

ABSTRACT

URBAN GOVERNANCE AND SERVICE DELIVERY IN ASSAM: A STUDY OF WATER SUPPLY AND SANITATION IN GUWAHATI CITY

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Safe water and adequate sanitation are basic to the health of every human being. Throughout history, civilizations have thrived in regions where water has been in abundance. Historical evidence also shows that during the Roman civilization, issues like purity of water, turbidity, ground water, slopes of aqueducts, pipes, wells, etc. were points of discourse of the urban water supply systems (Biswas: 1985). However, increased population and associated pressure on resources in the present time have led to water scarcity, which is a nightmare for a huge section of population all over the globe, more so in the developing countries (Borah: 2013). Most of the developing countries are now witnessing rapid urbanization due to increasing population and migration. This rapid growth of urban population is having serious implications in terms of urban infrastructures and services such as potable water and sanitation, housing, roads etc. There is a big gap between demand and supply of infrastructure facilities in urban areas of India. Basic infrastructure is the fundamental need of urban life. The provisions for strengthening infrastructure as an objective indicator of the development process reveal the standard of the actual field. The services provided by the urban governments in most developing countries are costly, ineffective, unreliable and of poor quality (World Bank: 2003). Besides, these services are not easily accessible to a larger section of society particularly the urban poor and disadvantaged groups (World Bank: 2003). This is particularly so in developing countries like India where public service are provided under highly inefficient bureaucratic monopolies and incredible political promises (Smitha: 2011). The pan-India scenario of drinking water supply and sanitation facilities continues to be deficient (Ghosh Mitra, 2010 Vishwanath, 2013). No Indian city receives piped water 24 hours a day, 7 days a week.¹ According to a WHO-UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, in 2011, 92 per cent of the total population of India has access to improved sources of water (96%-urban/89%-

¹ The World Bank, “*Urban Water Supply in India*” (4July 2011), <http://www.worldbank.org/en/news/feature/2011/09/22/urban-water-supply-india> (accessed on 18 March 2013)

rural).² However, the water supply systems in most cities of India are poorly operated with weak infrastructure and worse resource management (Ghosh Mitra, 2010; Mckenzie and Ray, 2009). And the city of Guwahati is no exception (Borah, 2013).

Against this back ground, many initiatives have been taken at the global and national levels to improve the quality of governance and service delivery in urban areas. The UN-HABITAT (2002) in its Global Campaign on Urban Governance advocated the principles of urban governance such as-sustainability, equity, efficiency, transparency and accountability, civic engagement and citizenship and security. These urban governance principles are relevant to any city in the world.

In developing countries since the ability of the state for providing these services has proved inadequate and unsustainable, new arrangements like decentralization, private participation, public-private partnership have been introduced to bring efficiency and performance standards for service provisioning (Smitha : 2011). Thus, multiple agents and different mechanisms and practices are involved depending on the nature of service and institutional context in terms of service delivery in the cities.

In India, the process of urbanization is an ever- expanding phenomenon, with increasing population in cities and towns leading to growing demand for basic civic amenities and services, which underscores the importance of urban governance in improving the conditions of city life (Mukhopadhyaya, 2001). Besides, effective delivery of services must be accompanied by reforms to strengthen the institutional framework to improve the effectiveness of delivery, and promote inclusive governance with greater involvement of communities, especially the poor. In this context, the 74th Constitutional Amendment Act (CAA) in India is considered as a new institutional innovation that drives to bring 'locality' in the governance of the cities besides symbolizing the promotion of local autonomy and devolution of powers to the level closest to the people. The 74th CAA, 1992 clearly aims at decentralization and creation of a democratic governance structure at the local level. This Act provides constitutional status to the urban local governments.

² WHO/UNICEF Joint Monitoring Programme (JMP) for *Water Supply and Sanitation*, WHO-UNICEF, <http://www.wssinfo.org/data-estimates/table> (accessed on 18 March 2013)

The 74th Constitutional Amendment Act aims at a transformation in the ‘structure’ of urban service delivery. This Act is landmark initiative of the Government of India to strengthen urban local self government in cities and towns.

Statement of the Problem

Water scarcity and inadequate sanitation facilities are increasingly being posed as a development challenge for many countries, particularly in urban areas (Saleth and Dinar, 2004). Urban India today faces major problems such as shortage of safe drinking water, inadequate sanitation facilities and poor solid waste management services. The urban water supply and sanitation sector in India is characterized by inefficient delivery of services (including high unaccounted water and intermittent water supplies) and inadequate coverage with piped water supply, especially for the urban poor. The water supply system in urban India are plagued by problems of inadequate distribution, unreliable service, deteriorating water quality, increasing user fees for water and inadequate funds for operation and management. Many large Indian cities have to source water from long distances ranging from 50 to 200 km due to exhaustion or pollution of nearby sources. This increases the cost of raw water and enhances the possibility of leakage during transmission.³ Errors in metering, unbilled water consumption and plain theft contribute to commercial losses. All these factors lead to high levels of non-revenue in the urban water supply system. With no monitoring systems in place and no incentive to reduce inefficiencies, the urban water supply scenario in India is one of poor service delivery, poor maintenance of physical systems, poor cost recovery, and poor generation of revenues. With rapid increase in urban population and continuing expansion of city limits, the challenge of delivering water to Indian cities is growing almost exponentially. Increasing attention, therefore, needs to be given to water supply and sanitation services as these affect the quality of life of citizens and economic growth of the country.

The government is responsible for catering to the basic needs including water and sanitation of the people including poor people in the cities (Smitha: 2011). Most of the

³ Ministry of Urban Development, Government of India, *‘Report on Indian Urban Infrastructure and Services’*, March, 2011, p-46

water and sanitation facilities in cities are state-owned either by the corporation or *parastatal* body (board). However, due to haphazard growth of urban population, the government is not able to meet expectations. To solve this issue several governance reforms have been introduced in both developed and developing countries of the world. These are decentralization, private participation and public-private partnership (PPP). To cope up with this, the Government of India has also passed 74th Constitutional Amendment Act, 1992. The act aims at decentralization and creation of democratic governance at the local level. This amendment has also opened up spaces for the participation of civil society organizations in the urban governance. In the shift of government to governance, the role of civil society organizations has been significant. Non Governmental Organizations (NGOs) play multifarious roles in the implementation of governmental programmes. NGOs have carved out new spaces in the political processes and delivery of public services. They play an important role in contributing to filling the gaps in the efforts of the governments.

Guwahati is one of the fastest growing cities of Northeast India. The haphazard growth of the city has resulted in a chaotic situation, giving rise to circumstances not favourable to its residents in many aspects. Amongst these, drinking water and sanitation facilities are the most crucial problems confronting the residents. There is a variety of institutional arrangements in the provision of urban water supply in the city. The system of public water supply in Guwahati is mainly administered through three organizations- the Guwahati Municipal Corporation, the Public Health Engineering Department and, the Assam Urban Water Supply and Sewerage Board. Besides, Guwahati Municipal Corporation is the sole authority for sanitation as well as collection and disposal of the garbage in the city. The 74th CAA has redefined the role, power, functions and finances of the Urban Local Bodies (ULBs) wherein the Twelfth Schedule of the Constitution lists additional functions to be carried out by ULBs. In this context, the 74th CAA may be considered a landmark as it devolves power to the Corporation by consideration the global trends towards urban governance to make the Corporation- as a pro-people institution. At this juncture, it is essential to know whether organizational and institutional arrangements for Guwahati have made any significant contribution in the

delivery of services with reference to water supply and sanitation. As the urban governance is an important trend to the development, it is essential to know whether urban governance has promoted development with reference to effectiveness, equity and sustainability in the delivery of services. Therefore, there is an immediate need for an in-depth study focused on these areas.

Thus keeping this need in view the present study tries to examine the relationship between urban governance and service delivery in terms of efficiency, equity and sustainability with special reference to water and sanitation in Guwahati city.

Review of Literature

Over the past two decades, many scholars have been focusing their attention on urban governance and service delivery. The available literature on urban governance provides a conceptual framework for analyzing the relation between urban governance and service delivery. For the purpose of this study review of related literature has been divided into three groups viz. theoretical, conceptual and empirical. Theoretical review helps us to spell out the theoretical relationship between urban governance and service delivery; conceptual review helps to understand the concept and empirical studies help in understanding the research gap and field realities. Emphasis is placed on empirical studies in Guwahati city in order to indentify researchable issue and to spell out appropriate methodology.

Theoretical Review

There are several theories of the understanding of governance and service delivery. The purpose of the discussion on the various theories and models used to describe the workings of governance systems is presented in the following section:

(a) The Minimal State: The theory of governance as the minimal state refers to an organizational structures that arises when there is no government involvement. Applying this theory to state affairs would suggest that state affairs would be regulated without intervention from a formal actor, such as national or state governments (Peters and Pierre 1998:223-243). Rather, governance would arise from the aggregation of individual

decisions in the market place, and as a result, there will always be some sort of organic frame work that governs the behavior of all actors within the state. More often than not, this concept of the minimal state is brought up as rhetoric to demonstrate a- preference for less government. In addition, some scholars like Rosenau, believe that governance differs from market interactions-that aggregating informal and uncoordinated individual decisions to create order do not amount to governance. This is because it is believed that individual actors within the markets lack the intentional or shared goals required for a governance arrangement. Thus, there is no group decision- making to address shared concerns in the concept of the minimal state. As a result there is no governance according to many scholars.

(b) The New Public Management Theory: The New Public Management theory involves managing an organization by introducing private-sector management methods and incentive structures in to the particular organization (Peters and Pierre: 1998). Advocates of this theory believe that introducing private-sector methods and incentive structures into state organizations will increase the efficiency of these organizations.

They derive their inspiration from market economics, rather than democratic theory. Applying the new public management theory to state organizations would require running the organizations like a private business. This involves two aspects. First, state organizations may apply traditional private sector management techniques such as: (1) clear standards and measures of performance, (2) results-based management techniques, (3) a focus on the bottom-line. Second, state organizations may adopt portions of the corporate governance theory that structures private businesses. Since corporate governance is more concerned with overall system by which organizations (public or private) are directed and controlled, commonly including principles of openness, integrity and accountability (Peters and Pierre: 1998).

(c) Governance as socio-cybernetic system: Governance as a socio-cybernetic system refers to informal and non-governmental methods of organizing actors that are accountable to a government in some manner. This theory of governance does not require a sovereign authority, as it brings together numerous actors, from governments to

nongovernmental organizations, all who could benefit from the synergy to solve shared problems and take more effective actions to address shared concerns. The socio-cybernetic system relies on the view that policy-making actors in a specific area of policy need each other because no single actor can effectively address those problems alone. According to this theory, governance arrangements arise from the interaction of various social-political groups and organizations (Hist and Paul 1994).

(d) Governance as self-organizing networks: The theory of governance as self-organizing networks goes further than governance as socio-cybernetic systems and refers to governance arrangements that develop from coordination among all the actors in a network that are not accountable to a government body. This theory refers to the new structures of wide spread social coordination and interaction between both public and private institutions and organizations in the delivery of services involving a greater role of private non-state or *quasi*-state institutions (Hist and Paul 1997).

(e) Public Choice Theory: Public Choice theory is useful in analyzing the benefits and costs of decentralizing the provision of delivery services. Public Choice theory assumes that the voter is a customer and the politician is a businessman. Public choice school holds the view that the people are aware of their needs, and therefore people's involvement in planning and implementing will be more effective and efficient (Russel and Nicholson, 1981). Hence, the theory proposes to allow them to make choices about services, taxes and other policies. Again, the problem is that the Public Choice theorist is not much concerned with improving the capacity of government institutions for facilitating effective services which may not be achieved by market mechanism. Public Choice approach can be useful in understanding the nature of goods and services. The main limitation of Public Choice approach is that it is too rationalistic and lays out narrow prescriptions (Oppenheimer 1981).

(f) Political Economy: From the perspective of political economy, both institutional and financial arrangements have an impact on the cost efficiency of delivery of services (Rondinelli et. Al. 1989: 62). It includes significant factors like political, administrative, financial, social, organizational, local resources, technical assistance and so on. In

decision making process political conditions (creative and systematic thinking of leaders and political stability) are considered very significant which affect the implementation of urban governance. Political economy implies that useful relationships among the interest groups are necessary for policy- making and implementation. Even in non-democratic countries decisions are made not only by rational calculation but also by political bargaining and negotiation (Rondenelli et. al. 1989:80). The most common political rationale for urban governance is that it is assumed as good governance which is very much closer to the people (Inman and Rubinfeld 1997). It accommodates pressure of regional autonomy, and sustains a heterogeneous society. The economic rationale for urban governance is to improve the ‘competitiveness’ of governments by satisfying the wishes of citizens and cost efficiency in delivery services (Salmon 1987:24). Nevertheless, it is not very clear whether political economy can identify local needs and satisfy people in a society where society is based on a certain hierarchy. Again, there is a debate as to whether politics and economics will go together.

Governance as explained briefly in its various theoretical frameworks has to be understood as a multidimensional concept. Hence the functioning of governance in the urban domain encompasses and embraces a variety of ideas. These comprise inter-governmental relations, such as negotiations, agreements and co-operative ventures among public and private parties, non-governmental and community-based organizations, implying bottom-up decision making process.

Conceptual Reviews on Urban Governance

Literature on urban governance in general and related to service delivery in particular is exhaustive but literature dealing with the issue of urban governance and service delivery in Assam is relatively scanty. However, for the purpose of the present study conceptual reviews on urban governance and service delivery have been reviewed in the following section:

While exploring the concept of governance and the kind of transformation of the state that is taking place in India, the study by Mathur (2008)⁴ finds that cooperative networks of the state; market and civil society- are taking over roles that were earlier confined to the state alone. This transformation leads to many challenges. Existing institutions of governance have to be so strengthened that they are able to face new demands. New institutions have to be forged that can fulfill the functions of coordination, control and regulation. The study presents a brief survey of this movement from government to governance and attempt to unravel a complex web of institutions that have emerged since governance became an important element of the policy discourse.

A study by Smitha and Sangita (2008)⁵ explores public-private partnership in the light of persistent state failure, institutional constraints, and systematic weakness, which impede the service delivery. The study focuses on key issues: whether public-private partnerships facilitate innovation, and thereby enhance quality of services, and essentially pro-poor reflecting equity concerns. The study examines various types of partnership at work for service delivery in metropolitan Bangalore.

While examining the state of affairs of the urban local bodies in the urban areas of Assam, a study by Das (2002)⁶ mainly focuses on the basic services of the urban local bodies especially of the Guwahati City and the Mangaldoi Town in Assam. The study argues that state-society synergy i.e., co-operation between the state and civil societies in the urban local self-governance system is useful for effective urban environmental management.

⁴ Kuldeep Mathur, *From Government to Governance*, National Book Trust India, New Delhi, 2008

⁵ K.C. Smitha and S.N. Sangita, *Urban Governance and Service Delivery in Bangalore: Public-Private Partnership* (Working Paper 189), Institute For Social and Economic Change, Bangalore, 2008.

⁶ Kalyan Das, *Urban Basic Services and the issue of the State Society Synergy: Cases from urban areas of Assam* (OKD Journal), Social Change and Development, October, 2002, pp. 17-35

Review of Literature on Urban Water Supply and Sanitation

India faces a pressing developmental challenge, namely providing safe, affordable and efficient drinking water and sanitation services to a burgeoning urban population, the size of which is largely underestimated even by the official records of the census of India. Inadequate water supply and sanitation services impose a disproportionate financial and public health burden on the poor. It also results in unregulated and unsustainable ground water pumping, poor quality infrastructure, insufficient maintenance and non-standardized accounting practices undermine the effectiveness of water utilities and lead to unaccepted by high level of water loss. The urban water and sanitation services sector needs systematic responses to address inter connected problems, which have huge ramifications for other development imperatives for India as well.

A study by Gopakumar (2010)⁷ focuses on the role of Public-Private Partnerships (PPP) in transforming existing water supply regimes in developing cities. The study argues that by bringing private actors and civil society groups into infrastructural delivery the expectation is that partnership efforts can make water supply systems more participative and democratic, which in turn can enhance access of different groups in society to essential services. The author also argues that such a characterization disregards the role of social and political context that, to an extent guide the role of PPP efforts in transforming water supply regimes. This study sketches five cases of water supply and sanitation partnerships located in three metropolitan cities in India viz., Bengaluru, Chennai and Kochi. The study concludes that PPP do play a role in making water supply regimes more participative but that depends on the nature of the regime as well as the actions of partners.

Research gaps identified from the Review

The review of literature indicates the following research gaps:

⁷ Govind Gopakumar. *Transforming water supply regims in India: Do public-private partnerships have a role to play?*, in *Water Alternatives* 3 (3): 2010, pp.492-511,(accessed from www.water-alternatives.org on 30 March, 2014).

First, it is no secret that a vast amount of literature exists on urban governance, water supply and sanitation in India but the service delivery system related with water supply and sanitation in Guwahati City does not find any place in these studies. Second, another set of studies focused about public-private partnership in the delivery of urban services but it is very rare to get a study the perception of people on the service delivery system in Assam. Thirdly, none of the studies examines the delivery of water supply and sanitation in the context of urban governance. Further, there is very less literature existing on Guwahati Municipal Corporation after the 74th Amendment Act which may be considered an important issue. This is important because, this Act devolves power to the corporation by consideration the global trends towards urban governance to make corporations as pro-people institutions. At this juncture, it is essential to know whether organizational and institutional arrangements for the Guwahati City have made any significant contribution in the delivery of services with reference to water supply and sanitation. As urban governance is an important trend to development, it is essential to know whether urban governance has promoted development with reference to effectiveness, equity and sustainability in the delivery of services. Therefore, there is an imperative need for an in-depth study focusing on these areas.

Research Issues Raised

First, what are the institutional arrangement available for delivery of water supply and sanitation in Guwahati city? To what extent are these institutional arrangements truly effective to ensure service delivery? If they are not effective what are the constraints on delivery of services? If there is any constraint how can it be eliminated?

Second, to what extent does urban governance deliver services effectively, equitably and sustainably? If it does not achieve its goal, what are the constraints? What other factors can contribute to deliver effective, equitable and sustainable services?

It is with these assumptions that a study has been proposed here to examine the relationship between urban governance and service delivery in the context of Guwahati

City, Assam. The problem considered for the present study is “Urban Governance and Service Delivery in Assam: A Study of Water Supply and Sanitation in Guwahati City”.

Thus, the present study attempts to know whether municipal agencies have made any significant contribution in the delivery of services with special reference to water supply and sanitation in the Guwahati city. As urban governance is an important trend related to the process of development, it is essential to know whether urban governance has promoted development with reference to effectiveness, equity and sustainability in the delivery of services. Therefore, there is an imperative need for an in depth study focusing

Objectives of the study

The objectives of the present study are-

1. To study the organizational and institutional aspects in the delivery of services in Guwahati City.
2. To assess the implications of governance in terms of efficiency and equity for water supply and sanitation in Guwahati City

Research Questions

In order to fulfill the objectives, the following research questions have been framed.

1. What are the institutional arrangement available for delivery of water supply and sanitation in the city?
2. Does the majority of populations in the area under observation have access to safe drinking water and what are the sources of drinking water available to them?
3. Are the present water supply systems of the city quipped to meet the requirement of water in the city?
4. To what extent are institutional arrangements truly effective to ensure service delivery?

Concepts and Operational Definitions

The concepts and operational definitions relating to the study are as follows:

List of Terms Used

Urban Governance: Urban Governance is derived from the concept of governance in relation to urban areas to be reflective of how the various constituents of public service delivery are organized to increase the welfare of citizens. Governance in urban areas may be described in the words of UNHABITAT (2002) “as the sum of many ways individual and institutions, public and private, plan and manage the common affairs of the city.” It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action taken. It includes formal institutions as well as informal arrangements and social capital of citizen. Thus, as a concept urban governance goes beyond government. It includes the mechanism, institutional structures and processes through which decision affecting the welfare of the citizen and stakeholders are taken. For the purpose of the present study, the institutional arrangements of urban local governance concern with the local self-government in urban areas.

Service Delivery: Service implies that something is going to be delivered in a certain way. In the present study public services would refer to those services provided by the governments (local, municipal, or national) to the public. The need for services that no individual can or will pay for, but that benefit all by their presence, is one of the justifications for taxation. Public service delivery is the implementation of those services and making sure they reach those people and places they are intended for. Service delivery maintains the expectations of the public relating to the service up till the service has not been delivered and also making the public delighted by the satisfaction. It is simply delivering the services effectively and efficiently to the public.

Water Supply: Water Supply means facilities for bringing drinking water to a community through reservoirs, aqueducts, tunnels and pipelines. Water Supply is the provision of water by public utilities, commercial organizations, community endeavours or by individuals, usually via a system of pumps and pipes.

Accessibility of Water Supply: Accessibility is assessed in terms of access to improved water source which implies to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpost, borehole, protected well or spring, and rain water collection. Unimproved sources include vendors, private tanker, *kuccha* wells and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 litres per person per day from a source within one kilometer of the dwelling (ADB et al 2005:46).

Sanitation: In the present study 'sanitation' would refer conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal. The World Health Organization (WHO) states that: "*Sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and feces. Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities*". The United Nations Development Programme (UNDP, 1998) defines sanitation as "*safe disposal of solid waste and liquid waste and maintaining a clean environment which promotes the health and hygiene of the community.*"

Slum: There is no common and authoritative definition of a slum. Most of the definitions are comparative and mostly based on empirical defined in terms of more or less accurately observed consequences. Different cities from different countries have their own nomenclature. Urban slums are usually understood as places where conditions of housing fall much below the general standards of living. The term slum, therefore, is comparative and means various things in different contexts. The above discussion clearly reveals the fact that slum is an evaluative term and not an analytical concept. The definitions, however, reflect clearly the physical and social image of the slums.

Slum Pockets: The Government of India (1988, p. 5) defines slum pockets as "housing that is unfit for human habitation or detrimental to safety, health and morals of the inhabitants." Physically, slums consist of clusters of hutments comprising several rooms constructed with building materials where each room is inhabited by a family sharing a common latrine without the arrangement for water supply, drains, disposal of solid waste

and garbage within the slum boundaries. Apart from degrading environmental conditions, slums in the urban settlements are also characterized by an almost total absence of community and recreational facilities.

Notified Slums: Urban areas notified as slums by respective municipalities, corporations, local bodies or development authorities. (NSSO 2002).

Non-Notified Slums: A compact urban area with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions, if at least 20 households lived in that area (NSSO 2002).

74th Constitutional Amendment Act, 1992: The most significant policy change in the urban sector came in the form of the 74th Constitutional Act, 1992 which aims at decentralization of urban governance in the country. Eighteen functions to be performed by the ULBs have been identified under the 12th Schedule of the Indian Constitution. The act aims at- a transformation in the 'structure' of urban service delivery. This Act is a landmark initiative of the Government of India to strengthen urban local self government in cities and towns.

Household: The concept of household is based on the arrangements made by persons, individually or in groups, for providing themselves with food or other essentials for living. A household may be either: (a) one person or (b) a multi-person household (UNCHS 2001: 59).

Methodology

A. Area of Study

Guwahati, the capital city of Assam is selected for the present study. The city is located on the crescent-shaped southern bank of the river Brahmaputra, in the Kamrup Metropolitan District. The foothills of the Shillong plateau lies to its south, with Lokpriya Gopinath Bordoli International Airport to the west and the town of Narengi to the east. The core of the city is surrounded by hillocks of varying altitudes from 100 to

300 meters. The average altitude of the city is 54 meters from the mean sea level. The city extends from 26.5' N to 26.12' N latitude and 91.24'E to 91.51'E longitude. The stretch of the river Brahmaputra within the city area is 12.78 km. The river has been satisfying the basic needs of the people in many ways, being the only major source of water, mode of riverine transportation and scenic beauty.

Guwahati city experiences mild subtropical climate. The average rainfall is 2272.37 mm and about 90 per cent of it occurs between May and September. According to the 2011 census, Guwahati Municipal Area and Guwahati Metropolitan Area have a populations of 963,429 and 968,549 people respectively.⁸ The municipal area is under the jurisdiction of the Guwahati Municipal Corporation (GMC) whose limits were last extended in 1991 to cover an area of 216.79 sq. km. The Guwahati Metropolitan Area covers about 262 sq. km. and is under the jurisdiction of the Guwahati Metropolitan Development Authority (GMDA). Our study is conducted in areas under the jurisdiction of Guwahati Municipal Corporation which comprises of 31 wards.

B. Data Collection

Field study has been conducted in Guwahati city from July to November, 2014. The information for the present study has been collected both from primary and secondary sources. Two sets of interview schedules have been framed for the purpose of collecting data- one set for the household of the wards of the city and the other for the slum dwellers. Both the sets include open and close- ended questions. In addition to these, personal interviews and focus group discussions were also conducted to consult with the ward councilors and concerned officials of GMC and AUWSSB responsible for the management of water supply and sanitation system for the city. Similarly, two Focused Group Discussions were arranged in the slum areas of the concerned wards in order to know the ground realities of the slum dwellers. Besides members of NGOs were interviewed who have been working in these areas.

⁸ [http://www.censusindia.gov.in./2011 census/population enumeration.aspx](http://www.censusindia.gov.in./2011%20census/population%20enumeration.aspx) (accessed on 02 February 2013).

For the collection of data from secondary sources libraries of Gauhati University (Krishna Kanta Handique Library), Omeo Kumar Das Institute of Social Change and Development (OKDISCD), Institute of Social and Economic Change (ISEC) , Bangalore have been consulted in addition to the Central Library of Assam University. Extensive use of internet has been made, including using e-books and e-journals, minutes of GMC meetings, Census reports, and clippings of news papers.

C. Sample Selection for the Study

The study was conducted in areas under the jurisdiction of the Guwahati Municipal Corporation (GMC) which comprises of total 31 wards. The study proposed a three - stage sampling for collecting primary data in Guwahati.

In first stage, 10 percent of the total wards that is 3 wards were selected purposively to represent the heterogeneity of the city as far as possible. Further, for selecting wards, three distinct attributes were taken into consideration- the core, intermediate and periphery areas. So, one ward was taken from each category for sampling. Ward No. 10 falls in the core of the city area, where the main water supply plant is located at Panbazar. Ward No. 20 was selected which is located in the intermediate area of the city, here a water treatment plant is located at Hengrabari. Similarly, Ward No. 25 was chosen located at a periphery area of the city.

In the second stage, emphasis was given on selecting localities on the basis of observation and available secondary information to represent different 'income groups' in each of the three wards. The areas were stratified as (i) Middle income (ii) Low income and (iii) Slums.

In the third stage, from each stratum, total 66 households were selected randomly. In other words, $66 \text{ HHs} \times 3 \text{ wards} = 198$ households were selected. Further, from each ward $66/2 = 33$ households were selected from each stratum of income group i.e., Middle Income and Low Income.

Selection of Sample for Slums

For the present study a sample of 96 households was selected from 12 Notified Slums of the three wards of Guwahati city. From each ward 4 Notified Slums were selected through purposive sampling. This sampling technique was used as it is generally observed that Notified Slums have better opportunities for accessing basic amenities as against Non-Notified Slums. Out of a sample size of 96, 32 households were drawn from each ward. Thus, 8 households from each notified slums (12) located in the three wards were selected to arrive at the total households of 96.

Chapterisation

The study has been divided into Six Chapters.

Chapter- I

Introduction

The first chapter provides the introductory information of the study, discusses the research problem, review of related literature and concepts and operational definition of term. This also discusses the research gaps, research issues, objectives, research questions and methodology along with the chaptersiation of the study.

Chapter II

Urban Governance and Institutional Arrangements in Guwahati

In this chapter a brief discussion is made on the constitutional and legal provision of urban governments in India under the 74th CAA, 1992. This amendment act prescribes various institutions for the formation and operation of urban local governance in the states. The institutional arrangements for local governance are- State Election Commission, Municipalities, State Finance Commission, Ward Committees and other committees, are studied in this chapter. Besides, recent urban development programmes like Swachha Bharat Mission, Smart City Mission have also been are discussed.

Chapter III

Urban Governance and Service Delivery in Guwahati City

In this chapter, the demographic profile of Guwahati city is given. Also, the, spatial expansion of the city over the years has been discussed. This chapter deals with urban governance and service delivery in Guwahati city, the urban poor, urban local networks and civic groups in the city. This chapter also focuses on urban governance challenges in delivery of services like urban growth, institutional complexity and financial constraints.

Chapter IV

Delivery of Water Supply and Sanitation in Guwahati City

Chapter four explores field perceptions on water supply and sanitation facilities in Guwahati city. This chapter presents empirical data with regard to efficiency in water supply and sanitation facilities among the households at the ward levels of Guwahati city.

Chapter V

Delivery of Water supply and Sanitation in Slums of Guwahati City

Chapter five also presents field perceptions with regard to water supply and sanitation facilities for slum dwellers at the ward levels of Guwahati city.

Chapter VI

Major findings, Recommendations and Conclusion

The concluding chapter presents the summary of the study with its major findings. Besides, policy recommendations, scope for further research are also discussed in this chapter.

Major Findings: The discussion in the preceding chapters leads to the following major findings of the study.

Major Findings

- The study reveals that the assignment of functions to local governments is left to the state governments. Since assignments of functions are not mandatory in nature, it is not incumbent on the states to entrust the functions and responsibilities to the local bodies including those listed in the 12th Schedule. In Assam, the Guwahati Municipal Corporation has to discharge 24 mandatory and 47 discretionary functions, of which five are as per the 12th Schedule. It is observed that the functions prescribed for municipalities under the 74th CAA are wide-ranging and overlap with many functions presently performed by state functionaries. Many municipal governments do not have the capacity and the resources to discharge these functions and, thus, they are either performed by state agencies or left undelivered in the process. In Guwahati City, Guwahati Municipal Corporation, Assam Urban Water Supply & Sewerage Board and Public Health Engineering Department have a shared responsibility in the distribution of water supply. Thus, responsibilities are highly fragmented among development agencies, state departments and municipal governments, delivering inefficient services without economies of scale.
- It is observed that irregularity of monthly meetings and annual general meetings of the ward committees weakened the prospect of having a transparent and accountable local decision-making process. It is possible that the councilors themselves desire to keep the activities of the ward committees beyond the scope of public scrutiny. The GMC could monitor the functioning of the ward committees with help of a standing committee constituted by the Board of Councilors. At the extreme, the Board of Councilors can dissolve the non-functioning ward committees. However, the irony is that the GMC does not appear to be much interested in utilizing these provisions and this is indicative of their apathetic attitudes towards ward committees. Similar conclusions with regards to non-functioning of ward committees are also found in a study by

Soumyadip Chattopadhyay (2012) in *'Decentralized Urban Governance: Participation and Accountability in West Bengal's Municipalities.*

- An important implication arising from the study is that politically motivated selection of ward committee members diluted the non-political character of ward committees as envisaged by the 74th CAA. The councilors, in their attempt to eliminate any possible opposition, selected members from their own political parties in these ward committees.
- It is observed that involvement of community based organizations (CBOs), NGOs and private sector players in some municipal affairs and service provisions such as solid waste management, sewerage and sanitation, is showing an increasing trend in the Guwahati city, but citizen participation in consultation/ decision-making at the ward level is highly limited. Horizontal accountability mechanisms have not been in placed in municipal management in terms of budget formulation, expenditure and borrowing decisions and performance reporting. Thus, effective involvement of the citizen in plan preparation and implementation is missing. There are examples of community involvement in municipal budget formulation in a few cities like Bangalore and Hyderabad, but these examples are more of an exception than a general rule in India. Further, there is general resistance to pass on relevant information to the citizens by the municipal bureaucracy and sharing of information outside the municipal organizational hierarchy is perceived as a threat. There is no formal linkage in the wards and corporations for regular citizen participation and involvement of civil society organizations in the municipal affairs as in other states of India. Formal institutional mechanism for people's participation such as referendums, public hearings, citizens' assemblies, and people's initiatives are lacking in Guwahati municipal area.
- It is revealed from the study that division of Guwahati city into various areas like-GMC area, GMA area, GMDA area by the different governance institutions has created a disconnect in undertaking cohesive planning of the city as a whole.

Projects are conceptualized as per a specific area by the respective agency, which in the long run leads to inequitable development in the city pockets.

- The study made an enquiry on institutional arrangements for delivery of services in the Guwahati city. It is observed that the primary development agenda of Guwahati city is carried out by two main agencies, the Guwahati Municipal Corporation and the Guwahati Metropolitan Development Authority. Besides, multiple other agencies work in the Guwahati metropolitan area including Guwahati Development Department , Assam Urban Water Supply and Sewerage Board, Public Health Engineering Department , Public Works Department etc. The presence of multiple agencies while discharging similar duties has compounded the problem of service delivery in the city. Though each of the agencies in question has a clear demarcation with respect to service delivery in specific locations, for example, the PHE supplies drinking water to State Government installations; many a time, there are duplications of effort. The problem is compounded with respect to consumers, who have to deal with a number of agencies for service delivery and redressal of grievances.
- It is observed that the Guwahati Jal Board has been instituted as the new mechanism for handling water supply and sewerage functions and will supersede all existing agencies that are responsible for water supply in future in the city. The entire infrastructure currently being created under various projects for Water Supply and Sanitation (WSS) will be handed over to the Jal Board which will be responsible for its O&M.
- It is noticed that the major constraint of urban local bodies all over India is financial. This arises due to three distinct sources. One, insufficient supply of funds from the government; second, failure in augmenting own sources of revenue; third, mismanagement of the fund. The GMC has been facing a perennial financial crunch responsible for the dismal picture of provision for basic urban services. Development works is envisaged in the budget, but has remained unmaterialised for want of funds. The total amount of liability is much higher than

the total revenue income of the Corporation as revealed in its budget in several times. The administrative expenses are much larger and the usual course is to divert the loan taken for development purposes to administrative purposes. The share of development work varies from 12% to 13% of the total expenditure. Expenditure on development work used to be kept restricted to the fund anticipated to be received from the government and financial institutions as grants and loans. It is observed that there is a gulf of difference between the actual and the estimated revenue and expenditure. Hence, it leads to compromise of the development agenda. The revenue expenditure of the Guwahati Municipal Corporation has shown a voluminous increase of expenses which are to be required particularly for running the general administration and performance of obligatory services. About 90 per cent of GMC's income is spent on salaries, terminal benefits and other establishment expenses, leaving only about 10 percent for maintenance and development works. Hence, the GMC faces financial constraints in initiating any major development project.

- The analysis of urban disaster governance in Guwahati city reveals that the Assam state has made a separate institutional arrangement in the form of Assam Disaster Management Authority to manage disasters in the state as a whole. However, in this policy/manual there has been much less focus on issues such as presence of multiple agencies for delivery of services and duplication of functions in Guwahati. Moreover, disaster manual/policy does not deliberate on growing encroachment of wetlands, water bodies and hillsides in the guwahati despite the enactment of Guwahati Water Bodies (Preservation and Conservation) Act and Assam Hill Land and Ecological Sites (Protection and Management) Act of 2006. Such insidious encroachments have led to the problem of water logging and flash floods in the guwahati city. The hill encroachments have led to heavy soil erosion, landslides and soil movement with rainwater.
- The study reveals that the provisioning of water supply and sanitation services is ill- managed in Guwahati city. The existing water supply mechanism in Guwahati

does not 'prioritize' supplying 'safe drinking water' to each and every citizen of the city. Guwahati Municipal Corporation and Assam Urban Water Supply and Sewerage Board have failed to fulfil the demands of the people. Even though in recent years, several court verdicts considered drinking water as one of the fundamental rights, and stated that the state has the responsibility to provide 'safe' drinking water to the citizens. Similar findings with regards to ill management of water supply services are also found in a study by Aviram Sharma (2015) in '*Sustainable and Socially inclusive Development of Urban Water Provisioning: A Case of Patna*'.

- Regarding the present status of water supply in the city, the study observes that the drinking water needs of the majority of the population are at present fulfilled by the municipality through piped supply or water-supplying tankers. However, the quantum of supplied water is quite limited and irregular and there is a mismatch between demand and supply. The local residents need to face the worst situation, especially during the dry winter season in the city. Under such circumstances, many private initiatives have also come up to cater to the ever-increasing demand to a great extent but most of them operate illegally. The over-exploitation of ground water by private agencies has led to depletion of ground water table in the city and endangered the aquifers. These findings correspond with the findings of a similar Study by (Natasha Hazarika and Vilas Nitivattananwn, published in 2016).
- As regards the municipal water as major source of drinking water in the study area, it found that there is a vast difference among the three wards in terms of public water supply connections. Municipality water is the primary source in core city area (ward no. 10) which covers 98.5 per cent of the households. As the city's main public water distribution system is located in this ward, availability and reliance on public water system is found to be more here. The reliance on public water system is found to be decreasing in intermediate and periphery areas of Guwahati City. In the intermediate (ward no. 20) areas piped water supply

supports 59.4 per cent of the households. Supply is found to be more or less regular, except in the dry season, when water supply becomes intermittent. Insufficient public water supply affects the citizens of the ward who are left with no option other than depending on the private water suppliers. These Private water suppliers support around half of the households in the area. In the periphery area (ward no. 25), the percentage of households having piped water supply is only 36.4 per cent. In this ward, the water is supplied by the Hengrabari water plant, which is under the jurisdiction of Assam Urban Water Supply and Sewerage Board.

- An analysis with regard to other sources of water in the study area that that personal ground water bore wells, deep tube wells and private water tanker system have come to play a very crucial role in meeting the demands of drinking water in the absence of a reliable public water supply system. Even in the households having piped water supply connection, the quantity of water is very less and both Guwahati Municipal Corporation and Assam Urban Water Supply and Sewerage Board have failed to fulfil their demands. The study showed that the need of water is fulfilled by different sources according to the affordability and availability of the water supply. In the core city area though piped water supply is regular, frequency of supply is limited to just once per day and supply duration ranges from two to three hours. Besides, they require more water during festival seasons and for domestic rituals. In the intermediate location of the city insufficiency of public water supply affects the users of the ward who are left with no option other than depending on personal bore wells, deep tube wells and private water suppliers. In the periphery area due to lack of reliable public water supply system, personal ground bore wells, tube wells and ring wells come to play a very crucial role on meeting the demands of drinking water. Another reason for the dependence on ring wells is due to the high cost involved in taking a new water supply connection. Besides these, the area is hilly and many households living in the upper slopes do not have any connections of piped water supply because the AUWSSB has not laid pipes in these locations and does not cater to

the populace of these areas. Even in the households having piped water supply connection, the quantity of supplied water is very less and some households disconnect piped water due to high water bills. Around 10.6 per cent households of this ward are having individual ring wells as supply water does not fulfill their requirements.

- Regarding the frequency and regularity of water supply in the city, it is found that during the monsoon season, water supply conditions stable. However, during the winter season (October to March) the frequency of supply becomes highly intermittent. This is because though the river Brahmaputra is the main source of water for the city, during winter season the water level of the river decreases. But among the three wards, supply scenario is comparatively impressive in core city area (ward no. 10) as the Panbazar water-treatment plant of the GMC is located in this ward.
- The study also made an enquiry on the perception of the overall quality of piped water (taste, smell and colour) in the study area. It is observed that the respondents from the three wards (core, intermediate and periphery areas) viewed that quality of piped water is good but sometimes it is contaminated with sewerage. Contamination by sewerage has been accentuated due to faulty machinery and ill maintenance of the equipment. It has been observed that in most of the by-lanes of the wards water leakage from the supply pipes is a common phenomenon. Moreover, at the time of floods, especially during the summer seasons, polluted water enters through the leakages of the old pipes and fittings and consumers are often supplied with such polluted water. Though the people of the locality lodged complaints about the polluted water, pipelines have not been replaced.
- It is observed that groundwater is used as a source of drinking water by city dwellers to a great extent. The groundwater in Guwahati is rich in iron in most of the areas whereas sporadic occurrence of high fluoride content has also been reported which has created confusion among the residents of the areas concerned.

In areas like *Chandmari*, *Noonmati*, *Mathgharia*, *Narengi*, *Satgaon*, *Rukminigoan*, *Hatigoan*, etc., the fluoride content in ground water cross the permissible limit and alarming amount of fluoride is found in deeper depth, ranging between 2 p.m. to 7 p.m. From groundwater sample analysis of various deep tube wells of different parts of Guwahati, it is clear that the fluoride content is higher than the permissible limit in the eastern, south-eastern and southern parts of the city. This is a serious cause of concern.

- An analysis of the responses during field work confirms that the respondents from the core, intermediate and periphery areas of the city submitted written complaints and engaged in protest demonstrations before the concerned authorities with regard to irregularity and poor quality of drinking water. The local residents complained that in many areas, some unscrupulous elements carry out water theft by installing powerful motors. They often notice a reduced flow of water supply whereas; people who do not have an authorized connection are getting adequate water. They are of the view that GMC authorities must inspect such areas, especially in the wee hours to control water theft. In the intermediate area, people do not get water for two-three days at a stretch, which badly affects their everyday activities. For the people of the hilly terrains of *Hengrabari* and *Lichubagan* areas under periphery location, acute shortage of water during winter season has become a part of their lives. Largely dependent on the natural sources (ring well and tube wells) of water, the people of these localities face immense difficulties during winters. The long pending demand of the residents to take up small schemes for providing immediate relief to the people located in such hilly terrains is yet to get a positive response from the authorities. Moreover, the people of the locality also made complaints related to underground water boring. In many apartments, builders have undertaken boring work, which has resulted in a water crisis in neighbouring areas. Boring has apparently resulted in drains in the locality getting clogged. People are satisfied that GMC has stopped boring after they started complaining.

- It has also been found that there is a provision of door-to-door collection of household solid waste in the three wards as Guwahati Municipal Corporation has adopted a new Solid Waste collection and transportation system in association with different NGOs from July, 2014. The NGOs are collecting wet waste on a daily basis and dry solid waste minimum once in a week. Each household of the ward is now paying Rs. 30 per month as user charge as fixed by the Corporation to the NGO. But it is observed that there are differences among the three wards as far as domestic waste collection is concerned. In the core city area (ward no. 10) domestic waste collection process is quite sound. In the intermediate area (ward no. 20) also, NGOs collect waste from door-to-door on a daily basis. But there is no provision for door-to-door collection of solid waste in areas like *Japarigog, Krishna Nagar, Bikrampur* under intermediate location of the city. So, people of these localities use nearby small waste ground for domestic waste disposal. It is observed that the people were not sincere enough to dispose waste at the designated storing points or bins. But in areas like *Anil Nagar, Tarun Nagar, Sri Nagar, Ambikagiri Nagar, Sundarpur, Rajgarh Manik Nagar* the picture is quite different. In these areas an NGO named Gitanjali collects solid waste from door-to-door to the designated secondary collection point or Transfer Stations on a daily basis. The NGO collects waste from doorsteps by ringing the bell and following a fixed time schedule (6 am to 8 am and 5 pm to 9 pm at evening) every day. In the periphery region door-to-door collection of waste is lesser as compared to core and intermediate areas of the city. In areas like upper *Hengarabari, Sachal and Dwaranda* the people dispose of garbage in their backyards by burning it. Because these areas are relatively sparsely populated, they have enough space to dispose the garbage in the surroundings. The system of door-to-door collection of solid waste is still not followed in these areas. The respondents (39.4 per cent) from *Rangkimi Path, Dalbari Road, Dwaraka Sachal Suk Road* are of the view that they dispose garbage in the bins installed by the GMC in their localities. They have reported that the number of GMC bins used in this area is lesser in comparison to other wards of the city. Moreover, door-to-door collection of

Municipal Solid Waste (MSW) scheme is not fully implemented in the periphery area (ward no 25) of the city. Some households from their ward are covered by this scheme but their area is still deprived of this civic facility.

- It is found that there are drainage connections for domestic waste disposal in core, intermediate and periphery areas of the city. But existing drainage facilities in these areas are not adequate to carry all domestic waste water from each of the localities. Lack of initiative on the part of the authorities to clean the drainage system leads to artificial floods during summer season. The problem of urban floods is increasing in the intermediate location of the city with every passing year, whereas some localities like *Anil Nagar*, *Nabin Nagar*, *Tarun Nagar* face water logging almost throughout the year. The inability to drain out water even in the dry season points to utter failure of civic authorities. Thus, a lack of scientific drainage system and inadequacy of its capacity creates problems in the city. It is also found that there is no sewerage system in the Guwahati Master Plan area. The households have individual septic tanks without any system of collective disposal of the effluent. The absence of sewerage treatment system creates serious environmental problems in the entire city.
- The data on slum in Guwahati city reveals that there are 217 slum pockets with a population of 1, 39,296 and number of households are 26,090 according to the GMC's Rajiv Awas Yojana survey, 2012. Out of the 217 slum pockets, 112 are Non-Notified Slums and 105 are Notified Slums pockets at present in the Guwahati city.
- With regard to accessibility of drinking water in the slum pockets of the city, it is found that slum dwellers have no individual piped water connection; they have to rely on other sources of water for their daily use. It is observed that slum dwellers collect water from road side municipal taps, public hand pumps and tube wells installed by the GMC; but in some locations under the study area, these sources of water are not available. They have to rely on other sources like *kuchha* well and ring wells.

- An analysis of the area-wise sources of drinking water in the slum pockets shows that there is provision for municipality water in the core city area. The study reveals that there are 7 public taps and 3 hand pumps in the Four Notified Slums under the core city area. The study shows that among the Four Slum Pockets *Uzan Bazar Harijan Colony* and *Uzan Bazar Islam Patti* have in a better position as compared to the other two slum pockets (*Lakhtokia Railwayside* and *Harijan Colony, police Reserve*) so far as sources of water are concerned in the core city area. In the intermediate location of the city, almost all the sources of drinking water are available for slum dwellers, but in *Krishna Nagar Basti* slum pocket, there is no municipality tap. Here, the sources of water are two kuchha wells, one tube well and one ring well. But in *Hengrabari L.P. School Area* sources of water are good as compared to the above mentioned slum pockets. In this slum pocket, one public tap, two hand pump, two tube well and one ring well have been installed for daily needs. In *Anil Nagar Basti*, slum dwellers fetch water from tube well and one Ring well. The study reveals that amongst four slum pockets, the sources of water is quite sound in the *Hengrabari L.P.School Area*. In the peripheral settlement, there are no public hand pumps and public taps for the slum dwellers. The municipality water is not covering this slum pockets till now, though government has adopted several measures for these urban poor.
- It is found that slum dwellers have to fetch water from outside premises since water sources are not available within their residential campuses. It is revealed that the participation of female members in fetching water is more than that of the male members. Male members are less involved in it. The women face a number of problems in fetching water daily. The pressing problem revealed by female members of households is the need to wait in the long queues for water collection. It indicates that fetching water from outside sources is stressful, cumbersome and unpleasant. Moreover, fights with neighbours over water are common in their locality. In the intermediate area also, women are shouldering the burden of water collection, and this is exacting a high price in terms of time spent. It is revealed that they spend more than half an hour in fetching water. Moreover, with the

tension generated over time wasted in standing in long queues, there are frequent fights over water with neighbours. They complain that there is a lot of chaos when everyone wants to fill water at the same time. Some people get water, some do not. If they do not get water from public tap, then they have to fill from the hand pump and the well. Since there are no public hand pump and public tap in the periphery region of the city, the slum dwellers of this locality have to fetch water from tube well, ring well and *kuchha* well for drinking and other purposes. Female members are the active participants of these slum localities as far as fetching water is concerned. During focus group discussion, female members of slum households told that in the winter season (November to March) the water level of well (both *kuchha* and ring) decreases and they have to depend largely on tube well by standing in long queues. Also while water fetching from tube well, there are frequent fights over water with neighbour. So, they skip taking baths and wash clothes on alternate days.

- It is revealed from the study that slum dwellers are acquainted with the method of water purification. They use boiling for water purification. It is found that they boil water during winter season (December to February) only to drink hot water in order to ward off cold and infections. During the rest of the year they use untreated water for drinking which often leads to several water borne diseases among them.
- The study clearly reveals that contaminated water often leads to widespread water-borne diseases among the residents of slum pockets in Guwahati city like-diarrhea, dysentery, cholera, jaundice and typhoid. Jaundice is the prime disease caused by contaminated water. The second most frequently mentioned diseases are diarrhea and dysentery in their areas. Since there is no provision of public hand pump and public tap for slum dwellers in the periphery area, they have to rely on *kuchha* and ring well for their drinking water and other purposes. So, in this location both *kuchha* and ring well are accountable for slum dweller's sickness. Most of the respondents reported to have had at least one sick person in

their households during the previous two months. Besides these, the slum pockets- under this area are hilly and many households living in the upper slopes and their residential areas are very prone to other diseases like malaria, Japanese encephalitis.

- As regards the toilet facilities in the slum pockets of Guwahati city, it is observed that there are well-established toilets in the core city area. The residents use community toilets managed by the Guwahati Municipal Corporation. However, no slum-pockets under the core city area have separate sanitation locks for male and female users. Although there are provisions for free public toilets and community toilets for slum dwellers, there is lack of cleanliness and maintenance in them. It is important to note that there is no practice of open defecation in the notified slum pockets in the core area of the city. The data on household toilet facilities in the intermediate area of the city revealed that slum respondents have their own pit latrines (*kuccha* toilet). Twenty Five to Thirty households shared this toilet facility. Moreover, slum dwellers of this locality defecate in the river bank and the hill-side. It is observed that in the periphery area of the city the picture is quite different. Here, more than forty per cent respondents defecate in the open (railwayines, hill-side). It is revealed that during open defecation women have fear of reptiles, snakes and scorpions. Open defecation is perilous for women in rainy season owing to their fear of slipping from the hill. Moreover, they are also not safe because of men loitering in the area. On the other hand, 25 per cent people neighbour's toilets which are temporary in nature (pit latrine). There is no provision of community or free-public toilet facilities in this area. It is also observed that children generally use yards and places near tube-wells for defecating.
- The study clearly reveals that sanitation facilities in both intermediate and periphery slum pockets are comparatively unsatisfactory than in the core city area. Though there are provisions for community toilet and free public toilets in the notified slum pockets of core and intermediate areas of the city, these toilets

do not have any integrated sewerage system at present. These toilets have only septic tanks without any collective disposal system for effluents. The sewage from septic tanks goes directly into the open drain. This ultimately makes the surroundings unclean, unhygienic and conducive for the growth of diseases. It is observed that soak pits connected to septic tanks are becoming non-functional due to high sub-soil water table within a short span of time. Thus, toilet facilities in the notified slum pockets of the study area are not hygienic and environmental friendly.

- As regards the frequency of waste collection in the slum pockets, it is observed that in the core city area corporation workers collect domestic waste from the garbage bin every day in the morning or evening. Though municipal bins are found in this slum pocket for waste disposal, but they are not sufficient and the inhabitants have to dispose solid waste in the open ground and road-sides thereby leading to the destruction of environment. On the other hand, in *Lakhtokia Railway Side* slum pocket, waste is collected from the waste-ground by the corporation workers once in a week. However in the slum pockets of intermediate and periphery areas of the city, waste collection system is totally absent. Slum dwellers of both areas (ward 20 and 25) have to throw their domestic waste in the gutter, yard and small waste-ground in their residential area. It is found that there are no provisions for garbage bins in the slum pockets under these two areas. Solid waste disposing system of these slum areas is very low poor and as a result, the environment is hazardous.
- On the question of drainage connection for waste water disposal, it is revealed that there is a difference in the slum pockets under the three localities. It is observed that there is a well drainage system with regard to waste water disposal in the two slum pockets of core city area (*Uzanbazar Harijan Colony* and *Uzanbazar Islam Patty*), but rest of the slum pockets have no such provisions. They use the streets and railwayines for domestic waste disposal. In the intermediate location of the city, only *Anil Nagar Basti* and *Hengrabari L.P.*

School Area slum pockets have drainage systems. In rest of the slum pockets there is no provision for domestic waste disposal. It is found that in the slum pockets of the periphery region, the domestic waste water disposal picture is quite different as compared to the other two areas of the city. There is no drainage provision in the slum pockets of this locality and they use yards, streets and railwayines for domestic waste water disposal and it has pernicious impact on the environment.

In a nutshell, it can be concluded from the study that in spite of the various reform measures and policies adopted by the union government for service delivery system in Guwahati city, infrastructure is found to be unsatisfactory. The Guwahati Municipal Corporation does not adequate resources for efficient management of the various public utility services it has to undertake and to care of the urban poor. Both the state government and elected representatives continue to suffer from lack of motivation in making the GMC a successful institution. It suffers from paucity of funds and there is not much enthusiasm among the councilors to mobilize money through taxation. The problems of the city cannot be properly solved by the corporation alone but could be solved through individual and collective efforts.

Recommendations and Conclusion

Based on the findings of the study and field observations by the researcher some recommendations have been made for bringing efficiency and equity in urban governance and service delivery mechanism with special reference to water supply and sanitation in Guwahati city.

- There is a need for undertaking an assessment of the existing institutional structure for urban governance in Guwahati to assess gaps, overlaps and duplication of functions between various organizations.
- About the machinery of institutional arrangement, there should be clear demarcation of issues between the GMC and the GMDA and other government departments. GMC needs to review its office structure and assess the needs for an

integrated office complex for improving overall management efficiency. The GMC also needs restructuring both at organizational and financial levels. Until and unless organizational and financial inefficiencies are removed, the spirit of the 74th Amendment Act cannot be materialized.

- The most important implication of the study is that politically motivated selection of the ward committee members continues to dilute the non-political character of the GMC ward committees as envisaged by the 74th CAA. There is an urgent need for depoliticizing and democratizing the selection of ward committee members. The media, Unnayan Samiti and community organizations in Guwahati could act as possible counterweights to reduce the degree of politicization. These institutions could be used to expose the political nature of the selection process, increase the consciousness of the people as regards the constitutionally envisaged character of such committees, and provoke public opinion against such politicization.
- Integrated project management is urgently required as Guwahati city is upgraded on all fronts. Projects for water supply, sewerage, drainage, roads and transportation need to converge to reduce public inconvenience. An institutional mechanism needs to be developed which brings all agencies on a common platform such that overlaps, departmental delays and duplication is reduced and faster delivery of projects is ensured with maximum synergy.
- There is a need for undertaking an institutional development study of GMC to assess the manpower and skill requirement keeping in mind the role that GMC will play in the future when all the 12th schedule functions are transferred and handholding support from various agencies (JnNURM, ADB) ends.
- Evaluation and regular monitoring of the water supply system of the city would help the system become more effective and efficient.
- The city of Guwahati and its surrounding areas receive abundant rainfall which is responsible for causing inundation of low lying areas of the city during the rainy

season. Arrangements may be made to store such water for domestic use through proper rainwater harvesting which would help the drainage problem and also the problem of drinking water to a considerable extent.

- Actual updated number of house connections under the GMC should be maintained. Ward- wise physical surveys need to be conducted soon within the GMC area to ascertain the number of legal connections and illegal tapings made.
- Present water tariff collection system requires to be reviewed and improved. Tariff should be raised to meet the water supply operation and maintenance charges at least. Water supply wing under the GMC should be given authority and power to collect water charges separately and allowed to maintain and operate this through a separate account for the purpose of O&M. For this, necessary staff, infrastructure for billing, collection of charges etc. should be provided.
- There is a need for a comprehensive policy and political will; media and public oversight to prevent growing encroachment of wetland, water bodies and hillsides in Guwahati despite the enactment of Guwahati Water Bodies (Preservation and Conservation) Act and Assam Hill Land and Ecological Sites (Protection and Management) Act of 2006.
- The most tantalizing objective of the Swacch Bharat Mission is to eradicate open defecation in India by 2019 by means of instituting sanitary toilets and converting the *kuchha* toilets into sanitary ones. During 2015 Assam government had taken the decision to construct six lakh household toilets and s earmarked Rs 860 crore to make the state open defecation free. In addition, the government assured to provide Rs 500 to each household who build toilets under the ongoing programme as incentive money. However, mere investment of money and incentives by the governments would not be enough to realize the objectives of Swacch Bharat and to make Assam open defecation free. There is a need to address the attitudes that shape people's distaste for toilet use and preference for open defecation. Of late, the Assam government has started to construct separate toilets for women based

on a Guwahati High court judgment. However, there is a need to undertake long term policy measures by the Assam government to bridge the gender disparities in sanitation facilities.

- To eliminate open defecation and promote widespread use of toilet, it is necessary to alter and address the behavioural patterns of individuals (especially slum dwellers) practicing open defecation. In this context, it is worth replicating Community-Led Total Sanitation (CLTS) approach in Assam as well as in India. This approach, pioneered in Bangladesh in 2000, rejects sanitation subsidies; instead it mobilises communities through emotions like shame and disgust. It shows people how they are literally eating their neighbour's shit, and how this makes them ill and stunts their children. It finds community representatives to trigger these messages, and rouses the community to adopt better hygiene habits, including menstrual hygiene. The CLTS is one of the powerful tools that Bangladesh used to achieve its target. Its techniques are used in over 60 countries now, and it has been taken up by many international agencies.
- The most important factor in any development effort is the involvement of its citizens. Unless they are convinced and motivated towards making their own city worth living in, no amount of efforts from either government or any private organization will bear fruit. There should be public pressure groups actively involved in the decision making process in selection of schemes and they should strengthen the hands of the government in by giving concrete shape to all such projects within their locality.
- Public-Private Partnership (PPP) is an important governance strategy that has recently emerged as a solution to enhance the access of marginalized residents to urban infrastructures. With the inception of neo-liberal economic reforms in India, in Indian cities too PPP has emerged as an innovative approach to expand coverage of water supply and sanitation infrastructures. But PPPs in the urban sector of Guwahati city is still at a nascent stage and few in number. There is limited involvement of private sector in the development agenda of the city.

Private sector should be involved in the creation of social and physical infrastructure. Involvement of private sector will lead to application of dynamic management techniques in the urban development agenda of the city.

- At present, Information and Communication Technology (ICT) is taking on an increasingly important role in Indian urban governance, both in high-level policy announcements and localized innovations. So, Guwahati Municipal Corporation can apply ICT in a broad-based manner to ensure service delivery more effectively and efficiently. This is because ICT can enable public participation in making water supply decisions or providing monitoring assistance to achieve reductions in leakage, unaccounted for water, and identifies locations of polluting sources. Improved water system reliability through ICT enables monitoring of safe water supply, illegal connections, enforcement of watershed protection measures, etc., can help city meet the water demands of urban residents. ICT – enabled programmes aimed at changing sanitary and hygiene behaviours, such as hand washing and proper disposal of waste can greatly reduce morbidity and mortality rates from hygiene related diseases, achieving immediate, cost effective public health impact.

A thorough investigation of various aspects of organizational and institutional arrangement in the delivery of services in Guwahati city reveals that the structural network of urban development management operating in the city is the replication of the all India scenario which is fairly diverse and incompatible with the growing demands of urbanization. The study reflects a complex institutional framework of overlapping roles and responsibilities. Parastatals have their efficacy but the system should not grow at the cost of democratic decentralization. Guwahati Municipal Corporation (GMC) has limited role in infrastructure provisioning, planning for new infrastructure, implementation and service delivery. The corporation is suffering from a variety of problems as it is working within the limitations of inherent organizational framework and it is yet to emerge as a real mechanism for service delivery. There is a need for undertaking an assessment of the existing institutional structure for urban governance in Guwahati to assess gaps, overlaps

and duplication of functions between various organizations. A specific institutional study for the Guwahati Municipal Corporation (GMC) as an organization covering current situation, capacity gaps, roles and responsibilities etc., would help in overall strengthening of the municipal body so that it is able to assimilate the organizations and functions being merged into it as per the 74th Constitutional Amendment Act. This will help in making the GMC strong enough to assume the role of steering organization for all purposes.

The present study has some limitations. In the first place, the study concentrates only around three wards of Guwahati City that may not be sufficient to generalize the findings. However, this limitation may not distort the findings in any way since a micro-level investigation is carried out on the three wards, which is taken as a representation of the city situation. Secondly, the scope of the study is limited to domestic consumers of water and sanitation services excluding industrial and commercial consumption. Third, the present study deals only with two basic issues of wards. However, many other important issues such as water logging, artificial flood, city transportation, housing, pollution etc. are not focused. Hence, the present study has broadened the scope for undertaking more research work covering water and sanitation services to industrial and commercial consumption and other important issues such as solid waste management, artificial floods, city transportation, pollution, water logging etc. Such studies will definitely help the government to formulate new policies and programmes that suit the needs of the people.

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