

## Chapter-VI

### Major Findings and Recommendations

Urban India is struggling to provide adequate water and sanitation services to its citizens. Open defecation, insufficient wastewater treatment, and mixing of untreated waste water with storm water and drinking water supplies are contributing to a severe health and economic crisis. 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. 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 India, a number of reform initiatives have been undertaken by the Government of India to strengthen municipalities and to improve service levels in urban areas. Important among these are the enactment of a set of constitutional provisions, implementation of numerous urban development programs and adoption of various innovative practices. Recent Central Government measures such as the Jawaharlal Nehru Urban Renewal Mission, Urban Sanitation Policy, Swachha Bharat Abhijan and Smart City Mission are steps in right direction. The issue of urban governance is therefore, deeply interwoven with national, state and local government's constitutional and institutional provisions. This study explores current governance factors involved in provisioning of services like water supply and sanitation in terms of efficiency and equity in the municipal areas of Guwahati city

The next section is devoted to the discussion of major findings of study.

#### 6.1 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 12<sup>th</sup> Schedule. In

Assam, the Guwahati Municipal Corporation has to discharge 24 mandatory and 47 discretionary functions, of which five are as per the 12<sup>th</sup> Schedule. It is observed that the functions prescribed for municipalities under the 74<sup>th</sup> 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.

- The CCA provisions for elected representatives and ward committees visualize the local government to be fully participatory, responsive, transparent and accountable institutions. Ward committees are the only formal institutional arrangement for people's participation under the 74<sup>th</sup> CAA. It is observed that in Guwahati city there are 31 ward committees, but they have not been delegated adequate powers and responsibilities to discharge their functions effectively. The wards are also deprived of any support from the Guwahati Municipal Corporation. Membership of these ward committees is based on selection and nomination rather than election and are largely dominated by elected councilors. The distressing feature of ward committees is that they are packed with members of the ruling party, thus politicizing this grassroots institution, meant to promote peoples' participation in city governance.
- 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 74<sup>th</sup> 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 place 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 observed that Guwahati has won the recent Smart City Challenge. The city has made it to the list of top 20 to receive funds in the first phase of the central government's Smart City Mission. For its transformation into a smart city, Guwahati is to receive a staggering amount of Rs 2,600 crore over the next five years. Guwahati's draft smart city plan aims to solve two main challenges of traffic congestion and flooding through place-making activities. The main proposals under the plan include development of riverfronts, drainage, streetscape, and open spaces and destinations. The plan proposes to develop floating markets, cycling tracks, cultural markets, wildlife habitat and social spaces, etc., which basically aim at enhancing the aesthetic beauty of the city. But serious issues such as *housing for urban poor, provision of safe drinking water, solid waste management and sewage management* have not even been mentioned in the smart city plan. Without fixing these basic urban problems of Guwahati, going for such a huge transformation would only create a more divided, unsustainable city.
- 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 found that most of the 12<sup>th</sup> Schedule functions have been transferred to GMC on paper, however the overall capacity of the ULB is weak to assume charge of these functions and ensure effective delivery of services. Even though GMDA has been merged with GMC, it operates as an independent organization which plays an over-arching role in delivering most of the functions. Guwahati Municipal Corporation has a limited role in infrastructure provisioning, planning for new infrastructure, implementation and service delivery. Its core function is water supply, solid waste management, maintenance of roads and drainage apart from social infrastructure like community toilets etc.
- 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.
- In the present study on the Municipal Solid Waste (MSW) management of Guwahati city, it is observed that the Guwahati Municipal Corporation (GMC) has a separate conservancy department under the authority of a Superintendent Engineer to deal with the huge piles of waste generated daily in the city. Land filling was the only method adopted by the GMC for disposal from waste points and bins. The study revealed that the collection and disposal of solid waste of

Guwahati city are done by private parties on contractual basis under the supervision of Guwahati Municipal Corporation authority.

- The Study reveals that under JnNURM's sub-mission of Basic Services to the Urban Poor (BSUP), three sites of Guwahati city were proposed for construction of housing for the urban poor in *Fatasil*, *Morasoli* and *Amingaon* slum pockets. But even till now, only the *Morasoli* site has been completed where Guwahati Municipal Corporation (GMC) built 128 dwelling units. In *Fatasil* approximately 400 dwelling units have been constructed so far against the proposed 1,104 dwelling units. In *Amingaon*, where 1,028 dwelling units were to be built, construction work has not even started. The dwelling units at *Morasali* and *Fatasil* have been allotted to the Guwahati Municipal Corporation class IV employees who used to earlier live in dilapidated houses and hutments on the same land.
- The study clearly reveals that Guwahati city is experiencing tremendous influx of population from outside thereby increasing the demand for water and sanitation facilities. Unrestricted expansion of the city areas has kept the water supply system out of reach of the larger section of the population. Even the existing facilities are plagued by low supply, high leakages, low pressure and poor quality. The rapid growth of urban population in the city has had serious implications in terms of urban infrastructures and services. There is a big gap between demand and supply of infrastructure in the Guwahati city. This creates a serious situation for urban poor.
- 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 study reveals that a Citizen Charter has been released by the Guwahati Metropolitan Development Authority (GMDA) in March 2012 and published on the GMDA website. It has not published on the Guwahati Municipal Corporation website. The Charter available on the GMDA website does not delineate entitlement of the citizens, service standards and remedies available to the citizens in case of non-adherence to standards nor does it provide a structure for obtaining feedback and performance audit or accountability.
- 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).



- It is also found that the public water supply system in the core, intermediate and periphery areas of the city (ward no. 10, 20 and 25) depends both on water from the river Brahmaputra as well as on ground water. Drinking water supplies in the study area are under the management of two different organizations - Guwahati Municipal Corporation (GMC) and Assam Urban Water Supply and Sewerage Board (AUWSSB). The Guwahati Municipal Corporation is the major agency of water supply in the city. The GMC water supply scheme caters to most of the areas within the Corporation including ward nos 10 and 20 selected for the present study. On the other hand AUWSSB supplies potable water to some parts of the city and it caters to ward no. 25 which was selected for the study.
- 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

this 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 daily basis. The NGO collects waste from doorsteps by ringing the bell and following a fixed time schedule (6 am to 8am 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 Patty* 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 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.

- As regards measures adopted by the slum dwellers during water storage, it is found that they have no modern means of water storage, like overhead or underground tanks. Different types of containers are used by the households for storing water. They store water in drum, bucket, cooking pot, pitcher, and jugs.
- 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 of 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.

- The study clearly reveals that out of twelve Notified Slum Pockets only two from the core city area ( *UzanBazar Harijan Colony* and *UzanBazar Islam Patty*) and *Hengrabari L.P. School Area* from the intermediate area are in a better position as compared to other slum pockets as far as water supply and sanitation facilities are concerned. These slum pockets are better served and rest are in a weak position.

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 have 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.

## **6.2. 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 74<sup>th</sup> 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 74<sup>th</sup> 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 12<sup>th</sup> 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 74<sup>th</sup> 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, 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 environment management, road system, city transportation, pollution, water logging, housing etc. Such studies will definitely help the government to formulate new policies and programmes that suit the needs of the people.