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Municipal Capacity and Environmental Service Delivery in Digotsion Town, Amhara Regional State, Ethiopia

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Abstract
The basic environmental service delivery in the town such as potable water supply, solid waste management, green area management and development and others is crucial for the mere existence of towns or cities. However, the delivery of them is a daunting task seeking utmost municipal capacity for a given town globally to local levels. This study is hence assessed municipal capacity in delivering of basic environmental services of Digo Tsion Town and especially to the existing conditions of basic environmental service delivery; assessing the municipal capacity of the town in terms of institutional policy framework, technical, financial and material and identifying challenges encountered with inadequate environmental services delivery. In carrying out of the study, both qualitative and quantitative research approaches were employed and descriptive research design was applied. To go through with the unit of analysis and observation, probability and non-probability sampling techniques were used for household respondents and for officials, respectively. Questionnaires were filled by 162 household respondents, 4 different institutions were consulted and observations were also made on the spot to realize some aspects of environmental services delivery. The analysis of the collected data was made using SPSS and Microsoft Excel. Bar graph and tables were used to present the result of the analysis. The findings of the result revealed that owing to the unprecedented denizens and town sprawl drinking water supply seeks improved management system. The sanitation service is also curtailed due to lack of proper sanitation facilities including public toilets, materials and inadequate coordination capacities. When the management of solid waste is considered, it is almost out of the auspices of the municipality as there is neither technical support to realize integrated solid waste management nor should it be given to the third party and generally public participation is lacking. In regard to green area development and management, even if there is no popularity in greenery activities, the practice is made haphazardly by the communities. The municipal capacity in the delivery of aforementioned environmental services are leashed due to lack of coordinated and concerted efforts which are aggravated by lack of proper policy frameworks; lack of skilled human resources; inadequate budget; materials and facilities and above all lack attention and commitment of the municipal authorities to environmental service delivery tasks. To bring about sustainable town development, based on the study findings it is imperative to undertake remedial activities amidst the shortcomings in all issues including water supply and sanitation, solid waste management, green area development and management. To do so, in a nutshell capacity building in terms of policy issues and institutional framework; financial and human resource management; provision of materials and exercising good governance so as to benefit from public participation is recommended.
Keywords: Urban Sprawl, Municipal environmental Services, Green areas, Municipal Capacity, Ethiopia

1. Introduction

Local government can make cities more competitive, more efficient and more attractive to investors and workers by promoting the sustainable development of the urban environment (The Cities Alliance, 2007). However, the capacity of local governments (municipalities) to render better services, to deal with public-private-partnership, to maximize municipal revenues, to plan and implement different projects, etc. are the cruxes. In this regard, institutional capacity is detrimental. Capacity is generally, the ability of individuals, institutions and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner (UNDP, 2007).

Serious environmental issues, including an increased level of vehicular pollution, haphazard disposal of solid waste, wastewater, and illegal dumping of industrial waste into rivers and streams, are emerging because of uncontrolled and chaotic urban development. Insufficient financial resources and lack of qualified human resources, and a low level of institutional capacity mean that urban authorities are unable to cope with the growing demand for services with commensurate infrastructural facilities (ADB, 2013).

Digo Tsion Town is capital of Bibugn Woreda in east Gojjam administrative zone. Since its foundation, it has been showing steady growth and recently unprecedented urban physical growth prevailed. This phenomenon has its own influence on the delivery of basic services. In a nutshell environmental services delivered to the residents are at substandard level.

Based on the 2007 national census conducted by the Central Statistical Agency of Ethiopia (CSA), Digo Tsion town has a total population of 6,241, of whom 3,100 are men and 3,141 women and also based on CSA (2013) projection it has a total of 6,587, of whom 3,354 are men and 3,233 are female. However, according to the municipality preliminary data from the town, municipality indicates that the total population of

the town reaches 10219 of whom 4105 are men and 6114 women. On this moment, the population will be more than this because there is an improvement in infrastructure delivery in the town Digo Tsion. Thus, population growth has played significant role causing multiplier effect on the production of wastes and increased demand on the environmental services.

Environmental services enhance the quality of life of town inhabitants, and increase their social and economic opportunities by promoting health and safety, facilitating access to work, education and recreation, and stimulating new productive activities. However, municipality faced serious challenges in providing environmental services including water supply and sanitation, solid waste management and green area development and management among others. For instance, periodic interruption of drinking water supply and inadequate sanitation; lax and haphazard disposals of solid wastes; and mismanaged green areas are among the salient environmental service delivery challenges of Digo Tsion Town.

The municipal capacity which could be seen in terms of institutional capacity (policy frameworks, planning, public- private-partnership, etc.); technical capacity (skilled manpower); financial capacity (the ability to use the existing resource effectively and efficiently, levying and exhaustively collecting of taxes, community mobilization, etc.); and material/equipment availability (waste collection trucks, vacuum truck, etc.) are generally critical to deliver municipal environmental services of the town. Given the prevailed environmental services delivery challenges, it has become imperative to undertake study on municipal capacities so that informed decision on environmental service delivery improvement for sustainable urban development is feasible.

2. Methods and Materials

2.1 Description of the Study Area

Digo Tsion Town is one of the Woredas in east Gojjam Administrative zone of Amhara Regional State. It is found in the Eastern part of Ethiopia situated 381 km away from Addis Ababa. It is estimated to have an area of approximately 15.58 km^2.

The altitude of the town is ranging about 2200 meters above sea level and it gently slopes towards west and east from the center. It receives prolonged rain characterized by heavy rainfall during the wet season (May to October). The annual rainfall is between 900-1500 mm and the mean annual temperature was not measured till this study. The town is endowed with water resources originated from Choke Mountain (*water tower of east Africa*).

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The town is not known for industry however there are different microenterprises supporting the community. Since recently financial institutions are emerging. There are one commercial bank; one credit and saving institute; one branch post office; and the town has modern telecommunication service. In addition, it receives 24 hours electricity supply from the country grid.

3. Research Design

For the assessment of the institutional capacity and environmental service delivery of Digo Tsion town, a well-structured questionnaire with both open and close ended questions was prepared. The questionnaire was prepared in English and then translated to native and national language Amharic to ensure better understanding of the residents. There are 4 villages in the town and samples were taken from all villages. Finally questionnaires were administered to the selected households from the four chosen villages. To pick representative households from the preferred villages systematic sampling based on the document prepared by the town municipality of Digo Tsion was adopted. The housing units were marked in each village in order of their serial number like house number 1, 2, 3 and so on. Hence, the said document was used for picking the representative households.

The total number of housing units in the selected villages was 1623. To determine the total sample size, the common method adopted is to use 10% of the total population; hence, 162 households were systematically selected for the distribution of the questionnaire. Apart from questionnaire, interviews and focus group discussions were conducted with concerned municipal authorities of Digo Tsion Town.

4. Results and Discussion

Findings of the study are presented and discussed based on its objectives and interpreted as follow:

4.1 Existing Conditions of Basic Environmental Services Delivery in Digo Tsion Town

It is paramount to keep the basic environmental services delivery to the extent possible for the wellbeing of the citizens. Accordingly, in view of the study area the existing condition is analyzed in three service types.

4.1.1 Water Supply and Sanitation

In view of meeting the MDGs safe drinking water, adequate quantities of water for health, hygiene, agriculture and development sustainable sanitation approaches to protect health and the environment is needed (Moe and Rheingans, 2006).

Similarly, data from Bibugn Woreda Water resource development office report (2013) indicated that the aggregate urban water supply coverage as of 2012 was estimated to be 68.5%. However, the town's water supply when the scheme was due in 2006 was sufficient to satisfy the needs for the prevailing town population that was estimated to be 7000. As Hailemariam, 2009 forwarded that the rapid growth of urban population has placed tremendous pressure on the management capacity of municipalities for service delivery and local economic development. This phenomenal growth has also burdened many municipalities with the problem of inadequate housing, poverty and unemployment, inadequate water and electricity supply and poor sanitation system. Since recently, due to the demographic factor and spatial expansion of Digo Tsion Town the supply coverage should become diminished. That is why 34.8% of the respondents used water from vendors of probably unsafe sources; 15.2% in rivers; 2.4% from hand pumps and 25.6% from combination of both vendors and rivers as a coping mechanism during service unavailability. And the severity of the service uncertainty is in the range between 1-3 days, 4-5 days and others (depending on the severity of damages and power availability) having response rate of 11.3%, 38.8% and 43.7% respectively.

For the town under study, the sources of the water supply are the water supply scheme, hand pumps, Gravity water and raw water from `Babicha` Rivers. Based on the study result, 57.9% respondents accessed through pipe on premises; 27.4% on both pipe on premises and rivers; 8% on shared pie or "Bono"; 3.7% on hand pump; 3% on contact agreement in the neighbor and rivers verifying that the source of drinking water supply are variable.

According to the progress report UNICEF and WHO, 2012 sanitation facilities that are shared among households, whether fully public or accessible only to some, are not considered improved according to the definition used for the MDG indicator. The reason stems from concerns that shared facilities are unacceptable both in terms of cleanliness (toilets may not be hygienic and fully separate human waste from contact with users) and accessibility (facilities may not be available at night, or used by children, for instance). As indicated under appendices on table 1, the result of the study showed that 46.3% used shared dry and protected; 39.6% private dry and protected; and 1.2% private unsafe pit latrine respectively with some of the respondents used to do with a combination of either. This showed that the sanitation coverage which is aggravated by unreliability of water supply is overwhelming in the town. In addition, personal hygienic practices like washing of hands after toilet and feeding of children and bathing facilities and so forth are all not promising. Further illustration put by the DHS data during study period of 2000-2012 by Hopewell and Graham 2014, revealed that cities with the poorest improved sanitation coverage, below 25%, were Kampala, Conakry, Addis Ababa, Antananarivo, Dar es Salaam, Kumasi, and Brazzaville with the lowest coverage of 8.2%. Likewise, the sanitation coverage of the Digo Tsion Town by taking the regional coverage of 2008 is estimated to below 19% which spur meticulous effort to improve the trend.

Even though, health extension workers are engaged in each kebele (there are 2 health extension workers in Digo Tsion Town) to render basic health extension package and to bring about change in behavior of the community; the sanitation coverage of the town is still lower which implies prior attention to environmental health. This evidence strengthened what KJellén and Mcgranahan, 2006 articulated that in urban settlements of low-and middle-income countries, water supply and sanitation provisioning typically leaves a lot to be desired. Poorly functioning systems and low coverage inconvenience the inhabitants and allow infectious diseases to spread. Women bear a disproportionate share of the inconvenience, while infants and small children bear a disproportionate share of the burden of disease.

Basically, the delivery of environmental services is a daunting deed for which coordination of stakeholders is critical. For instance, failure to provide water supply services for sanitation trigger the community to use sources that have hygienic problems; withholding of toilet emptying services in tandem with the moderate climate of the town as it was stated by respondents create conducive media for the proliferation of disease causing microbes. Although Digo Tsion Town's water supply is administered by separate organization of Proclamation 42/85, in view of the prevailing water supply and sanitation, abatement on the challenges should be made by the board fostering integrated responsibilities.

While from the study, the respondents forwarded possible remedial actions to hold back the problem. To mention, on the government or municipality side scheme expansion, undertaking of frequent monitoring and evaluation activities, improving the existing administration and management of the town water supply and sewerage service office, and combination of all aforementioned tasks were replied. While on the public side, paying service charges regularly; render financial and material support for the sustainability of the scheme; care and treatment for water supply service infrastructure should be made. The above results reinforce the idea that the municipality has a lot of environmental service delivery tasks.

Households and private enterprises are the developers and builders of urban communities and the owners and operators of economic activities. But unless the municipality can deliver the supportive infrastructure and services they need, orderly development will be impaired. In developing countries, the rapid pace of urbanization and large migratory flows have increased the pressure on local government spending for urban development (Serageldin, et al. 2008). Hitherto, neither of the governance, facilitation, and managerial and administrative exercises paramount to the issue of water supply and sanitation was being vested from the municipal authority. Although endeavors to maintain the water supply scheme was undertaken precautionary tasks like capacity building (material and skill building for the coworkers), effective monitoring and evaluation including early warning activities (informing the beneficiaries) remain unresolved.

For instance, there is no public toilet constructed in the past, so no toilet that could accomplish the objective for many reasons including lack of water, facilities and management problem. Furthermore, as an executer and facilitator the municipality has no capacity to accomplish sanitary activities and yet should not create fertile ground for private sectors involvement in this mammoth deal.

4.1.2 Solid Waste Management

Information in the Welfare Monitoring Survey (2001) indicates that the amount of waste collected and disposed using disposal trucks in cities of the country is only 17.7%. An additional 15.4 % and 12.4% is, respectively, disposed by burning and burying in pits (EPA, 2003). By the same token, 98.6% of the respondents replied to perform solid waste collection without sorting in different containers. It is worth to point out the disposal of solid wastes peculiar to the community that 88% of the respondents used combination of nearby solid waste open free space dumping site and burning otherwise. It can be inferred from the study result that the practices of managing solid waste from collection to disposals by the communities and institutions as well are done dominantly by traditional means although efforts were made to consider waste management as an activity where a great deal of unemployed groups could make a living. Mostly, except for service givers like hotels and markets, solid waste disposal is done just to farther out the waste from home compound to the place where solid waste is accumulated. Moreover, in the study area, majority of the respondents (91.5%) agree that properly demarcated solid waste disposal sites are not available in their surroundings.

Moreover solid waste management practices in the town is one of the issues of environmental services delivery that should be provided by the municipality as there are no sanitary landfills or controlled dumping site in the town. In addition, the existing solid waste disposal site has no clear area demarcation and it is not prepared by excavating the soil; different kinds of solid wastes including plastics, ashes, food scraps, vegetables and, cartoons, papers, beverage residues, etc., are dumped; birds and other animals scavenge there; it is observed that houses are constructed around the site; and no follow up and monitoring are made by the municipality and wastes are recklessly dispersed along the road in the vicinity.

The responsibility of municipalities to provide solid waste collection services dates back to the middle of the 19th century, when infectious diseases were linked for the first time to poor sanitation and uncollected solid waste (UN-Habitat, 2010). On the contrary, Digo Tsion Town has no properly designed solid waste disposal sites and the practice of integrated waste management was not implemented yet. Despite the fact the issue of environmental sanitation including solid waste management is popular, neither the community nor should the stakeholders involved in the management deal. This issue also reinforces the facts underlined by the same report that the municipal government is responsible for solid waste management in a city, but cannot deliver on that responsibility by undertaking measures in isolation, entirely on their own. The best functioning solid waste systems involve all the stakeholders in planning, implementing, and monitoring the changes.

Cities are at the nexus of a further threat to the environment, namely the production of an increasing quantity and complexity of wastes. The estimated quantity of municipal solid waste generated worldwide is 1.7-1.9 billion metric tons (UNEP, 2010). In connection with the production of solid waste, recently, preliminary study was conducted by Horn Africa in 2013 about the amount, types and sources of solid waste of the town but the feedback of study is not known (information obtained from interview made on November 11/2014 from officer, Municipality's Town).

In many cases, municipal wastes are not well managed in developing countries, as cities and municipalities cannot cope with the accelerated pace of waste production. Waste collection rates are often lower than 70 percent in low-income countries. More than 50 percent of the collected waste is often disposed of through uncontrolled land filling and about 15 per cent is processed through unsafe and informal recycling (Chalmin and Gaillochet, 2009 cited on Modak, 2010). While in Digo Tsion Town the entire solid waste so generated is not recycled and reused for lack of proper management of same.

Integrated solid waste management ISWM practices which presumably bid the integration of methods and stakeholders so as to make the three Rs practiced; viz. a viz. solid waste source reduction; reuse and recycling which favor the idea that solid wastes have economic value from their cradle to death. No microenterprise for solid waste management was established in Digo Tsion Town. Based on the study result, the possible remedial actions to counter the problems associated with mismanagement of solid waste induced

environmental challenges include municipal capacity development, make use of ISWM practices, establishing and strengthening of micro and small enterprises and combinations of either solutions were suggested similar with Berhanu and Akola (2014). It is imperative therefore that integration of stakeholders with the municipality is crucial for ease of management of solid wastes with the idea that components of the solid waste management in one way or another depend on public awareness and participation. Hence, public awareness and attitude is one of the crucial issues which determine the success or failure of solid waste management system (MoUDC, 2012).

4.1.3 Green Area Development and Management

Based on the studies of different cities, different researchers provide some guidelines to evaluate the nature of green spaces. Firstly, one of the main factors in determining the nature of green spaces is their quantity in the city. Secondly, existing qualities like activities and experiences, and perceived benefits to the users determine the utilization of green spaces. Thirdly, the functionality of those green spaces is equally influenced by the location and distribution (accessibility) in the whole city of Helsinki, Finland; Chicago, America; Kuala Lumpur, Malaysia; and Mexico City, Mexico (Haq, 2011). Also, the residents of Digo Tsion Town are aware of the advantage of green area development besides the environmental condition is conducive for the development of same. Thus, as the study result indicated 42.4% practiced green area development and manages by their own for the benefit of greens for different uses like shade, live fences and beautification to mention whereas the 57.6% replied on the contrary for different reasons (living in rent house, shortage of land, lack of tree seedlings and awareness problems).

Parks and green spaces are supportive of social and economic objectives and are an important learning resource. In particular the provision of public parks helps to reduce the inequalities, poor health and social exclusion in deprived areas and reduces the inherent tension between the many social and ethnic groups who form the wider community, (Barber, 2005). Even though green areas are abundant, public as well as private recreational sites with essential facilities are not found. In this regard, 41.8% of the respondents used to recreate in the available recreational sites either in public or private recreational sites but 58.2% are not. For instance, it is not uncommon to see beneficiaries to spend their time particularly during the dry spell period inconvenient to stay at home in the town fringe green Park despite it lacked good facilities but volley ball ground with some services (pleasant environment and atmosphere, clean air, dusk sun set show).

It is vividly seen in the town that the typology of green areas are tremendous. One seldom find a residence house and institutions without a tree that were planted in the past or recently. In addition, one private forest near the town which renders recreational, wedding, student reading site and occasional services are found at the boundary of the town. It has different indigenous and exotic tree species; water bodies and among others.

It would have been easy for the municipality to make the town green by using the raw water from the nearby rivers. However, the existing green areas are not appealing due to lack of facilities. Hence, from the study result development of green areas by maintaining the existing and by developing new ones with the public and private effort; developing basic facilities; public awareness to bring change on the development of recreational sites were among the suggested solutions verifying that the municipal effort was limited to linear typology of green area management.

4.2 Assessment of Municipal Capacity for Environmental Service Delivery

Capacity assessment framework of UNDP has three dimensions. As an entry point: since a given country has resided at different levels, the enabling environment, organization and individual could be addressed. As a core issue, not all but some of the issues: the scope of leadership, policy and legal framework; mutual accountability mechanisms; public engagement; human resources; financial resources; physical resources; and environmental resources could be assessed. While the cross cutting functional issue at all three points of entry and for all core issues: engaging in multi-stakeholder dialogue; analyzing a situation and create a vision; formulating policy and strategy; budgeting, managing and implementing; and monitoring and evaluation. Accordingly with the available limited information, the municipal capacity assessment was made in respect to the objective of study (UNDP, 2007).

4.2.1 Institutional Policy Frameworks

Municipal services delivery is affected by regulations at the local, state/provincial, and central levels. Understanding these regulations, how decentralized the government is, and how empowered or constrained the service provider is, is important to devising effective interventions (USAID, 2006). Generally, the Digo Tsion Town municipality was established to perform duties and responsibilities bestowed to it. However, due to lack of regulation and transparency the endeavors made in isolation by different stakeholder offices and organization did not bring the desired change. Political leaders that were assigned to administer the overall activities are crumpled for governance problems. Generally, lack of commitment; unable to employ participatory approach of municipal endeavors; lack of managing, planning, monitoring and evaluation skills; and among others from the political leaders hamper the town progress and development.

Basic problems of urban in Ethiopia essential for emanation of the urban development policy are

development related; and democratic and good governance related (MoUDC, 2012). In the former case lack of adequate infrastructure; lack of adequate and quality social services; lack of recreational centers and environmental pollution among others and in the latter case lack of trained manpower, appropriate organizational and operational system that considers the unique features and missions of urban; and lack of authority to collect and utilize their own revenue, etc. Challenges which were used as a spring board for the formulation of this policy are profoundly seen in the town. The luck of formulated rules and regulation including essential working documents which would have been used as supporting materials to exercise and ensure good governance had not been the case.

4.2.2 Human Resource

As Joseph, 2002 pointed out good municipal capacity requires many specialized skills including governance skills, facilitation skills, and management and administrative skills. In view of this, the analysis is made taking each element of the environmental services under the study. As a core issue institutional policy frameworks are very essential component of an organization to perform its duties and responsibilities. It is the way that leads to the required direction. To shoulder several mandates for environmental services delivery, business process reengineering was made and organized under town sanitation and beautification business process. This business processes are organized by two officers, of course there are a number of contractual labors engaged in different activities.

Nonetheless, the attention given for the aforementioned services deliveries is lower than the rest of business processes. Although, this business process had had a lot of duties to be performed rightly the existing officials neither have qualified skill nor shall supported with essential capacity. While the study was undertaken, there was only one qualified person with BSc degree qualification in the municipal office.

4.2.3 Financial Resource

According to the UN-Habitat 2010, financial sustainability in solid waste management is a major issue for cities all over the world. In developing and transitional country cities, solid waste management represents a high proportion of the recurrent budget, as much as 20-50%. One of the principal reasons that municipal services are inadequate in almost all developing and transitional cities is that municipalities are not adequately financed. Even when local governments have been assigned clear service responsibility, lack of revenue-raising powers and predictable intergovernmental transfers often preclude them from discharging these functions efficiently to meet the needs of local residents (USAID, 2006).

In connection with the above idea, to have basic facilities and materials including recurrent the budget a huge outlay is required. Although in every annual plan document budget request was made inculcating essential activities to be covered to the respective body, so far, no capital budget was allotted. Moreover, the revenue collected by the municipality is amalgamated and administered by the Town Administration but priority is given to tasks other than environmental service delivery. This is the critical problem in achieving basic activities bestowed to the municipality.

Generally, for sustainable supply of water supply service the community were expressed their views to contribute according to their capacity while the majority of the communities are willing to pay for solid waste management cost to ease the implementation but lack of coordination is the bottleneck for the municipality.

4.2.4 Material Resource

Households and private enterprises are the developers and builders of urban communities and the owners and operators of economic activities. But unless the municipality can deliver the supportive infrastructure and services they need, orderly development will be impaired. In developing countries, the rapid pace of urbanization and large migratory flows have increased the pressure on local government spending for urban development (Serageldin, et al. 2008)

Similarly, material resources and facilities are one of the important parameters that will help to evaluate the capacity of a given institution to render services for it mandated to.

4.3 Challenges Encountered with Inadequate Environmental Services Delivery

In view of the objective of the study and the study area under consideration the challenges amidst inadequate environmental service delivery were analyzed hereon.

4.3.1 Water Supply and Sanitation

The Cities Alliance 2006, stated out that in service delivery, the prime concerns are coverage (geographic), accessibility and affordability (price), and the quality/cost ratio (often a tradeoff). As in the case of environmental quality, service delivery systems need to be sustainable. Contrastingly, drinking water supply service run by the Digo Tsion Town Water Supply and Sewerage Service (WSSS) did not satisfy the needs of the ever increasing population and spatial expansion of the town and the result of the study reinforce the fact as respondents unanimously replied.

It was mentioned that service delivery capacity of municipals is the mandate, motivation, and means to provide services required and needed by local citizens in a manner responsive to changes in requirements and

needs over time; responsive to the differing requirements and needs of different groups of citizens within the community; equitably to all citizens; at a price they can afford; with the required quantity and quality; in compliance with local, regional, national, and international obligations, regulations, and recognized best practices; and that in a responsible and sustainable manner (UNDP, 2010). Although the persistence of problem may vary the irregularity of the service is prevalent. In the meanwhile, agreeably the challenge of water supply service is an important issue for the residence of the town.

According to the Woreda office of Health (WOH, 2012) malaria, infection of upper respiratory tract, diarrhea accounted 1%, 9.9% and 6.8% of morbidity cases respectively. If not the direct indicators, challenges in water supply and sanitation could be considered as proxy indicators justifying the inadequacy of environmental services prevailed in the town. In terms of cost the minimum water tariff of the town water supply of the city is Birr 2.75 per cubic meter with the possibility of .25 Birr progressive charges after 5 cubic meters. This tariff is not such unaffordable; however, in terms of cost incurring Birr 2-5 per Jerry can (25 liter) water for water vendors is not amenable. On the other hand, water born disease that prevailed and affected the vulnerable children is the challenge.

As mentioned before, the challenges in water supply of the study are combination of managerial, technical and environmental. Since the raw water intake is from `Babiccha` River, during rainy season when the catchment is maximum the system inevitably is subjected to siltation leading to withhold the raw water intake. And this in turn has effect on the overall water supply service. The supply scheme at its early stage was installed with water meters that measure the raw water intake, the water filtered at the filtration chamber and finally the amount of water discharged for use but this has not been the case and currently the amount produced and distributed and wastage of water is not known.

The water supply scheme was designed to render service for estimated 7,000 people of Digo Tsion Town when the scheme commenced service. However, due to unprecedented populace (currently it is in excess of 10,219) the supply did not match with the need and over all development. This is phenomenal and a challenge in view of the standard of drinking water supply service as it is accepted by the nation that urban per capita drinking water supply service standard of the country is 20 liter per capita per day within 0.5 km radius (MoWE, 2011). In addition, the spatial dimension of the town has influence on the access because it needs additional investment on the expansion of new lines.

4.3.2 Solid Waste Management

Solid waste management is a daunting task for municipalities in developing country towns and the mismanagement of which has risked the social and the natural environment. In lower-income countries, as well as poorer parts of middle-income nations such as Ethiopia, an estimated of 30 to 50% solid waste produced in urban areas is left uncollected. Some viral and other infectious diseases are associated with waste and also serve as habitat formation for breeding insects and mosquitoes. In tropical climates, some flying insects are directly associated with the transmission of endemic diseases. Uncollected waste also blocks drainage channels and increases the health problems related to pool stagnant water. In addition, accumulated wastes provide the ever-present hazard of physical injury to people coming into its close proximity, particularly children (MoUDC, 2012). Littering of food and other solid wastes in medieval towns-the practice of throwing wastes into the unpaved streets, roadways, and vacant land led to the breeding of rats, with their attendant fleas carrying bubonic plague (Tekle, 2004). Likewise, due to haphazard solid waste management practices prevailed in Digo Tsion Town, 26.2% of respondents replied for infections (like common cold, asthma, headaches) and bad odor; 43.9% for infections and breeding sites for flies and mosquitoes causing diarrhea, and malaria; 9.8% for infections and bad intrusion; and among others. Besides, it is overt to see solid wastes recklessly discarded and haphazardly designated solid waste disposal sites which are believed to cause nuisance odor and bad intrusion for the city residents. These disposal sites are also dependable media for breeding of flies and other annoying insects and rodents having multiplier effect on the susceptibility of the communities to different vector born ailments.

4.3.3 Green Area Development and Management

Urban green spaces serve as a near resource for relaxation; provide emotional warmth (Heidt and Neef, 2008). However, existing recreational sites in Digo Tsion Town are inadequate and the fact is supported by 98.8% of the respondents. On the other hand, according to the municipal officers, encroachment of the town green areas and spaces urban expansion in tandem with infrastructure development, among others are the challenges with respect to green area development and management. For instance, the total area of Digo Tsion Town as of 2007 was 3.65 km^2 but now it is redesigned to have 10 km^2. For developmental activities huge constructions are underway in the expense of green areas.

During the study period the construction of bus terminal; mushrooming of constructions by private house in the previously open and green space were also observed. Although, these development activities are vital for over all development of the town this may induce environmental problem unless proper monitoring and evaluation is made for the multiplier effect of each activity on the environment.

5. Recommendations

From the results, interpretation and analysis of this study the following recommendations are forwarded.

Water Supply and Sanitation: In towns like Digo Tsion that have less water accessibility, water supply and sanitation service is prime concern. Therefore, the water supply service should be rendered in a sustainable manner and to do so scheme expansion; proper management-proper functioning of the board, monitoring and evaluation of performances; capacity building of the agency staffs in skill, material and facilities; early warning activities such as information dissemination before the withholding of water supply service should be made.

For the sanitary aspect public awareness; construction of shared community latrines and baths should be done; and in the short run arrangement to have toilet emptying vehicles on contract basis must be in effect through coordination of the stakeholders and in the long run the municipality should capacitate itself through procurement of essential vehicles.

Solid Waste Management: Solid waste management is a daunting and a resource hungry activity. Thence, the management should deserve attention by the municipal authority and to manipulate the negative effects and to secure benefit from solid waste management the overall task should start from the scratch.

Strengthening of microenterprises; continuous public awareness; and integration of stakeholders for participatory approach should be in place.

If it is not possible to have proper sanitary land fill which needs specialized arrangement, controlled dumps should be designed and be in effect.

Integrated solid waste management that employs the three Rs (source reduction, reuse and recycling) should be familiarized and exercised.

The municipality should also be strengthened with materials and techniques for collection and transportation of solid wastes.

Green Area Development and Management: Owing to the natural endowment of the town to have vibrant vegetation growth, the need to have green areas and open spaces are critical for the livability of the town. Therefore, though the residents have an awareness to have their own tree plantings, it should be strengthened by providing tree seedlings, create conducive environment to use the opportunity to invest on green area development that qualify basic standards for recreational purposes.

The planned to have green spaces, parks, and recreational areas in the town were not implemented rather the existing green areas and spaces are encroached for different purposes. Therefore, proper management of these resources should be practiced.

In most cases tree species that have been used for greenery purposes are exotic species. Thus, due consideration should be extended to have the indigenous tree species and attractive vegetations.

Institutional Framework: Different institutions do have different area jurisdiction to perform their function. But, those who have public responsibilities like municipality needs tasks accomplished by integration of different stakeholders. Therefore, policy documents, rules and regulations devised and endorsed by the concerned authority should be popularized and disseminated to each implementing agency in advance to avoid misunderstanding among different actors.

It is not uncommon to see lack of commitment and governance skill of municipal bodies whose final destination is failure to respond public inquiries affecting the overall development. Therefore, municipal authorities should have skill and ability to governance, skill of collaboration with various stakeholders and the communities at large and administer to perform their duties without partiality among different work divisions and community groups.

For sustainable environmental services, public private partnership is paramount. Therefore, the municipality should not only built this partnership but also deserve formal attention.

Financial Capacity: The municipality under study does have financial sources from its revenue collection efforts and from the government annual block grants. However, the trend to have stretched effort to collect revenue was hampered by lack of diversified and expanded local tax bases. Therefore, study based tax collection effort should be strengthened through properly designed approach.

For the municipality, as study result indicated, there is seldom possibility to have capital investments for the expansion of basic environmental services. Thus, it is imperative to enhance their economic competitiveness; meet the demands for public services; and generate funding for capital investments.

Human Resource: There is no doubt that skilled human resource can make a difference for given developmental activities. Even though intra office integration is possible, in case of the municipality the majority of the work is designed to be shouldered by one core process (Town Sanitation and Beautification) having only 2 officers. Therefore, adequate number of officials with the required skills should be engaged in.

Material and Facilities: Digo Tsion Municipality lacks facilities including sufficient office for officers so as to perform tasks and to accommodate different customers. Therefore, office that has sufficient rooms considering the ambient climate of the town should be provided in the long term.

In addition, materials like vehicles for solid waste transport, solid waste collection containers or bins, surveying equipment, transport vehicle, etc. should be provided through planned capacity building program.

6. Conclusions and summary

In view of the information obtained from the respondents, Woreda officials and observation of Digo Tsion Town and from the study result, analysis and interpretation the conclusion so deducted is presented here on.

Water supply and sanitation of the Digo Tsion Town has its source from the scheme of the Town Water supply established in 2006. However, due to population pressure and from the management and design of the scheme point of view, the service is not rendering in a sustainable manner. Even if it is delivered on shift basis, there is no a 24 hours service. Therefore, the residents of the town are obliged to use different water supply sources including, pumps, and raw water from the existing rivers as a strategy to cope with. With regard to sanitation, amid the water supply service challenges the existing service delivery of the Digo Tsion Town seeks improvement. Reiterating the natural climate is conducive for the proliferation of disease causing microbes and outbreak of diseases, the sanitation services in terms of providing public toilets, private hygiene and facilities for environmental health are essential for the town's vibrancy. Generally, owing to the existing natural environment; i.e., the abundance of surface water and the prevailing climate of town in one hand and the sprawl of the town and increased demand on the other hand, the issue of water supply and sanitation services is the crux.

Concerning the municipal solid waste management of the town, the existing condition for the delivery of solid waste collection, transport and disposal and or reuse of same is at substandard level. The practices of solid waste management undertaken by the communities of the town are just to make the waste out of their home stead. Generally, there is neither sanitary landfills nor controlled dump sites and lack of integrated solid management system prevailed in the town. The collection, transport and disposal system is not in place, yet. Solid wastes that would have been used for value accrual and sort of employment had not realized luxuriantly. Although the communities are willing to pay for solid waste management lack of coordination and integration of stakeholders are still unresolved challenge in the area. It is also overt that mismanagement of solid wastes has been causing environmental problem including ailments (like common cold, asthma, head ache), offensive and bad scent, clogging of the existing storm water drainage channels, pollution soil, and bad intrusion among others.

The fact that green area development and management is essential and the majority of the residents are aware of tree plantation for greenery (shade and beauty), the existence of public recreational sites is negligible and the existing sites lack facilities and open spaces, and parks are encroached for expansion of towns and other infrastructures to the extent that nursery sites for raising tree seedlings are neglected.

In the context of Digo Tsion Municipality due to lack of concrete integration of similar institutions like administration, the municipality, and others; policies and strategies that are devised at regional level in the context of Digo Tsion Town are not cascaded and popularized to the stakeholders for ease of implementation. It is therefore seldom possible to get documented policies, rules and regulations at each unit of implementing agency. Although, the revenue collected from the municipality is showing improvement disbursing it for expansion of basic environmental services is negligible let alone to covering recurrent expenditure. With respect to human resource capacity, skilled personnel are lacking especially in the area of land management sector and Town Sanitary and Beautification Business Processes. Some of the disciplines which are badly needed include: hydrologist, geologist, cadaster expert, GIS expert, sanitary engineer, environmentalist, sociologist, surveyor and town planner. It is however overtly seen that in the area of sub-processes human resources are highly saturated to drain the existing limited resources. Materials and facilities are determinant to carry out tasks effectively and efficiently. From the Municipality of Digo Tsion Town reality, neither vehicles nor should facilities were in place to render basic environmental services for the town populace.

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Appendices

Table 1: Types of latrine used by the respondents

Types of latrine	Frequency	Percent
Flush type (private)	13	7.9
Dry and protected (Private)	65	39.6
Unsafe pit (private)	2	1.2
Flush type (shared)	4	2.4
Dry and protected (shared)	76	46.3
Flush type private and dry and protected (shared)	2	1.2
Shared flush and Shared dry and protected	1	0.6
Flush type (private) and Dry and protected (Private)	1	0.6
Total	164	100

Source: Field Survey, 2014

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