't know

c). How much do you pay per month for water? in (TK)

15. How can you evaluate your satisfaction with the quality of service facilities?

Highly Satisfied 1	Satisfied 2	Some Extent Satisfied 3	Dissatisfied 4	Highly Dissatisfied 5
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16. How can you manage water if there is no water supply in your house/locality?

Management Procedures:

17. Do you think that the responsibility of municipal authority in providing piped water supply to household is properly maintained?

- a) Yes
- b) No

If Notplease give your opinion

.....

18. How about the authority's response if any problem occurs in case of water supply?

Very Quick 1	Quick 2	Some Extent Quick 3	Slow 4	Very Slow 5
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Power/Electricity Supply

19. What is your main source of home lightning?

- Codes: 1 = electricity,
- 2 = kerosene,
- 3 = others (specify:)

20. Who is responsible to provide electricity in your house?

- Codes: 1 = PDB,
- 2 = REB,
- 3= Private Company,
- 4 = Others (specify:... ..)

21. How can you evaluate your satisfaction with the quality of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

22. Do you have a preference for service delivery?

- Codes: 0 = no,
 1 = Public/PDB,
 2 = REB
 3 = Private,
 4 = Others (specify:)

23. How can you evaluate your satisfaction with the providing gas service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

Household Waste Management

24. How do you store household waste before taking outside from home?

- Codes: 0 = Don't store, dump at the corner of home,
 1 = through straight outside,
 2 = open container,
 3 = closed container,
 4 = plastic bag,
 5 = other (specify... ..)

25. Who collect your garbage?

- Codes: 0 = not collected (self),
 1 = municipality people,
 3 = private organization
 4 = community collection
 5 = others

26. How often do your garbage collected from your home?

- Codes: 1 = once/ daily,
 2 = 2-3 times in a week,
 3 = 3-4 times in a week,
 4 = others

27. Where is the secondary transfer station/ site?

- Codes: 1 = road side,
 2 = through into low-lying areas,
 3 = through into water bodies,
 4 = other (specify... ..)

28. How can you evaluate your satisfaction with the quality of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

29. Do you think that the responsibility of municipal authority in managing household and citywide wastes is properly maintained? Yes or No....

If Not please give your opinion

.....

.....

.....

Drainage Maintenance

30. What types of drain do you have in your neighborhood?

- Codes: 1 = don't know,
- 2 = kutchra: mud, made naturally,
- 3 = semi-pucca: mud made constructed,
- 4 = pucca: brick built/constructed links to main drainage net work

31. Do you know where does your household wastewater (sewer water) go?

- Codes: 0 = don't know,
- 1 = into a drain,
- 2 = into pond/lake/river,
- 3 = into low-lying area,
- 4 =other (specify... ..)

32. Do you face drainage congestions? Codes: 1 = yes, 2 = no

33. When do you face drainage congestion? Codes: 0 = never faced,
1 = during rainy seasons, 2 = all the year around

34. How severe is the congestion occurred in your neighborhood?

- Codes: 1 = not very severe,
- 2 = Not severe,
- 3 = Some extent severe,
- 4 = Severe,
- 5 = Very severe

If severe or very severe, what problems do you face during congestion?
Problems:

35. How can you evaluate your satisfaction with the quality of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

Water logging Management

36. Do you face water logging in your neighborhood? Codes: 1=yes, 2=no

37. What are the causes of water logging in your area?

Codes: 0= don't know,
1= low-lying area,
2=excessive rainfall,
3=drainage congestion,
4= flooding from river

38. Do you think that the responsibility of municipal authority in managing disaster is adequate? Codes: 1=yes, 2=no

Open Space Management

39. Do you think that the playground and park is sufficient in the city to refresh the city dwellers? Codes: 1=yes, 2=no

Road and Transportation Systems

40. What types of vehicles do you or your family members use for going to work/ shopping/school/visit to relatives/day out?

Codes: 1= don't use any vehicle
2= rickshaw
3= bus
4= Private cars

41. Did you experience any accidents in this city? Codes: 1= yes, 2 = no
If yes....how many?

42. Do you have enough access roads for vehicles movement in your neighbourhood?

Codes: 1 = yes, 2 = no

If not, do you face any traffic congestion? Codes: 1 = yes, 2 = no

If yes, how often do you face congestion?

Codes: 1 = daily during peak hours,

2 = all day long

3 = particular day in week

43. What types of access roads are there in your neighborhood?

Codes: 1 = kutchra: mud built,

2 = semi-pucca: thin brick layer on the road,

3 = pucca: full constructed pavement

44. Do you have sufficient footpaths for pedestrian movement in your neighbourhood? Codes: 1 = yes, 2 = no

45. Do you feel that vehicular movement in your neighborhood causing noise pollution? Codes: 1 = yes, 2 = no

46. How can you evaluate your satisfaction with the quality of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

PART-B

Please give your valuable opinion on governance system of the problems in Tangail Paurashava. Put the tick mark on your opinions. Each option contents particular values.

The Governance Condition of Water Supply

Indications	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
Finance/ Resource	Authority has adequate fund for water supply connection					
	Authority has adequate fund for establishment of water treatment plant					
	Proper utilization of income in Paurashava for water supply purpose					
	Proper utilization of government fund					

Accountability	in Paurashava for water supply purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose					
	Authority invite local people on water supply related meeting					
Transparency	Available information of people's water supply related right and choice are remain in website					
	Share information of expenditure of water supply projects with mass people					
	Detail information of water supply projects and development work available in website					
	Invite various stakeholders before implementing water supply project					
	Set up signboard with detail information of water supply projects of those projects area					
	Information of water supply project are available in notice board					
Responsiveness	Receive water supply related complain cordially from the public					
	Take action immediately					
	Publish citizen's rights, water bill, services charge, condition and time schedule of water supply					
Peoples' Participation	Ensure participation of local people in preparation and implementation period of water supply related project					
	Consider participants opinion in water supply related projects					
	Women participation in meeting of the Paurashava					
	Women participation in water supply project					
Rules and Regulations	Water supply activity is carried out according to municipality rules					
	Take action against those who have not paid water bill on time					
	Monitor first to last implementation of water supply related work					
	Assessment of households satisfaction after delivery water					

	supply					
Planning	Maintain planning and guideline to provide water supply in Paurashava					
Leadership	Committed, honest and dedicated public representatives to provide water supply in own Wards and overall Paurashava					
	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the delivery of water supply services provided by the Paurashava					
Effective Governance	Authority has adequate fund for water supply connection					
	Proper utilization of government fund in Paurashava for water supply purpose					
	Share information of expenditure of water supply projects with mass people					
	Invite various stakeholders before implementing water supply project					
	Detail information of projects and development work available in website					
	Take action immediately					
	Take action against those who have not paid water bill on time					
	Participation of local people in preparation and implementation period of water supply related project					
	Women participation in meeting of the Paurashava					
Manpower	Adequate manpower of authority for water supply					
	Adequate skilled manpower of authority for water supply					
Technological Support	Sufficient technological support for water supply					

The Governance Condition of Waste Management

Indicators	Sub-Indicator	Strongly agree 1	Agree 0.75	Neutral 0.5	Disagree 0.25	Strongly disagree 0
Finance/ Resource	Authority has adequate fund for waste collection and manage					
	Authority has adequate fund for establishment of necessary dustbins					
	Adequate fund for buying waste dumping site					
Accountability	Proper utilization of income in Paurashava for waste management purpose					
	Proper utilization of government fund in Paurashava for waste management purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for waste management purpose					
	Invite local people on waste management related meeting					
Transparency	Available information of people's waste management related right and choice are remain in website					
	Share information of expenditure of waste management related activity with mass people					
	Detail information of waste management related activity available in website					
	Invite local people to implement any waste management related works					
Responsiveness	Receive waste collection related complain cordially from the public					
	Take action immediately					
	Publish citizen's rights, waste bill, services charge of waste collection					
Peoples' Participation	Participation of local people in waste management activity					
	Consider participants opinion in this activity					

	Women participation in meeting and management activity					
Rules and Regulations	Waste management activity is carried out according to municipality rules					
	Take action against those who have not paid waste bill on time					
	Authority monitor first to last waste management activity					
	Authority assess household's satisfaction in this activity					
Leadership	Committed, honest and dedicated public representatives to manage waste in own Wards and overall Paurashva					
	CBOs NGOs are dedicated to manage waste in this Paurashava					
Effective Governance	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the waste management by the Paurashava					
	Adequate fund for waste management					
	Proper utilization of government fund in waste management purpose					
	Share information of expenditure of waste management activities with mass people					
	Invite local people to implement any waste management related works					
	Detail information of waste management related activity available in website					
	Take action immediately when waste related problems occur					
	Participation of local people in waste management activity					
	Women participation in meeting and management activity					
Manpower	Adequate manpower of authority for waste management					
	Adequate skilled manpower of authority for waste management					
Technological	Sufficient technological support for waste management					

Support						
The Governance Condition of Drainage and Water logging Management						
Indicator s	Sub-Indicators	Strongl y agree 1	Agre e 0.75	Neutral 0.5	Disagr ee 0.25	Strong ly disagr ee 0
Finance/ Resource	Adequate fund for drain cleaning and maintenance					
	Adequate fund for making drains					
Accountab ility	Proper utilization of income of Paurashava for drain maintenance and making purpose					
	Proper utilization of government fund in Paurashava for drain maintenance and making purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for this purpose					
	Invite local people on drain maintenance and making related meeting					
Transpare ncy	Available information of people's drainage related right and choice are remain in website					
	Share information of expenditure of drain management and making related activity with mass people					
	Detail information of drain management and making related activity available in website					
	Invite local people to implement any drain construction related works					
	Set up signboard with detail information of drain construction projects of those projects area					
Responsiv eness	Receive drain blockage related complain cordially from the public					
	Take action immediately when water logged					
Peoples' Participati on	Participation of local people in Drain management, making and water logging management activity					
	Consider participants opinion in this activity					
	Women participation in meeting					
	Drain management and making activity is carried out according to					

Rules and Regulations	municipality rules					
	Authority monitor first to last drain management and making activity					
	Assessment of households satisfaction in this activity					
Leadership	Committed, honest and dedicated public representatives to manage drains in own Wards and overall Paurashva					
Planning	Maintain planning and guideline to make drain in Paurashava					
Effective Governance	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the drain management by the Paurashava					
	Adequate fund for drain cleaning and management					
	Proper utilization of government fund in drain management purpose					
	Share information of expenditure of drain management activities with mass people					
	Invite local people to construct drains and management related works					
	Detail information of drain construction related activity available in website					
	Take action immediately when water logged					
	Participation of local people in Drain management, making and water logging management activity					
	Women participation in meeting					
Manpower	Adequate manpower of authority for drain maintenance					
	Adequate skilled manpower of authority for drain maintenance					
Technological Support	Sufficient technological support for drain maintenance					

The Governance Condition of Drainage and Water logging Management

Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
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Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail

Finance/ Resource	Adequate fund for road construction and maintenance					
	Adequate fund for making foot paths					
Accountability	Proper utilization of income in Paurashava for road construction purpose					
	Proper utilization of government fund in Paurashava for road construction purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for this purpose					
	Invite local people on road construction related meeting					
Transparency	Share expenditure of road construction related activity with mass people					
	Detail information of road construction related activity available in website					
	Involve local people to road construction related works					
	Set up signboard with detail information of road construction projects of those projects area					
Responsiveness	Receive road damage related complain cordially from the public					
	Take action immediately when people face excessive traffic jam					
Peoples' Participation	Participation of local people in road construction and repair activity					
	Consider participants opinion in this activity					
	Women participation in meeting					
Rules and Regulations	Road repair, management and making activity is carried out according to municipality's rules					
	Authority monitor first to last road management and making activity					
	Assessment of households satisfaction in this activity					
Leadership	Committed, honest and dedicated public representatives to manage roads in own Wards and overall Paurashva					
Planning	Maintain planning and guideline to construct road in Paurashava					
	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the road					

Effective Governance	management by the Paurashava					
	Adequate finance for road construction and management					
	Proper utilization of government fund in road construction and management purpose					
	Share expenditure of road construction and management activities with mass people					
	Involve local people to road construction related works					
	Detail information of road construction related activity available in website					
	Take action immediately when people face excessive traffic jam					
	Participation of local people in road construction and repair activity					
	Women participation in meeting					

The Governance of others Problems in Tangail Paurashava

Problems	Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
Electricity Crisis	Responsiveness	Take steps for better electricity supply					
Noise pollution		Launch awareness building campaign to mitigate noise					
	Rules and Regulations	Applying rules and regulation like fine on vehicles loud horn					
River pollution	Responsiveness	Take steps to free from dumping waste in the river					
Open space and recreational facilities		Made and maintenance play ground or park properly					
Mosquito problem		Take steps to reduce mosquito problem					

APPENDIX- 2

Questionnaire for Key Informant Interview

GENERAL QUESTIONS FOR ALL GROUPS

Part A

1. Personal Identification

Name:..... Age: Education:.....
 Profession:..... Duration of Living/Working in Tangail:.....
 Address:

2. Tangail city is associated with some environmental issues. Please give your valuable opinion on governance system of the problems in Tangail Paurashava. Put the tick mark on your valuable opinions

The Governance Condition of Water Supply

Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
Finance/Resource	Authority has adequate fund for water supply connection					
	Authority has adequate fund for establishment of water treatment plant					
Accountability	Proper utilization of income in Paurashava for water supply purpose					
	Proper utilization of government fund in Paurashava for water supply purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for water supply purpose					
	Authority invite local people on water supply related meeting					
Transparency	Available information of people's water supply related right and choice are remain in website					
	Share information of expenditure of water supply projects with mass people					
	Detail information of water supply					

	projects and development work available in website					
	Invite various stakeholders before implementing water supply project					
	Set up signboard with detail information of water supply projects of those projects area					
	Information of water supply project are available in notice board					
Responsiveness	Receive water supply related complain cordially from the public					
	Take action immediately					
	Publish citizen's rights, water bill, services charge, condition and time schedule of water supply					
Peoples' Participation	Ensure participation of local people in preparation and implementation period of water supply related project					
	Consider participants opinion in water supply related projects					
	Women participation in meeting of the Paurashava					
	Women participation in water supply project					
Coordination	Good coordination among DPHE and others					
	Good coordination among all wards of providing water supply services					
Rules and Regulations	Water supply activity is carried out according to municipality rules					
	Take action against those who have not paid water bill on time					
	Monitor first to last implementation of water supply related work					
	Assessment of households satisfaction after delivery water supply					
Planning	Maintain planning and guideline to provide water supply in Paurashava					
Leadership	Committed, honest and dedicated public representatives to provide water supply in own Wards and overall Paurashava					

	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the delivery of water supply services provided by the Paurashava					
Effective Governance	Authority has adequate fund for water supply connection					
	Proper utilization of government fund in Paurashava for water supply purpose					
	Share information of expenditure of water supply projects with mass people					
	Invite various stakeholders before implementing water supply project					
	Detail information of projects and development work available in website					
	Take action immediately					
	Take action against those who have not paid water bill on time					
	Participation of local people in preparation and implementation period of water supply related project					
	Women participation in meeting of the Paurashava					
Manpower	Adequate manpower of authority for water supply					
	Adequate skilled manpower of authority for water supply					
Technological Support	Sufficient technological support for water supply					

The Governance Condition of Waste Management

Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
Finance/Resource	Authority has adequate fund for waste collection and manage					
	Authority has adequate fund for establishment of necessary dustbins					
	Adequate fund for buying waste					

	dumping site					
Accountability	Proper utilization of income in Paurashava for waste management purpose					
	Proper utilization of government fund in Paurashava for waste management purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for waste management purpose					
	Invite local people on waste management related meeting					
Transparency	Available information of people's waste management related right and choice are remain in website					
	Share information of expenditure of waste management related activity with mass people					
	Detail information of waste management related activity available in website					
	Invite local people to implement any waste management related works					
Responsiveness	Receive waste collection related complain cordially from the public					
	Take action immediately					
	Publish citizen's rights, waste bill, services charge of waste collection					
Peoples' Participation	Participation of local people in waste management activity					
	Consider participants opinion in this activity					
	Women participation in meeting and management activity					
Coordination	Good coordination among Paurashava authority, CBOs and others					
Rules and Regulations	Waste management activity is carried out according to municipality rules					
	Take action against those who have not paid waste bill on time					
	Authority monitor first to last waste management activity					
	Authority assess household's					

	satisfaction in this activity					
Leadership	Committed, honest and dedicated public representatives to manage waste in own Wards and overall Paurashva					
	CBOs NGOs are dedicated to manage waste in this Paurashava					
Effective Governance	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the waste management by the Paurashava					
	Adequate fund for waste management					
	Proper utilization of government fund in waste management purpose					
	Share information of expenditure of waste management activities with mass people					
	Invite local people to implement any waste management related works					
	Detail information of waste management related activity available in website					
	Take action immediately when waste related problems occur					
	Participation of local people in waste management activity					
	Women participation in meeting and management activity					
Manpower	Adequate manpower of authority for waste management					
	Adequate skilled manpower of authority for waste management					
Technological Support	Sufficient technological support for waste management					

The Governance Condition of Drainage and Water logging Management

Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
	Adequate fund for drain cleaning					

Finance/ Resource	and maintenance					
	Adequate fund for making drains					
Accounta bility	Proper utilization of income of Paurashava for drain maintenance and making purpose					
	Proper utilization of government fund in Paurashava for drain maintenance and making purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for this purpose					
	Invite local people on drain maintenance and making related meeting					
Transpar ency	Available information of people's drainage related right and choice are remain in website					
	Share information of expenditure of drain management and making related activity with mass people					
	Detail information of drain management and making related activity available in website					
	Invite local people to implement any drain construction related works					
	Set up signboard with detail information of drain construction projects of those projects area					
Responsi veness	Receive drain blockage related complain cordially from the public					
	Take action immediately when water logged					
Peoples' Participat ion	Participation of local people in Drain management, making and water logging management activity					
	Consider participants opinion in this activity					
	Women participation in meeting					
Rules and Regulatio	Drain management and making activity is carried out according to municipality rules					
	Authority monitor first to last					

ns	drain management and making activity					
	Assessment of households satisfaction in this activity					
Leadership	Committed, honest and dedicated public representatives to manage drains in own Wards and overall Paurashva					
Planning	Maintain planning and guideline to make drain in Paurashava					
Effective Governance	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the drain management by the Paurashava					
	Adequate fund for drain cleaning and management					
	Proper utilization of government fund in drain management purpose					
	Share information of expenditure of drain management activities with mass people					
	Invite local people to construct drains and management related works					
	Detail information of drain construction related activity available in website					
	Take action immediately when water logged					
	Participation of local people in Drain management, making and water logging management activity					
	Women participation in meeting					
Manpower	Adequate manpower of authority for drain maintenance					
	Adequate skilled manpower of authority for drain maintenance					
Technological Support	Sufficient technological support for drain maintenance					

The Governance Condition of Drainage and Water logging Management

Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree
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Environmental Governance in Secondary Cities of Bangladesh: A Case Study of Tangail

)			ee (0)
Finance/ Resource	Adequate fund for road construction and maintenance					
	Adequate fund for making foot paths					
Accountability	Proper utilization of income in Paurashava for road construction purpose					
	Proper utilization of government fund in Paurashava for road construction purpose					
	Proper utilization of other fund of various projects and programmes of Paurashava for this purpose					
	Invite local people on road construction related meeting					
Transparency	Share expenditure of road construction related activity with mass people					
	Detail information of road construction related activity available in website					
	Involve local people to road construction related works					
	Set up signboard with detail information of road construction projects of those projects area					
Responsiveness	Receive road damage related complain cordially from the public					
	Take action immediately when people face excessive traffic jam					
Peoples' Participation	Participation of local people in road construction and repair activity					
	Consider participants opinion in this activity					
	Women participation in meeting					
Coordination	Good coordination of Paurashava authority with LGED and others					
Rules and Regulations	Road repair, management and making activity is carried out according to municipality's rules					
	Authority monitor first to last road management and making activity					
	Assessment of households satisfaction in this activity					
Leadership	Committed, honest and dedicated public representatives to manage roads in own Wards and overall Paurashva					
Planning	Maintain planning and guideline to					

	construct road in Paurashava					
Effective Governance	The Paurashava performs all the mandatory functions					
	Citizens are satisfied with the road management by the Paurashava					
	Adequate finance for road construction and management					
	Proper utilization of government fund in road construction and management purpose					
	Share expenditure of road construction and management activities with mass people					
	Involve local people to road construction related works					
	Detail information of road construction related activity available in website					
	Take action immediately when people face excessive traffic jam					
	Participation of local people in road construction and repair activity					
	Women participation in meeting					

The Governance of others Problems in Tangail Paurashava

Problems	Indicators	Sub-Indicators	Strongly agree (1)	Agree (0.75)	Neutral (0.5)	Disagree (0.25)	Strongly disagree (0)
Electricity Crisis	Responsiveness	Take steps for better electricity supply					
Noise pollution		Launch awareness building campaign to mitigate noise					
	Rules and Regulations	Applying rules and regulation like fine on vehicles loud horn					
River pollution	Responsiveness	Take steps to free from dumping waste in the river					
Open space and recreational facilities		Made and maintenance play ground or park properly					
Mosquito problem		Take steps to reduce mosquito problem					

Part B
Detail Questions
Category 1: Public Representatives

Honorable Mayor and Ward (Councilors) Commissioners

1. What types of steps are taken to improve the environmental condition (of your ward (for ward commissioners) the city)?

2. What types of problems has to face in providing services facilities to the citizens?.....

3. Is financial support is adequate to provide services facilities to the city dwellers?
 Yes or
 No....IfNo....Why.....

4. How can you evaluate your satisfaction with the delivery of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

5. Do you think is manpower available to provide the service facilities? Yes or No If no... Why.....

6. Do you think is technological support available to provide the service facilities? Yes or No If No... Why.....

7. Do you think does the drains, dustbin, public toilets, water supply tank sufficient in the Paurashava?

 ...

8. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....
.....

9. Do you know how the environment can be managed and governed in proper way?

.....
.....
.....

10. Do you think do mass people have proper knowledge of environment and their right and choice?

.....
.....
.....

11. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....
.....
.....
.....

12. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No... Why.....

.....
.....
.....

13. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if

Yes....How.....
.....
.....
.....

14. Is there any participation of women in any development work or plans in Paurashava?

.....
.....
.....
.....

15. Are you satisfied with the coordination of ministries and different department of

municipality? Yes of No if No Why
.....
.....

16. Are you satisfied with CBOs and NGOs involvements in developing urban environmental condition in this city? Do you have any link to them?.....
.....
.....
.....

17. Do you have any training facilities and your employees to improve environmental condition of city? Yes or No.... if... Yes... What.....
.....
.....
.....

18. How many training have hold? Who are the participants?
.....

19. Do these trainings cover any topic of environmental planning, programme or governance issue? Yes or No...if Yes..What.....
.....
.....
.....

20. Does the authority monitor if any plans are implementing of providing service facilities?
Yes b) No c) don't know ...if No or Don't know..why.....
.....
.....

21. Does the authority evaluate after implementation of any plans of providing service facilities?
Yes b) No c) don't know if No or Don't know why.....
.....
.....

22. Did you committed on any environmental improvements to the citizens during the last election?.....
.....
.....

23. How do you want to improve the quality of citizens' overall living conditions?.....
.....
.....

24. Specify the dominant environmental problems in your Ward:(For Ward Commissioners)

Rank (perceived)	Environmental Problems
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

25. CBO/NGO's activities in your Ward: (For Ward Commissioners)

CBO/NGOName	Activities	Comments
1.		
2.		
3.		
4.		
5.		
6.		

26. What types of problems do you face in the city? What are the causes behind the problems?

.....

27. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....

28. How can be solved the problems as per your opinion?.....

.....

Political Leaders

1. What types of environmental problems are prevailing in Tangail city as per your opinion?

.....
.....
.....
.....

2. What was the agendas in your election manifesto to develop environmentally sustainable city.....

.....
.....
.....

3. Did you exchange your views with CBOs, NGOs and other stakeholders to formulate those agendas? Does these views follow up regularly?.....

.....
.....
.....

4. Is there any relation among your agendas and vision 2021, 2041 and SDG Goals? Yes or No...if Yes How.....

.....
.....

5. What types of challenges have you faced to implement your goals?.....

.....
.....
.....
.....

6. What are the factors or reasons of environmental governance problems of the city?
Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....
.....

7. How can be improve environmental quality of the city as per your opinion?.....

.....
.....
.....
.....

Category B: Service Providers

Tax collector

1. Is tax collect from different section of the city as per expectation? Yes or No....if

No
Why.....
.....

2. Are people aware about tax giving? Yes or No....if No... Why?.....

.....
.....

3. What types of work are done by the tax collection?.....

.....
.....

4. Is collected tax sufficient for improvement of environmental condition of the city?
Yes or No....if .No Why.....

.....
.....

5. Is manpower sufficient for tax collection? Yes or No....if No
Why.....

.....

6. Is expenditure of collected tax transparent?.....

.....
.....
.....

7. What types of problems do you face in the city? What are the causes behind the problems?

.....
.....
.....

8. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....
.....

9. How can be solved the problems as per your opinion?.....

.....
.....
.....
.....

Executive Engineer (Public Works, Municipality)

1. What types of projects are continuing to develop Paurashava?.....

.....
.....
.....
.....

2. What services are to be given to the city dwellers through MGSP (Municipal Governance Services Programme) project?.....

.....
.....
.....
.....

3. Do you think that is there any infrastructural problem in the city?

.....
.....

4. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....

5. Do you know how the environment can be managed and governed in proper way?

.....

6. Do you think do mass people have proper knowledge of environment and their right and choice?

.....

7. Is this project implementing according to Master Plan? Yes or No...if No...Why...

.....

8. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....

9. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No...Why.....

.....

10. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if

Yes....How.....

11. Is there any participation of women in any development work or plans in Paurashava?

.....

12. How do you evaluate the coordination among different department of the municipality and various authorities of the city?

13. How can you evaluate your satisfaction with the delivery of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

14. What types of problems do you face in the city? What are the causes behind the problems?

.....
.....

15. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or Why are not solved environmental problems of the city?.....

.....

16. How can be solved the problems as per your opinion?.....

.....
.....

Town Planner

1. Is Tangail Paurashava has Master Plan? If yes...Is this passed by the LGED? If yes....Is this implemented?

.....
.....
.....

2. Are residential, commercial and other buildings constructing according to Municipal authority's guidelines? Yes or No...if no. Why.....

.....
.....

3. Does land use planning and management standard maintain properly of using land? Yes or No...if no. Why.....

.....
.....
.....

4. Do you think that is there any infrastructural problem in the city?

.....
.....

5. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....

6. Do you know how the environment can be managed and governed in proper way?

-
.....
7. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....
8. Are you accountable to do your work? Yes or No...if yes.....
How.....
.....
.....
9. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....
Why.....
.....
.....
10. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No...Why.....
.....
.....
11. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if
Yes....How.....
.....
.....
12. Is there any participation of women in any development work or plans in Paurashava?
.....
.....
.....
13. How do you evaluate the coordination among different department of the municipality and various authorities of the city?
14. How can you evaluate your satisfaction with the delivery of service facilities?
15. What types of problems do you face in the city? What are the causes behind the problems?
.....
.....
16. What are the factors or reasons of environmental governance problems of the city?

Please give your opinion..... Or

Why are not solved environmental problems of the city?

.....
.....

17. How can be solved the problems as per your opinion?.....

.....
.....

Deputy Assistant Engineer (Electricity section, Municipality)

1. Who is responsible of limited electricity supply in the city? Please give your opinion.....

.....
.....
.....

2. Do you have sufficient employee and technological support or machineries to provide electricity supply? Yes or No...If

No...why.....

.....
.....
.....

3. Do you think that is there any infrastructural problem in the city?

.....
.....

4. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....

5. Do you know how the environment can be managed and governed in proper way?

.....
.....

6. Do you think do mass people have proper knowledge of environment and their right and choice?

.....
.....

7. Are you accountable to do your work? Yes or No...if yes.. how.....

.....
.....
.....
.....

8. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....
.....
.....

9. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No...Why.....

.....
.....

10. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if

Yes....How.....
.....
.....

11. Is there any participation of women in any development work or plans in Paurashava?

.....
.....
.....

12. How do you evaluate the coordination among municipality and PDB/REB of the city?

13. How can you evaluate your satisfaction with the delivery of service facilities?

14. How can we manage the electricity problem in the city?.....

.....
.....
.....

17. What types of problems do you face in the city? What are the causes behind the problems?

.....
.....

18. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....

19. How can be solved the problems as per your opinion?.....
.....
.....
.....

**Supervisor/ Assistant Engineer (Water Supply and Sewerage Section,
Municipality)**

1. What are the problems of supplying water in the household?.....
.....
.....
.....

2. Is budget sufficient for water supply purpose in the city? Yes or No...if No Why.....
.....
.....
.....

3. Is manpower and technical support sufficient for water supply purpose in the city? Yes or No...if No Why.....
.....
.....
.....

4. Who is responsible for piped water supply coverage in the city?
.....
.....
.....
.....

5. Do the technicians and employees have training of water supply related work? Yes or No...If No..explain.....
.....
.....

6. Do you think that is there any infrastructural problem in the city?
.....
.....

7. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....

8. Do you know how the environment can be managed and governed in proper way?

.....
.....

9. Do you think do mass people have proper knowledge of environment and their right and choice?

.....
.....

10. Do you give answer cordially water supply related questions of people? Yes or No.... if No.. Why.....

.....
.....

11. Does municipality take opinion of city dwellers to solve water supply related problems or implement plans or programmes of water supply?
a) Yes b) No c) Others if no or others
.....Why.....

.....
.....
.....

12. Do you share about expenditure of water supply with respective people? Yes or No...if No...Why.....

.....
.....
.....

13. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....
.....
.....
.....

14. Is there any participation of women in any development work or plans in Paurashava?

.....

.....

15. How about the authority’s response if any problem occurs in case of water supply?

.....

16. Do you have any step to do more coverage of water supply and better quality of piped water? a) Yes b) No.. if Yes what?.....

.....

17. Does the authority monitor if any work or plan of water supply implement?

a) Yes b) No if No

Why.....

.....

18. How can you evaluate your satisfaction with the delivery of service facilities?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

19. What types of problems do you face in the city? What are the causes behind the problems?

.....

20. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....

21. How can be solved the problems as per your opinion?.....

.....

**Conservancy Inspector (Waste Management and Cleaning Section,
 Municipality)**

22. What are the problems of waste management of the city?.....

.....
.....
.....

23. How many wastes produce per head in the city?

.....

24. How does collect wastes from the home?.....

.....

25. Where do the collected wastes dump? Is there any dumping Site?.....

.....

26. Is budget sufficient for waste management and cleaning purpose in the city? Yes or No...if No Why.....

.....
.....
.....
.....

27. Is manpower and vehicle support sufficient for waste management? Yes or No...if No Why.....

.....
.....
.....
.....

28. Does the waste management related people and employees have training to do this work? Yes o or No...If No..explain.....

.....
.....
.....

29. Do you think that is there any infrastructural problem in the city?

.....
.....
.....

30. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....
.....

31. Do you know how the environment can be managed and governed in proper way?

.....
.....
.....

32. Do you think do mass people have proper knowledge of environment and their right and choice?

.....
.....
.....

33. Do you give answer cordially waste management related questions of people? Yes or No.... if No..

Why.....

.....
.....
...

34. Does municipality take opinion of city dwellers to solve waste management related problems or implement plans or programmes of this?

Yes b) No c) Others if no or others ... Why.....

35. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....
.....
.....
.....

36. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No... Why.....

.....
.....

37. Is there any participation of women in any development work or plans in Paurashava?

.....
.....
.....

38. How about the authority's response if any problem occurs in case of waste management?

.....

39. Do you have any step to do better management of wastes? a) Yes b) No.. if Yes what?.....

.....

40. Does the authority monitor the waste management works?
 b) Yes b) No if No

Why.....

41. How can you evaluate your satisfaction with the waste management of the city?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

42. What types of problems do you face in the city? What are the causes behind the problems?

.....

 ...

43. What are the factors or reasons of environmental governance problems of the city?
 Please give your opinion..... Or

Why are not solved environmental problems of the city?.....

44. How can be solved the problems as per your opinion?.....

.....

Sanitary Inspector (Health Section, Municipality)

1. Do you think that the responsibility of municipal authority in providing public toilet to the city is properly maintained? Yes or No....If No please give your

opinion.....
...
.....
.....

2. What are the problems of providing public toilets of the city?.....

.....
.....
.....

3. Is budget sufficient for public sanitation in the city? Yes or No...if No Why.....

.....
.....
.....

4. Do you think that is there any infrastructural problem in the city?

.....
.....

5. Do you know about the causes and consequences of environmental pollution and degradation?

.....
.....

Do you know how the environment can be managed and governed in proper way?

.....
.....

6. Do you think do mass people have proper knowledge of environment and their right and choice?

.....
.....

7. Do you give answer cordially about public sanitation related questions of people? Yes or No.... if No..

Why.....

.....
.....

8. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....

9. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No... Why.....

10. Is there any participation of women in any development work or plans in Paurashava?

11. Does municipality take opinion of city dwellers to solve public sanitation problem of the city?

b) Yes b) No c) Others if no or others
Why.....

12. Do you have any step to make public toilets in the city? a) Yes b) No.. if Yes what?.....

13. How can you evaluate your satisfaction with the sanitation management of the city?

Highly Satisfied	Satisfied	Some Extent Satisfied	Dissatisfied	Highly Dissatisfied
1	2	3	4	5

14. What types of problems do you face in the city? What are the causes behind the problems?

15. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....

16. How can be solved the problems as per your opinion?.....

District level officer (DC Office)

1. What types of work does DC office do for Paurashava?.....
.....
.....
2. Who is responsible for constructing illegal establishments, illegal water and electricity connections in this city?.....
.....
3. Do you feel any barriers to implement the legislations against illegal actors in this city? Do you have such environmental legislations?.....
.....
4. Do you think environmental legislation is actually enforced to prevent such illegal actions? What are the barriers to be taken actions against them?.....
.....
5. What is your idea/plan about illegal settlements and illegal squatters in Tangail city?.....
.....
6. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....
.....
.....
7. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No...Why.....

.....
.....
8. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if Yes....How.....
.....
.....
9. Is there any participation of women in any development work or plans in Paurashava?
.....
.....

.....
10. What types of problems do you face in the city? What are the causes behind the problems?
.....
.....

11. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or Why are not solved environmental problems of the city?.....
.....
.....

12. How can be solved the problems as per your opinion?.....
.....
.....

LGED Officer

1. What is the permission and implementation status of the Master Plan (prepared in 2013)?.....
.....
.....
2. Does LGED require an urban environmental policy framework for maintaining sustainable improvements of local environment in Tangail?
3. Is there any balance of power and responsibilities between national and municipal authorities for maintaining good urban governance in this city? If no, why?
4. Do you have any link to the people who involve with environmental improvement programmes in this city?.....

Officials of Roads and Highway

1. Do you think is roads sufficient for the Paurashava?.....
.....
.....
2. Do you have any contribution in constructing roads in the Paurashava?.....
.....
.....

3. Is financial support sufficient for constructing and maintaining roads in the city?
Yes or
No.....
.....
4. Do you follow environmental roles and regulation to implement the projects? Yes
or No
.....
.....
.....
5. Do you think that is there any infrastructural problem in the city?
.....
.....
6. Do you know about the causes and consequences of environmental pollution and
degradation?
.....
.....
7. Do you know how the environment can be managed and governed in proper way?
.....
.....
8. Do you think do mass people have proper knowledge of environment and their
right and choice?
.....
.....
9. What types of problems do you face in the city? What are the causes behind the
problems?
.....
.....
10. What are the factors or reasons of environmental governance problems of the city?
Please give your opinion..... Or

Why are not solved environmental problems of the city?
.....
.....
.....
11. How can be solved the problems as per your opinion?.....
.....
.....
.....

Officials of DoE

1. Which of the environmental issues does DoE mainly concerned within Tangail
city?
.....
.....
.....

2. Is that issue(s) citywide or particular part of the city?.....
.....
.....
.....
3. Do you maintain any regulatory standards or guidelines to prevent air, water and noise pollution in this city?.....
.....
4. If not, why? How often do you monitor the regulatory standards for instance in air, water and pollution and disposal and management of solid wastes in this city?
.....
.....
5. Do you launch any campaign to develop citizens' awareness against environmental pollution in this city?.....
.....
6. What difficulties do you face to implement and monitoring a regulatory framework for better environmental management?.....
.....
7. Do you have any link to the people who involve with environmental improvement programmes in this city?.....
.....
8. Do you think that is there any infrastructural problem in the city?
.....
.....
9. Do you know about the causes and consequences of environmental pollution and degradation?
.....
.....
10. Do you know how the environment can be managed and governed in proper way?
.....
.....
11. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....
12. Are you accountable to the people to manage environmental problems of the city?.....
.....
.....
13. How do you evaluate the coordination between municipality and DOE of the city?

14. What types of problems do you face in the city? What are the causes behind the problems?

15. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....

16. How can be solved the problems as per your opinion?.....

Officials of DPHE (Department of Public Health and Engineering)

1. Are you responsible to provide Water Supply, Sanitation (human excreta and sullage disposal, drainage and solid waste management in the city? Yes or No.....

2. What are the problems of supplying water and quality of water in the household?.....

3. What are the problems of providing public toilets and sewerage line in the city?.....

4. What are the problems of wastes management in the city?

5. What are the problems of drainage maintenance in the city?

6. How can you evaluate your satisfaction with the delivery of service facilities?

Highly Satisfied 1	Satisfied 2	Some Extent Satisfied 3	Dissatisfied 4	Highly Dissatisfied 5
-----------------------	----------------	----------------------------	-------------------	--------------------------

7. Is manpower and technical support sufficient for different services in the city? Yes or No...if No Why.....

Manpower and technical support (Sufficient or insufficient)	Water Supply		Sanitation		Drainage Maintenance		Solid Wastes Management	
	Yes	No (if No Why)	Yes	No (why)	Yes	No (Why)	Yes	No (Why)

8. Do the technicians and employees have training of water supply related work? Yes or No...If No.. explain.....

.....

.....

9. Do the technicians and employees have training of sanitation related work? Yes or No...If No.. explain.....

.....

.....

10. Do the technicians and employees have training of drainage maintenance related work? Yes or No...If No.. explain.....

.....

.....

11. Do the labours and employees have training of wastes management related work? Yes or No...If No.. explain.....

.....

.....

12. Do you have any monitoring programme to examine water quality of the city? Yes or No if Yes What.....

.....

.....

13. Do you give answer cordially water supply, sanitation, drainage and waste management related questions of people? Yes or No.... if No.. Why.....

.....

 ...

14. Does DPHE take any awareness programme of environmental problems of the city?.....

.....

15. Does DPHE take opinion of city dwellers to solve water supply, sanitation, drainage and waste management related problems or implement plans or programmes?

c) Yes b) No c) Others if no or others

.....Why.....

.....

16. How do you evaluate the coordination between municipality and DPHE of the city?

Highly Satisfied 1	Satisfied 2	Some Extent Satisfied 3	Dissatisfied 4	Highly Dissatisfied 5
-----------------------	----------------	----------------------------	-------------------	--------------------------

17. How about the authority's response if any problem occurs in case of water supply, sanitation, drainage and waste management?

.....

18. Do you have any steps to do better management of these service delivery? Yes or No....If Yes

What.....

19. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....

20. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No... Why.....

.....

21. What do you think that financial capability of the Paurashava is adequate?

.....

22. Do you think that is there any infrastructural problem in the city?
.....
.....
.....
23. Do you know about the causes and consequences of environmental pollution and degradation?
.....
.....
.....
24. Do you know how the environment can be managed and governed in proper way?
.....
.....
.....
25. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....
.....
26. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if Yes....How.....
.....
.....
27. Is there any participation of women in any development work or plans in Paurashava?
.....
.....
.....
28. Does the authority monitor if any work or plan of these service delivery related work implement? a)Yes b) No if No Why.....
.....
.....
29. What types of problems do you face in the city? What are the causes behind the problems?
.....
.....
.....
30. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....
.....
31. How can be solved the problems as per your opinion?.....
.....
.....

Education officer

1. What are the main causes of urban environmental problems in Tangail city? As per your opinion.....
.....
.....
2. How can you evaluate your satisfaction with the delivery of service facilities?

Highly Satisfied 1	Satisfied 2	Some Extent Satisfied 3	Dissatisfied 4	Highly Dissatisfied 5
-----------------------	----------------	----------------------------	-------------------	--------------------------

3. How about the authority's response if any environmental problem occurs in your locality?
.....
.....
4. What do you think that financial capability of the Paurashava is adequate?
.....
.....
5. Do you think that is there any infrastructural problem in the city?
.....
.....
6. Do you know about the causes and consequences of environmental pollution and degradation?
.....
.....
7. Do you know how the environment can be managed and governed in proper way?
.....
.....
8. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....
9. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....
Why.....
.....
.....
10. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No... Why.....
.....
.....
11. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if Yes....How.....

.....
.....
12. Is there any participation of women in any development work or plans in Paurashava?
.....
.....
.....

13. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....

14. How can be solved the problems as per your opinion?.....
.....
.....

Leaders of Community based Organizations and Non-government Organizations

1. Who (community) is your main concern in Tangail city?.....
.....

2. Are you satisfied with responses from communities/citizens? Yes or No if No.. Why.....
.....
.....

3. What challenges are you facing to provide the programmes?
.....
.....
.....

4. Do you receive any cooperation from other institutions like Municipality, DPHE, PDB, and DoE?.....
.....
.....

5. What assistances do you need to extend the programmes relating to improvement of communities living conditions?
.....
.....

6. What do you think that financial capability of the Paurashava is adequate?
.....
.....
.....

7. Do you think that is there any infrastructural problem in the city?
.....
.....
8. Do you know about the causes and consequences of environmental pollution and degradation?
.....
.....
9. Do you know how the environment can be managed and governed in proper way?
.....
.....
10. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....
11. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....
Why.....
12. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No...Why.....
13. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if
Yes....How.....
14. Is there any participation of women in any development work or plans in Paurashava?
15. What types of problems do you face in the city? What are the causes behind the problems?
.....
.....
16. What are the factors or reasons of environmental governance problems of the city?
Please give your opinion..... Or
Why are not solved environmental problems of the city?.....
17. How can be solved the problems as per your opinion?.....
.....
.....

Leaders of Civil Society

1. What issues have you already raised in the public domain to improve environmental quality in the city?.....
.....
.....
2. Is any of the issues received priority by the local government or city authorities? If yes, which one got priority and Why?.....
.....
.....
.....
3. What change have you seen in the particular issue(s) after raised the demand?.....
.....
.....
.....
4. Are you satisfied with the responses and support of citizens?.....
.....
.....
.....
5. What barriers do you face to raise such issues as public demand?.....
.....
.....
.....
6. Do you have any linkage with other organizations/institutions and who are they?
.....
.....
7. What do you think that financial capability of the Paurashava is adequate?
.....
.....
8. Do you think that is there any infrastructural problem in the city?
.....
.....
9. Do you know about the causes and consequences of environmental pollution and degradation?
.....
.....
10. Do you know how the environment can be managed and governed in proper way?
.....
.....
11. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....

12. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....

Why.....
.....
.....
.....

13. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No...Why.....

.....
.....

14. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if

Yes....How.....
.....
.....

15. Is there any participation of women in any development work or plans in Paurashava?

.....
.....

16. What types of problems do you face in the city? What are the causes behind the problems?

.....
.....

17. What are the factors or reasons of environmental governance problems of the city? Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....
.....

18. How can be solved the problems as per your opinion.....

.....
.....
.....

Group: 3 Professionals and Policymakers (Teachers, Doctors, Engineers, Lawyers, Journalist, Architect- Planner)

19. What types of problems do you face in the city?

.....
.....

20. What are the causes behind the problems?.....

.....
.....

21. What do you think that financial capability of the Paurashava is adequate?

.....
.....

22. Do you think that is there any infrastructural problem in the city?

-
.....
23. Do you know about the causes and consequences of environmental pollution and degradation?
.....
.....
24. Do you know how the environment can be managed and governed in proper way?
.....
.....
25. Do you think do mass people have proper knowledge of environment and their right and choice?
.....
.....
26. Does authority share the progress of development work of service facilities to the inhabitants? Yes or No.....if No....
Why.....
.....
.....
27. Does authority share the detail expenditure of service facilities works to the inhabitants? Yes or No.....if No... Why.....
.....
.....
28. Does authority take opinion of city dwellers to implement plans or programmes of development work of environment? Yes b) No if
Yes....How.....
.....
.....
29. Is there any people's participation in any development work or plans in Paurashava?
.....
.....
30. Is there any participation of women in any development work or plans in Paurashava?
.....
.....
31. What are the factors or reasons of environmental governance problems of the city?
Please give your opinion..... Or

Why are not solved environmental problems of the city?.....
.....
.....
32. How can be solved the problems as per your opinion?.....
.....
.....

APPENDIX- 3

Orientation Handbook on Basic Issues in Paurashava Governance, 2018
(The Local Government (Paurashava) Act, 2009)

Chapter: 2 Local Government System of Bangladesh and Role of Paurashava

2.1 Paurashava in the local government system of Bangladesh

2.1.1 Local government system of Bangladesh

Bangladesh is a democratic state where fundamental human rights and the people's participation in administration through their elected representatives are guaranteed by the constitution. Based on the principles of democracy, the Constitution of the People's Republic of Bangladesh confers on local governments composed of elected representatives the power to perform functions prescribed by relevant law within their respective administrative unit (Section 59 and Section 60).

Local Government in the Constitution

Section 59: Local government

- (1) Local government in every administrative unit of the Republic shall be entrusted to bodies, composed of persons elected in accordance with law.
- (2) Everybody such as is referred to in clause (1) shall, subject to the Constitution and any other law, perform within the appropriate administrative unit such functions as shall be prescribed by Act of Parliament, which may include functions relating to: (a) administration and the work of public officers; and (b) the maintenance of public order; the preparation and implementation of plans relating to public services and economic development.

Section 60: Powers of local government bodies

For the purpose of giving full effect to the provisions of Section 59, Parliament shall, by law, confer powers on the local government bodies referred to in the Section, including power to impose taxes for local purposes, to prepare their budgets and to maintain funds.

Based on the Constitution, different acts were promulgated to establish different local governments with the right to collect taxes, fees, rates and tolls specified in respective act. There are five types of local governments today: District (Zila) Parishads; Upazila Parishads; Union Parishads; City Corporations; and Paurashavas. All these local government institutions are being governed by elected public representatives at present.

Local government system of Bangladesh

Geographical area	Local	
	Rural Local Government	Urban Local Government
Division		City corporation
District (Zila)	District (Zilla) Parishad	City Corporation Paurashava
Upazila	Upazila Parishad	Paurashava
Union	Union Parishad	

There two urban-based local government institutions in Bangladesh, namely City Corporation and Paurashava. Rural-based local government institutions are District (Zila) Parishad, Upazila Parishad and Union Parishad. As of May 2018, there are 11 City

Corporations, 329 Paurashavas, 3 specialized District Parishads, 61 District (Zila) Parishads, 492 Upazila Parishads, and 4,571 Union Parishads in the country.

The jurisdiction of a Paurashava is the area declared by the government as city area. As per the provision of Local Government (Paurashava) Act 2009 (Hereinafter referred to as Paurashava Act 2009), The below-mentioned conditions have to be met to be declared as city area:

- a) Three-fourth of the people is involved with non-agricultural profession.
- b) 33 percent land is non -agriculture type.
- c) Density of population is not less than 1500 in average in each square km.
- d) Population is not less than 50 thousands

Bangladesh Period

President's order No.7,1972: All the local councils were repealed and replaced by administrators employed and the names of the local institutions were changed as below:

- Union Council => Union Panchayet
- Thana Council => Thana Development Committee
- District Council =>Zila Board
- Town Committee =>Shahor Committee
- Municipal Committee =>Paurashava

President's order No. 22, 1973: Town committee was renamed as Paurashava and it had a provision for electing a chairman and vice-chairman through direct polling of citizens of the Paurashava.

Paurashava Ordinance 1977: The post of the vice-chairman was made defunct in this law. A provision was adopted for fixing the number of commissioners on the basis of election area and for forming of a Paurashava comprised of at least nine commissioners. The number of women commissioners could not be more than one-tenth of elected commissioners. The provision of selecting three women commissioners for every Paurashava was introduced through an amendment later on. Through a later amendment in 1997, seats for female commissioners were reserved creating one reserved seat for women in every three wards. A provision for directly electing female commissioners for reserved seats was arranged.

Local Government (Paurashava) Act 2009: This act is the latest and well-organized law on evolved town-based local governments in Bangladesh. At present 324 Paurashavas are being operated under this law.

2.1.3. Responsibilities and authority of the national government regarding Paurashavas

A Paurashava is a local government institution operated by public representatives elected by local inhabitants through popular vote in accordance with law. The government develops laws and rules on elections and operations of Paurashava (Section 120 and 121 of Paurashava Act 2009). The government also provides directions and advice on the administrative activities of Paurashavas.

The responsibilities and authorities of the government over issues on Paurashavas can be classified into the following areas:

- **Institutional area**

The government can extend or rearrange the area of a Paurashava (Section 4 (2) of Paurashava Act 2009). If any of Paurashavas fails to fulfil the conditions of the Act, the

government could abolish the Paurashava through a gazette notification (Section 11 (1)) or suppress Paurashava through a gazette notification (Section 49). The government also has control over own issues of Paurashava. For example, the government engages an appropriate officer as an administrator to perform functions of Paurashava after a town area is declared as a Paurashava and the administrator disposes his/her responsibilities until an elected Paurashava is formed (Section 42 of Paurashava Act 2009). Moreover, the government can employ, transfer, suspend, remove or dismiss the first and second class officers of Paurashavas. The government also can temporarily terminate a Mayor or a Councillor with a gazette notification (Section 31 of Paurashava Act 2009).

- **Financial area**

Paurashavas have to follow directions of the government on issues related to sources of income, tax assessment and use of their own fund (Section 89 and 90 of Paurashava Act 2009). Paurashavas develop and approve the annual budget following prescribed rules and procedures. The Paurashavas send a copy of the approved budget to the Divisional Commissioner or to any other authority determined by the government (Section 92 (i) of Paurashava Act 2009). If a Paurashava fails to approve its budget, the government will certify the income and expenditure statement of the Paurashava and it will be deemed an approved budget of the Paurashava (Section 92 (3) of Paurashava Act 2009). Moreover, under Section 92 (4) of the Act, the government can modify the annual budget through its orders within 30 days of receipt of the budget. There is a provision for depositing their fund to the treasury or a bank transacting the business of a treasury or following any other government-prescribed manner (Section 91 of Paurashava Act 2009). Besides, the government decides the amount of grants allocated to each Paurashava. It also prescribes various financial procedures/guidelines for account book keeping, usage of fund, etc.

- **Responsibilities and activities of Paurashavas**

Firstly, the government can inspect any document or record of Paurashava at any time as well as depute officers to inspect any divisions of Paurashava, services and development works or any properties (Section 83 and 84 of Paurashava Act 2009). If the government considers that any action taken by a Paurashava is illegal or irregular, or any action taken under the Act is done improperly, or sufficient money has not been allocated to perform the duties under the Act, the national government could issue orders to restrain the act of the Paurashava and gives directions to make appropriate arrangement (Section 88 of Paurashava Act 2009).

Secondly, if the government considers that any action taken or proposed to be performed by a Paurashava is not in line with Paurashava Act 2009 or against public interest, the government can take the following action (Section 86 of Paurashava Act 2009):

- a) Repeal the activity;
- b) Withhold implementation of any proposal or any order issued by the Paurashava;
- c) Restrict implementation of any activity proposed; or
- d) Order the Paurashava to take necessary steps.

Thirdly, the government can issue different orders for Paurashavas (Section 85 and 87 of Paurashava Act 2009).

- **Other area**

The government can issue standing orders on issues relating to: relations between Paurashavas and other local government institutions and local authorities in the Paurashava areas; coordination of the activities of Paurashava and the government

departments; provision of grants for Paurashavas under special conditions and circumstances including financial assistance to Paurashavas; arrangement of financial contribution from a Paurashava to another Paurashava or from any other local authorities; and provision of general guidance for Paurashavas to fulfill the objectives of Paurashava Act 2009 (Section 119 of Paurashava Act 2009).

2.2. Paurashava Act 2009 and functions of Paurashava

2.2.1. Contents of Paurashava Act 2009 at a glance

The performance of Paurashavas became more transparent, clear and specific as a result of introduction of Paurashava Act 2009. The Act introduces provisions for the constitution and operation of Paurashava with the objective of providing public services to the people living in urban areas.

The Paurashava Act 2009 is divided into five parts. Each part consists of a few chapters. The main contents of each chapter are roughly described in the table below.

Chapter	Description of the main contents
1stPart (Section 1-2)	
Introduction	Explanation and definition of terms used in the Act
2ndPart (Section 3-48)	
1 st Chapter Establishment and constitution of Paurashava, etc.	<ul style="list-style-type: none"> • Establishment of Paurashava • Constitution, tenure, naming and abolition of Paurashava, classification of Paurashavas, and honorarium and other benefits for the Mayor and the Councilors
2 nd Chapter Determining the boundary of wards, voter list, etc.	<ul style="list-style-type: none"> • Dividing Paurashava areas into wards • Determining boundaries of wards • Preparation of voter lists.
3 rd Chapter Qualifications and disqualifications of Mayors and Councilors, etc.	Qualifications and disqualifications of the Mayor and Councilors
4 th Chapter Election, reconciliation of election dispute, etc.	Election-related rules regarding schedule of election, procedure to conduct elections, disclosure of election results, submission of election appeals, election tribunal and reconciliation of disputes, election appeals, etc.
Chapter 5 Oath taking by elected representatives, declaration of properties, removal, etc.	Issues related to elected representatives such as: oath taking; declaration of properties; prohibition of candidature in more than one post; resignation, temporary dismissal, removal and reappointment of Mayor and Councilors; responsibilities of the Mayor and Councilors; penalty for violating rules; rights and obligations of the Mayor and Councilors; non-confidence motion; leave of absence of Mayor and Councilors; appointment of Panel Mayor; appointment of administrator, etc.
Chapter 6 Property of Paurashava, contracts, etc.	<ul style="list-style-type: none"> • Paurashava's properties and their management. • Management of properties on behalf of Paurashava • Contracts made by and on behalf of Paurashava.
3rdPart (Section 49-82)	

1 st Chapter Suspension of the Council and re-election	The authority "of the government to suspend any council through a gazette notification.
2 nd Chapter Responsibilities and activities of Paurashava, committees, etc.	Responsibilities and functions of Paurashava including delivery of services, administrative responsibilities such as publication of annual report and citizen charter, adoption of advanced information technology and good governance, constitution of standing committees, preparation and retention of records, etc.
3 rd Chapter Executive power and conduct of business	<ul style="list-style-type: none"> • Authority to execute Paurashava's operation • Holding of meetings of the Council, documentation of minutes of meetings, etc. • Proposal by Councilor to convene a meeting on important public issues. • TherightsofCouncilorstoaccessinformationregarding Paurashava's activities and administration.
4 th Chapter Officers and employees of Paurashava, Provident Fund, etc.	Issues related to officers and employees of Paurashava including: appointment/employment; the government's authority to appoint government officers to Paurashava; provident fund and other benefits; setting of rules on service-related matters; andrelations between elected representatives and officers/employees.
5 th Chapter Registration of tutorial schools, coaching centers, private hospitals, etc.	Registration of tutorial schools, coaching centers, private hospitals, paramedical institutes, etc., and penalty on failure of registration, collection of fees by Paurashava, re-registration, etc.
4th Part (Section 83-112)	
1 st Chapter Request for records, inspection, etc.	The national government's right to: request records from Paurashavas; send an officer for inspection; give orders to Paurashavas; provide directions and inspection; and instruct Paurashava to take step on any matter.
2 nd Chapter Financial management, budget and accounting	Issues on the financial activities of Paurashava such as sources of fund, expenditure, reserve, investment, and special fund, budget preparation, accounts keeping, audit, etc.
3 rd Chapter Infrastructure! services	Execution of infrastructure -related projects and contracts, implementation of infrastructure-related services, and execution of contracts with the private sector.
4 th Chapter Paurashava taxation	Notification and enforcement of taxes, framing of model tax schedule, the government's directions regarding taxes, liability to taxes, tax collection and recovery, tax evaluation and petition against it, tax deduction from salaries, etc.
5 th Chapter Other local authorities, offences and punishment	<ul style="list-style-type: none"> • Joint committees with other local authorities. • Resolution ofdisputesbetweenPaurashavasor betweenPaurashavaand other local government organizations. • Offence, punishment, reconciliation and receipt of complaint for trial, etc. .
6 th Chapter Right to information	The right of any citizen of Bangladesh to access information related to Paurashava following specific procedures

5th Part (Section; 113-131)	
1 st Chapter Law and order	<ul style="list-style-type: none"> • Assistance of from the police to Paurashavas. • Appointment of Paurashava police.
2 nd Chapter Miscellaneous	<p>Miscellaneous issues on operational and activities of Paurashava including:</p> <ul style="list-style-type: none"> • Formation of a committee for dialogue with the people in the Paurashava area; • Establishment of and administrative arrangements for training institutes by the government for Paurashavas; • Rules to deal with encroachment; • Appeal against orders by Paurashava; • Issuance of standing orders related to Paurashava by the government; • The government's authority to set rules and regulations; • The government's authority to make by-laws; • Delegation of power from the government to Divisional Commissioner; and • Rules on licensing and sanctions by Paurashava
3 rd Chapter Transitional and temporary provisions	Temporary provisions until the Act comes into effect

In addition to the above-mentioned five Parts, there are eight schedules which provide some details in reference to specific sections or sub-sections of Paurashava Act 2009.

The content of the eight schedules are described below:

❖ 1st Schedule-Oath/Declaration

A form for conducting the oath by the Mayor and Councilors is provided in this schedule in reference to Section 27.

❖ 2nd Schedule - Detailed functions of Paurashava

This schedule describes 64 activities of Paurashava in detail, which are related to the duties, functions and operation of Paurashava as described in Sections 50 to 71 of Paurashava Act 2009. The areas of these activities are: public health; water supply and drainage; food and drinks; animals; town planning; building control; streets; public safety; tree, parks, gardens and forests; education and culture; social welfare; and development.

❖ 3rd Schedule - Taxes, rates, tolls and fees which may be levied by Paurashava and other sources

This schedule lists different taxes, rates, tolls and fees for the income of Paurashavas and other sources of income in reference to Section 98 "Municipal Taxation" of the Act.

❖ 4th Schedule - Offences under the Act

This schedule describes in detail offences under the Act in reference to Section 108 of Paurashava

Act 2009. There are descriptions of 61 offences in the schedule.

❖ 5th Schedule - Functions of the Paura Police

This schedule describes the functions of the Paura police according to Section 113 of Paurashava Act 2009 "Support from Police to Paurashava" and 114 "Appointment of Paura Police."

- ❖ 6th Schedule - Issues on which rules to be developed
This schedule describes the issues on which the government may develop rules following Section 120 of "Power to Make Rules" of Paurashava Act 2009.
- ❖ 7th Schedule - Issues on which regulations to be developed
This schedule describes the issues on which the government may develop regulations according to the provisions under Section 121 "Power to Make Regulations" of Paurashava Act 2009.
- ❖ 8th Schedule - Issues on which by-laws to be developed
This schedule describes the issues on which the Paurashava may develop by-laws under the provision of Section 122 "Power to Make By-laws" of Paurashava Act 2009.

2.2.2. Important Sections of Paurashava Act 2009

There is a total of 131 sections in Paurashava Act 2009. A few important sections are discussed below in brief.

Establishment, declaration and tenure of Paurashava

The government may express its intention to declare any rural area as a town area through notification published in the government gazette according to Section 3 of Paurashava Act 2009. As per Section 4, the government may form a Paurashava merging a town area with other areas except for cantonment areas. The government can decrease, expand or change the Paurashava area.

According to Section 6 and 7, a Paurashava shall be constituted with a Mayor, equal number of Councilors to the number of wards and female councilors in the reserved seats who are one-third of the number of wards and elected through direct vote of the adult members of that area. According to Section 8, the tenure of a Paurashava Council shall be five years from the date of the first meeting of the Council but even after the completion of its tenure, the Council shall continue to function until the new Council holds its 1st meeting.

Delimitation of ward boundaries, electoral roll and ward committees

The government divides a Paurashava area into required number of wards as per Section 13 of Paurashava Act 2009. According to Section 14 of this act, a ward committee consisting of not more than ten members should be formed in every ward with the approval of the Paurashava Council, and elected councilor of each ward will be the chairman of the ward committee of that ward. 40% of the members of the committee shall be female.

Oath-taking of the Mayor and the Councilors, their obligations and status

Section 27 stipulates that the Mayor and Councilors of Paurashava shall take oath before taking charges within 20 days from the date of publishing their name through a gazette notification as per rules and forms developed by the government, and shall sign on the oath-paper. An officer authorized by the government shall administer their oath.

There are provisions for resignation, temporary dismissal and termination of the Mayor and Councilors in Section 30 to 32. (See 3.1.3. of this handbook for details).

As per Section 40, the Councilors of Paurashava shall elect a panel of mayors comprised of three councilors in a preference order within one month from the first meeting. One of the three elected members of the panel must be a Councilor for the reserved seats.

Properties, contracts, etc., of Paurashava

The government can develop rules for management, maintenance and development of properties owned by or vested in it, under Section 44. Paurashava can manage or develop properties received from the government or from any other authorities.

Section 45 confers on Paurashavas the right to acquire, if necessary, lands adjacent to road for public interest, with the approval of the government and following the provisions of laws.

As per Section 46, Paurashavas can lease or sell its immovable properties following proper procedures on the basis of open competition/bidding according to decision of the Paurashava Council. Paurashavas can also use movable properties by lease or rental. Paurashavas can sell or hand over any property with the prior approval of the government, if it is ensured that the Paurashava will be benefited from this and the immovable properties will not be required by the Paurashava to fulfill any objectives or conduct any duties or responsibilities under the Act.

Suppression of the Paurashava council

According to Section 49, the government can suppress any Paurashava through a gazette notification if: it fails to pass the budget of the next fiscal year before the end of the current fiscal year; 75% of Councilors resign; 75% of Councilors are removed due to disqualification following the Act; or it fails to collect at least 75% of imposed taxes, rates, etc., without any logical ground.

Responsibilities and functions of Paurashava and committees

The basic responsibilities and functions of Paurashava are described in Section 50 of Paurashava Act (See 2.2.3. of this handbook for details), and Section 51 mentions the functions of Paurashava entrusted by the government. In addition, Paurashavas have to publish the annual report on their activities in the government-prescribed form by 30th of September and the citizen charter following guidelines provided by the government, as per Section 52 and 53 of.

Section 55 stipulates that Paurashava shall constitute ten standing committees on specified issues for the tenure of two and a half years in the first meeting of the Council or in any other following meeting. Their terms of reference have to be determined by by-law but can be defined in the Council meeting until the by-law is issued (See 3.3. of this handbook for details).

According to Section 57, the Council, standing committees or any other committee of Paurashava can allow presence of any specialist, any citizen(s) in its meeting following their application and could adopt decisions or recommendations according to his/her opinion.

Section 61 obliges Paurashavas to: keep records on its activities following prescribed procedures; develop and publish periodical reports and statements if prescribed by the government; disclose/publish information following procedures prescribed by the government on the activities, executive power, administration and operations of the Paurashava.

According to Section 62, the executive power of Paurashava is exercised by the Mayor, Councilors or officers delegated the power by the Paurashava council. The proposal to delegate executive power for conducting regular services of the Paurashava has to be approved by the Paurashava and its modification, if necessary, have to be finalized by the Paurashava through a special meeting.

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Section 63 some basic rules regarding holding Council meetings, convening and chairing of the meetings, quorum of the meeting, etc. (See 3.2.3 of this handbook for details).

Section 68 provides each Councilor with the right to access information on development activities and administration of the Paurashava, He/she need to send a notice to the Secretary or where applicable to the Chief Executive Officer to collect specific information at least 24 hours before the meeting.

Officers/and staff members of the Paurashava

According to Section 73, the assigned authority can appoint a secretary and required numbers of Class I and Class II officers according to the manpower structure of the Paurashava. Paurashava can employ other employees following the government-prescribed organogram for conducting its activities properly

In addition, the government shall appoint a Chief Executive Officer for specific Paurashavas as per Section 74 and also can appoint the government officers and staff for a fixed period for conducting duties under general supervision of the Paurashava.

Government inspection activities on Paurashava

Under Section 83, the government can ask Paurashavas for any records, files, statements, estimates, plans, statistics, written speeches, reports, etc., anytime.

According to Article 86, if the government considers that any ongoing or proposed activity of a Paurashava is not compatible with the Act or against public interest, it can either: cancel the activity; implement it or suspend the order; restrict the proposed activity; or order the Paurashava to take necessary action.

Financial management, budget and accounting

Under Section 89, each Paurashava has a fund called 'Paurashava Fund1 {See 3.5.3 of this handbook for details). Various types of expenditure charged on the Paurashava fund are described in Section 90.

Article 91 provides that the money accumulated in the Paurashava fund should be deposited to any bank that performs the functions of public treasury or through any other manner directed by the government. Paurashava could invest any part of its fund following the procedures prescribed by the rules set by the government. Besides, Paurashava can constitute separate funds for special purposes, which shall be administered and controlled in a manner fixed by the government.

According to Section 92, Paurashavas have to prepare and approve the statement indicating estimated income and expenditure for the next year before it commences each fiscal year, which is referred to as the annual budget, A copy of an approved budget has to be sent to the Divisional Commissioner or to any other authorities selected by the government.

Under Section 93, the accounts of income and expenditure of Paurashava have to be kept and operated following prescribed forms and procedures (See 3.6.2. of this handbook for details).

Section 94 provides that accounts of Paurashava shall be audited by an auditing authority nominated by an approved panel of eligible audit authority.

Infrastructural service

Under Section 95, Paurashavas can perform service-oriented activities through partnership contract with any government or private organization related to financing, implementation, maintenance and operation of any project.

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According to Section 97, Paurashavas can implement projects on water supply, drainage and sanitation, waste management, roads and streets, and commercial infrastructures through Paurashava's own fund or through partnership contract with public or private organizations.

Paurashava taxation

Paurashavas can impose all or any of the taxes, sub taxes, rates, tolls, or fees listed in the third schedule of the Act with sanction of the government under Section 98.

As per Section 100, the government can frame a model tax schedule for the Paurashava and the rate of taxes shall be a model for all Paurashavas.

Section 103 stipulates that all of the taxes, sub-taxes, rates, tolls and fees imposed have to be collected following the procedures prescribed by the government.

Citizens' rights to access to information

According to Section 112, any citizen of the country deserves the rights to access any information on the Paurashava following the procedure fixed, subject to provisions in the laws in force.

Law and Order

Section 113 provides that the officer in charge of the police station and his/her subordinate officers and staff members will help the Paurashava to maintain law and order situation as per the fifth schedule of the Act. They will also assist the Paurashava in carrying out the orders of the magistrate appointed under laws. They are responsible for informing the Mayor and Secretary, and where appropriate, the Chief Executive Officer, of any attempts to perform any offence or on any offences already occurred without delay, and support the Mayor, Chief Executive Officer, Secretary or any other officer, upon their written request, to dispose their duties.

According to Section 114, the government can appoint the Paurashava police for any Paurashava area, and their recruitment, training, discipline and other conditions of their service shall be controlled by rules. The government shall engage an appropriate officer on deputation to operate the police. The activities of the Paurashava police are described in the fifth schedule of the Act, and they will dispose their duties to maintain law and order of the area in cooperation with the local police force.

2.2.3. Functions of Paurashava

Section 50 to 61 of the Paurashava Act 2009 describes responsibilities and functions of Paurashavas. Detailed functions of Paurashavas, including mandatory and discretionary functions, are provided in the second schedule of the Act. Those functions are listed in the table below.

Detailed functions of Paurashava

Sector	Detailed functions
Public Health	<p>Mandatory Functions: Waste removal and collection; provision and maintenance of public toilet and regulation of private toilets; birth, death and marriage registration; prevention and control of infectious diseases.</p> <p>Optional Functions: Necessary measures to ensure public health; regulation of insanitary buildings; waste management; promotion of public health; establishment and maintenance of hospitals/dispensaries; provision of medical aid, health education,</p>

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	etc.
Water Supply and Drainage	<p>Mandatory Functions: Water supply; regulation of the sources of private water supply; construction and maintenance of public drains; securing of bathing and washing places; management and operation of public ferries.</p> <p>Optional Functions: Execution of water supply schemes; regulation of private drains; execution of drainage schemes; provision and regulation of dhobi ghats for washer men; declaration, utilization and regulation of public watercourse; licensing of vessels; declaration and regulation on fisheries</p>
Food and Beverage	<p>Mandatory Functions: Establishment, development and maintenance of public markets; licensing and regulation of private markets; provision and maintenance of slaughter houses.</p> <p>Optional Functions: Regulation of manufacture, sale and preparation of food and beverages; execution of milk supply schemes</p>
Livestock	<p>Optional Functions: Establishment and maintenance of veterinary hospitals; provision of vaccines for prevention of infectious diseases; control of strayed animals; establishment and maintenance of cattle pounds; establishment and maintenance of animal shelters; establishment and maintenance of cattle farms and poultry farms; registration of cattle sales; execution of livestock schemes; control of dangerous animals; holding of cattle shows and fairs; maintenance of or contribution to zoological gardens; establishment and maintenance of zoo.</p>
Town Planning	<p>Mandatory Functions: Formulation of a master plan.</p> <p>Optional Functions; Inspection and control of execution of site developmentschemes.</p>
Building Control	<p>Mandatory Functions: Sanction of site plans and building plans; inspection ofconstructed buildings.</p> <p>Optional Functions: Regulations of buildings.</p>
Streets	<p>Mandatory Functions: Construction and maintenance of public roads; execution of road maintenance and development programmes; approval of development of new roads; lighting of public streets; control and regulation of traffic; licensing of vehicles; setting of the rate of fares for the use of public transportation.</p> <p>Optional Functions: Assignment of name, number and holding number of street; execution of street lighting schemes; watering of public streets.</p>
Public Safety	<p>Mandatory Functions: Provision of boats with other necessary equipment for flood fighting; execution of schemes to prevent illegal trades; provision, maintenance and administration of graveyards and cremation spots; registration of burial andcremation spots.</p>
Trees, Parks, Gardens and Forests	<p>Mandatory Functions: Plantation and protection of trees on public streets and other public places; execution of a garden development plan for each garden; provision and maintenance of open spaces; regulation on use of open space.</p> <p>Optional Functions: Execution of arboriculture plans; building, maintenance and administration of public gardens; execution of forest plans; destruction of pests for trees; clearance of noxious</p>

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	vegetation or undergrowth; felling and trimming of harmful trees; excavation/re-excavation of tanks; and reclamation of low lands.
Education and Culture	<p>Mandatory Functions: Maintenance of educational institutions (as may be required by the prescribed authority); enforcement of compulsory education.</p> <p>Optional Functions: Initiation of establishment of educational institutions if needed; financial contributions to private educational institutions; granting of scholarships; arrangement of training for teachers; promotion of adult education; maintenance of depots for sales of school books and stationaries; promotion of educational societies; establishment and maintenance of information centres for civic education; establishment of museums and art galleries; establishment and maintenance of public halls and community centres; celebration of religious festivals, independence day and other national holidays; arrangement of the reception of distinguished visitors; promotion of physical culture and encouragement of public games and sports; promotion of sightseeing tours in the Paurashava; preservation of historical places; provision of recreation facilities; provision of public libraries as well as mobile libraries.</p>
Social Welfare	<p>Optional Functions: Establishment and maintenance of welfare institutions; provision of burial and cremation of paupers; prevention of beggary, prostitution, gambling, illicit drugs, alcoholic drinks, juvenile delinquency and other social offences; organizing social service volunteers; promotion of the welfare of women, child and backward classes; promotion of social development and social welfare.</p>
Development	<p>Optional Functions: Implementation of development plans; implementation of community development plans; investment in commercial enterprise.</p>

3.4. Citizens' participation in Paurashava's activities

3.4.1. Objectives and benefits of citizen's participation

Citizens' participation is an integral part of the decision-making process of a local or central government under a democratic government system. The operation of a government is financed mainly by taxes from the people and therefore it is held accountable to tax payers, that is, citizens. Transparency and accountability of a government are ensured by the involvement of citizens in its decision-making process.

Citizen participation is beneficial both for the government and citizens.

Benefits of citizen participation
<p>For citizens</p> <ul style="list-style-type: none"> ❖ Citizens are given the opportunities to influence decision making of a government according to their needs and thereby able to prompt the government to improve their services.
<p>For government</p> <ul style="list-style-type: none"> ❖ Citizen participation increases the people's trust in and popularity of the government. ❖ Citizen participation facilitates awareness about their responsibility, which

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inspires them to pay taxes and also to cooperate with the government in its activities.

3.4.2. Citizen participation in legal context

Bangladesh is a democratic country and its constitution articulates at the beginning that "All powers in the Republic lies with the people." Based on this principle, Paurashava Act 2009 has some provisions (Section 14, 57 and 115) regarding citizen participation such as:

- 14. Ward Committee: (1) with approval of Paurashava, every ward can form a ward committee with persons not more than ten, and elected ward councilor shall be the chairperson of the committee.
(2) 40% of the members shall be female, but Paurashava can take necessary decision after considering activities of the ward to make it more effective.
- 57. Citizen's presence in meetings: If any expert person/citizen/citizens express interest to be present in any meeting of the Paurashava, the Paurashava or standing committee or any other committee can permit him/them to be present, and can adopt decisions or recommendations according to his/their opinion if it is considered appropriate.
- 115. Dialogue with the people of municipal area: (1) In every Paurashava, the elected council shall form a committee with members not more than 50 for dialogues with community people on issues related to services and others.
(2) In the meeting with the committee under sub-section (1) members shall have the opportunity to express their opinions regarding different services and development works along with taxation and recovery.

3.4.3. Citizen participation through Ward Committees

Though the objectives of Ward Committees are specified neither by Paurashava Act 2009 nor any rules, its effective functioning would develop such an environment as below.

- Paurashava identifies ward-level needs through discussions between elected public representatives and various stakeholders on infrastructures, services and other general socio-economic problems at the Ward level.
- Transparency and accountability of Paurashava increases through discussions between elected representatives and stakeholders on progress, quality and problems of the Paurashava's development activities.
- Citizens' awareness and sense of responsibility as a citizen through various awareness raising activities of Ward Committees.

Composition of Ward Committee

The Local Government Division issued a set of rules entitled "Paurashava (Constitution of Ward Committee and Terms of Reference) Rules 2012" through notification published in the government gazette on 26 June 2012. According to the rules, a Ward Committee consists of the following members and the membership should not exceed ten. 40% of them shall be female.

Composition of Ward Committee

Position	Representation
Chairperson	Elected Councilor of respective Ward
Co-Chairperson	Elected Female Councilor for reserved seat of respective Ward
Member	Three representatives of poor communities of the town

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Member	Two representatives from civil society
Member	Two representatives from professional organizations
Member-Secretary	Assistant Engineer/Sub-Assistant Engineer

Terms of reference of Ward Committee

The main responsibility of Ward Committee is to involve the local people in developmental and administrative activities of the Paurashava as articulated in Paurashava Act 2009. The tasks of Ward Committee defined in Rule 5 of the Paurashava (formation and terms of reference) rules, 2012 are shown in the table below.

Terms of Reference of Ward Committee

	Terms of Reference
1.	Discuss progress, quality and problems of ongoing and planned development works with the residents at Ward level
2.	Presenting infrastructures, services and problems of the Ward in the meetings of the TLCC formed under Section 115 of Paurashava Act 2009
3.	Conducting activities to raise public awareness on payment of taxes, sub-taxes, bills, tolls, rates, etc.
4.	Collecting essential socio-economic data including birth and death registration
5.	Advice the council to adopt project on street light, source of safe drinking water, and other public welfare-related projects
6.	Create public awareness with regard to cleanliness, sanitation, environmental conservation and tree plantation
7.	Raise awareness with regard to establishment of unity and good relationship among the people of various class and occupation
8.	Prepare the list of persons covered by various government development programmes such as Vulnerable Group Development (VGD), old age allowance, subsidy, etc., and forward it to the Paurashava.
9.	Assist the Paurashava through providing voluntary services in respect to public health programmes, particularly prevention of various diseases, family planning and waste removal
10.	Undertake emergency programmes to face epidemic and natural disasters
11.	Arrange open meetings by inviting 150 prominent residents once every six months to discuss overall activities of the ward, and list the people's demands and submit it to the Council for possible implementation
12.	Carry out any other responsibility as may be directed by the government and the Council from time to time.

Meetings of Ward Committee

Ward Committee meetings have to be arranged at least once in every three months, according to the conditions under the above terms of reference. The following steps can be taken to arrange Ward Committee meetings:

- 1) To prepare a draft working paper by member secretary;
- 2) To set a meeting date by chairperson;
- 3) To issue a notice attaching a working paper by member secretary;
- 4) To arrange the meeting;

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- 5) To prepare the minutes of the meeting including proposals by chairperson, members and member secretary.

A working paper is a document which records the progress made so far on implementation of the decisions taken in the previous meetings. It helps to conduct discussions effectively in the next meeting. The agenda of the next meeting can be incorporated in the working paper as well and distributed with the notice of the meeting.

Good practices of Ward Committees

- Ward Committee presented the activities of the Paurashava in a Ward Committee meeting.
- Ward Committee ensured women's involvement in the development projects of the Paurashava.
- Ward Committee assisted the Paurashava in registration of marriages, births and deaths.
- Ward Committee conducted campaign against women trafficking, child marriages and dowry, and ensure involvement of citizens.
- Ward Committee helped the Paura police and Thana police to prevent crimes.
- Ward Committee inspected cleaning activities and motivates the people about it.

3.4.4. Citizen participation through Town Level Coordination Committee

A Town Level Coordination Committee (TLCC) has to be formed in every Paurashava under Section 115 of Paurashava Act 2009 and an office order issued by the Local Government Division (memo No. 258) on March 9, 2011 with the objective of creating the wider scope for the people to provide their opinions about development activities of the Paurashava. The terms of references of TLCC have been defined in 2nd part of No. 3 of memo No. 258 as follows:

- Paurashava will provide services based on needs of the people as a result of discussions of development activities and other activities with representatives of citizens.
- Transparency and accountability of Paurashava will be enhanced through discussion on their annual budget, financial status as well as on their development works and services.
- It develops a partnership feeling on the citizen's side raising their awareness of civic responsibilities such as tax payment by participating in the decision-making process of the Paurashava.

Composition of TLCC

Paurashava Act 2009 fixes the maximum number of TLCC members at 50. The composition of TLCC is specified in an office order (memo No. 258) of March 9, 2011. The table below shows the composition structure of the TLCC:

Composition of TLCC

Position	Representation
Chairperson	Mayor
Member	Councilor (Determined by the Mayor) – 12 persons
Member	Representatives of line departments (District Administration, Local Government Engineering Department, Department of Public Health Engineering, Roads and Highways Department, Public Works Department, Social Welfare Department, Department of

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Member	Cooperatives, T&T) – 8 persons.
	Representatives of professional groups (education, culture, lawyers, businessmen, doctors) – a total of 5 persons
Member	NGO representatives – 4 persons
Member	Civil society representatives – 12 persons
Member	Representatives of poor Communities of the town – 7 persons
Member-secretary	Chief Executive Officer / Secretary

Note: Members of the committee will not be more than 50.

The following matters need to be considered to form TLCC:

- 1) Select 1 to 3 members from each ward;
- 2) Allocate at least one-third of the total membership to women;
- 3) Contact potential qualified citizens to learn their interest to be included in TLCC before the final selection of the members; and
- 4) Identify associate organizations considering the importance of their role.

Terms of reference of TLCC

Terms of reference of TLCC is prescribed in the above-mentioned office order (memo No. 258) as below.

Terms of Reference of Ward Committee

Terms of Reference	
1.	Hold discussions on the preparation of overall development plan including raising awareness of citizens of their active participation in different stages of the planning process.
2.	Assist, supervise and monitor the progress in Paurashava's overall development plan preparation
3.	Discuss the Paurashava's tax assessment and collection in the committee meetings.
4.	Discuss various services delivered by the Paurashava.
5.	Hold the first meeting of the TLCC within 15 days of its formation.
6.	Arrange one meeting in every quarter and prepare minutes of every meeting.
7.	Discuss the progress, quality and problems of development works implemented by the Paurashava.
8.	Discuss issues about the Paurashava's governance improvement.
9.	Discuss citizen's involvement in the Paurashava's development activities.
10.	Discuss progress of activities of the Paurashava's standing committees.
11.	Record discussions and decisions in the form of minutes, follow-up actions/status of implementation in the following meetings, and continue the process.

Meetings of TLCC

TLCC has to hold at least one meeting in every three months. A quorum is achieved with the presence of 50% of the members. Major actions to be taken to hold the meeting are described below.

- 1) The member secretary of TLCC convene the meeting after setting the date, time and agenda with a working paper attached in consultation, with the chairperson. The working paper is disclosed publicly, for example, through posting it on the notice board.

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- 2) The member secretary issues a notice of the meeting along with the minutes of the last meeting and a working paper.
- 3) Hold the meeting.
- 4) Approve the minutes of the last meeting and review the progress of implementation of decisions made in the previous meetings.
- 5) Prepare the minutes of the meeting including proposals and signatures of the chairperson, members and member secretary.
- 6) Preserve the minutes in a binding book.
- 7) Distribute the resolutions of the meeting to the members and disclose it to the public on the notice board.

Good practices of TLCC

- ❖ Paurashava presented its financial statement to the Council following the request of the members of the TLCC to ensure transparency in the financial activities.
- ❖ TLCC initiated various measures to raise awareness to prevent crimes and violence against women. It also provided active support to Thana Police and the Paurashava.
- ❖ Paurashava arranged training on income generation for the poor following recommendation of the TLCC.
- ❖ TLCC conducted an awareness building campaign to develop a clean town.
- ❖ Paurashava conducted programmes to increase public awareness about waste disposal in a health and hygienic matter following recommendations of TLCC.

3.5. Financial management and taxation

3.5.1 Objectives of financial management

Financial Management is an inseparable part of overall management of any organization. Especially for local government institutions such as Paurashavas, which are operated with the fund of taxpayers, their primal responsibility is to properly plan, operate, monitor and control their financial resources.

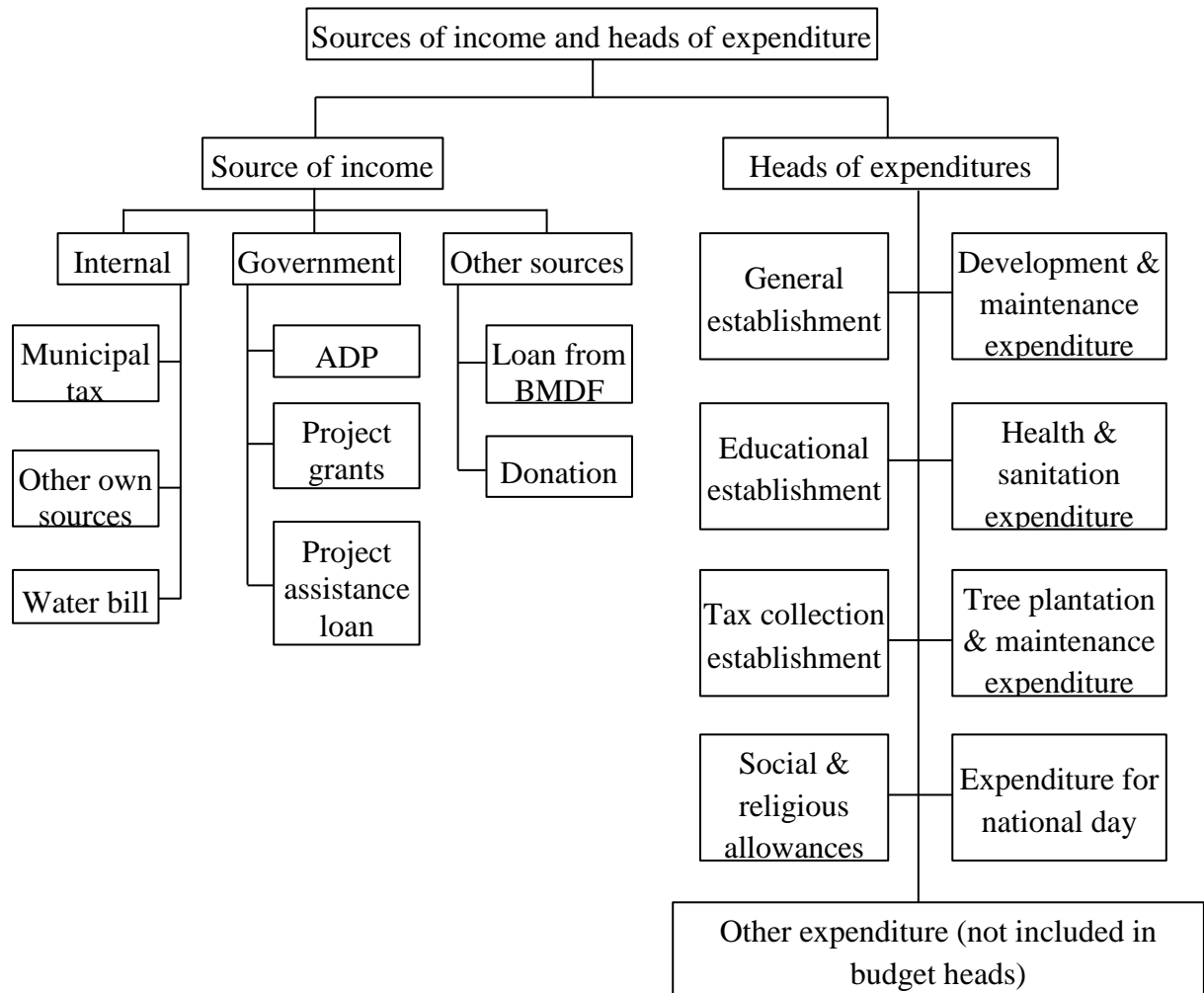
The objectives of financial management are:

- To prepare a balanced budget between income and expenditure;
- To ensure proper allocation of fund based on the fund flow and priority-based project selections reflecting demand of the people;
- To ensure proper use of allocated financial resources;
- To ensure transparency and accountability in financial transactions;
- To strengthen the trust of the stakeholders in the institution; and
- To facilitate the integrity of the institution in financial transactions.

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3.5.2. Financial structure of the Paurashava

The main sources of income and heads of expenditure of Paurashava's fund are shown in the following chart.



3.5.3 Sources of fund of Paurashava

The financial sources of Paurashava are: revenue income, government assistance (regular grants, special grants, project aid and loans). Paurashavas must have their own fund. The sources of fund are specified in Section 89 of Paurashava Act 2009 as below.

Section 89 of Paurashava Act 2009

(1) There shall be a fund for the respective municipality which shall be known as the municipality fund.

(1) Every Paurashava shall have a fund named as the Paurashava Fund. The fund shall be composed of money collected from different sources.

(2) Under sub-section (1), the fund shall be accumulated in the Paurashava Fund from the sources below

- a) The balance at the disposal of the Paurashava at the time of the Act coming into force.
- b) The proceeds from all types of taxes, sub-taxes, rates, tolls, fees and other charges imposed by the Paurashava under the Act.
- c) All taxes and income to be paid or accruing to the Paurashava from the resources

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<p>vested in or managed by the Paurashava.</p> <p>d) All sums received by the Paurashava for executing its functions under the Act or any other law for the time being in force.</p> <p>e) All sums contributed by individuals, organizations or local authorities.</p> <p>f) All sums accruing from the trust (if any) operated by the Paurashava.</p> <p>g) All grants made by the government and other authorities</p> <p>h) All profits accruing from investments.</p> <p>i) All proceeds from such income sources as the government may direct to be placed at the disposal of the Paurashava.</p>

The fund collected by Paurashava should be deposited in any bank operating public treasury activities, or in any other organization the government directs (Section 91 (1) of Paurashava Act 2009). The grants from the government and fund collected locally are the income of Paurashava, Specific sources of the fund of a Paurashava are listed below.

Sources of fund of Paurashava

1, Grants from the government	2. Own sources	3. Other sources
<p>a) Government grants/allocations under the revenue budget</p> <ul style="list-style-type: none"> ➤ Allocation for salary and allowances of officers/staff ➤ Allocation as compensation against octroy (city tax) <p>b) Development grants/allocations:</p> <ul style="list-style-type: none"> ➤ Development grants for annual development programme (ADP); and Project grants <p>c) Project grants/allocation:</p> <ul style="list-style-type: none"> ➤ Allocation for Annual Development Programme (ADP) ➤ Water supply 	<p>a) Paurashava/Paura tax</p> <p>Every Paurashava fixes Paurashava tax once in every five years on all buildings and lands within the area according to "Rules on Imposing and Collection of Paurashava Tax 2013" and "Paurashava Model Tax Schedule 2014". Taxes imposed on buildings and lands on the basis of annual valuation and rates imposed on street lights, waste disposal and water supply facilities are, as a whole, called Paura tax and it is collected using a single form.</p> <p>b) Other sources</p> <p>All other taxes, rates, fees and tolls specified in the Paurashava Model Tax Schedule 2014.</p> <p>c) Water rate</p> <p>Income from water supply connections and disconnections and water bills collected as per "Model by-laws (Water Supply) 1999".</p>	<p>a) Credit received from financial institutions</p> <ul style="list-style-type: none"> ➤ Loan from Bangladesh Municipal Development Fund (BMDF) <p>b) Donations received from any person, Institution or authorities.</p>

3.5.4. Assessment and collection of taxes Assessment of Paurashava taxes

Each Paurashava can assess Paurashava tax once in every five years on all types of buildings and lands under its boundary following "Rules on Paurashava Taxation and Tax Collection System Rules 2013" and "Paurashava Model Tax Schedule 2014."

The Paurashava Tax should be assessed as below.

- Each Paurashavas has to complete tax re-assessment every five years.

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- Interim assessment needs to be conducted all year during the interim period between completion of a tax assessment process and start of the next one.
- There are two methods for assessing annual value of a building: a) rental formula; and b) cost of construction formula.
- Three types of accounts are applicable for assessing annual value of a building: a) fully rented building; b) partially rented building, and c) own residential building;
- In order to assess the construction cost, the rate of construction for a square foot in the respective area adopted by the Public Works Department should be followed.

Introduction of assessment software to assess the Paurashava Tax will reduce time and make assessment accurate.

Tax collection system

The following steps should be taken to achieve the target for tax collection:

- Determine annual and monthly targets;
- Prepare and distribute bills under a computerized system every three months to increase the collection;
- Receive payment through banks;
- Review monthly collection status through the Standing Committee on Tax Assessment and Collection and the Paurashava Council;
- Initiate motivational programmes for tax payment;
- Issue reminders to large defaulters after passing a certain time according to rules; and
- Ensure collection through issuance of an attachment notice and, if required, seizure or sale of properties of defaulters after the time limit mentioned in the reminder

Introduction of web-based software instead of the present desktop-based Paurashava tax software and arrangement for payment through cell phone operators or through 'Bikash' would be convenient for tax payers.

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APPENDIX 4

Budget of Tangail Paurashava for Water Supply Section

The Expenditure of Water Supply Section on 2020-21 Financial Years in Tangail Paurashava

Serial Number	Expenditure Items	Proposed Budget of 2020-21 Year	Actual Cost of 9 months of 2020-21 Financial Year
01	Salary and Allowance of Officer and staffs of Water Supply Section	11000000.00	7478525.00
02	Transfer as Gratuity	2500000.00	2866850.00
03	Transfer of Provident Fund	2000000.00	1211792.00
04	Electricity Bill water supply related with arrear	4500000.00	3364552.00
05	Water line connection Expenditure	250000.00	1774686.00
06	Maintenance and repair of Pump House	1500000.00	730159.00
07	Maintenance and repair of generating Tube wells (with panel board)	800000.00	24320.00
08	purchasing of Stationary, goods and registers of Water supply section	500000.00	353614.00
09	Postal, Cable and revenue	200000.00	65107.00
10	Telephone Bill with Arrear	500000.00	
11	Transfer to Depreciation Account	500000.00	
12	Sanding and Washing	2000000.00	
13	Procurement of Chemical Products (Water Purification Medicines Procurement and Sampling Test	1000000.00	598151.00
14	Others Expenditure	500000.00	105000.00
15	Transfer to Development Account	3000000.00	
16	House construction and others Advance Payment	500000.00	
17	Maintenance & repair of Office building and	1500000.00	
18	Setting up Basins at different areas to combat Covid-19 and other expenditure	1000000.00	
19	Operation of MGSP Projects and Maintenance		581730.00
	Sub Total	36000000.00	19154487.00
	Sub Total Expenditure(1+2)	288700000.00	173161736.23
	Closing Balance	21051613.21	31327148.52
	Total Expenditure	309751613.21	204488884.75

The Expenditure of Water Supply Section on 2019-20 Financial Years in Tangail Paurashava

Serial No.	Expenditure Items	Actual Expenditure of 2017-2018	Amended Budget of 2018-2019	Proposed Budget of 2019-2020
01	Salary and allowance of officer and staffs of water supply section	9,091,461.35	10,000,000.00	11,000,000.00
02	Transfer as Gratuity	2,651,698.20	2,500,000.00	2,500,000.00
03	Transfer of Provident Fund	1,378,450.00	1,500,000.00	2,000,000.00
04	Electricity Bill water supply related	2,000,000.00	4,000,000.00	4,500,000.00

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	with arrear			
05	Water line connection Expenditure	3,19,096.00	200,000.00	2,500,000.00
06	Maintenance and repair of Pump House	100,000.00	900,000.00	1,500,000.00
07	Maintenance and repair of generating Tube wells (with panel board)	-	100,000.00	800,000.00
08	purchasing of Stationary, goods and registers of Water supply section	229,247.00	100,000.00	300,000.00
09	Postal, Cable and revenue	101,331.00	100,000.00	100,000.00
10	Telephone Bill with Arrear	-	-	500,000.00
11	Transfer to Depreciation Account	-	-	500,000.00
12	Sand washing and re-establishment	1,069,950.00	600,000.00	2,000,000.00
13	Procurement of Chemical Products (Water Purification Medicines Procurement and Sampling Test	192,000.00	400,000.00	1,000,000.00
14	Others Expenditure	233,105.00	100,000.00	500,000.00
15	Transfer to Development Account	-	3,000,000.00	3,000,000.00
16	House construction and others Advance Payment	-	-	500,000.00
17	Maintenance & repair of Office building and	-	200,000.00	1,500,000.00
18	Setting up Basins at different areas to combat Covid-19 and other expenditure	-	9,500,000.00	-
19	Operation of MGSP Projects and Maintenance	2,222,547.00	-	-
	Sub Total	19,588,885.55	33,200,000.00	34,700,000.00
	Sub Total Expenditure (1+2)	133,248,484.55	179,300,000.00	272,300,000.00
	Closing Balance	15,284,897.42	24,384,897.42	26,344,897.42
	Total Expenditure	148,533,381.97	203,684,897.42	298,688,897.42