

UNITED REPUBLIC OF TANZANIA



PRESIDENT'S OFFICE REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT



UBUNGO MUNICIPAL COUNCIL WASTE MANAGEMENT PLAN (August 2022) Draft 1

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EXECUTIVE SUMMARY

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

RCF	Refuse collection fee
SWM	Solid waste management

CHAPTER ONE

1. Introduction

The Ubungo Municipal Council was officially established through the Government Notes number 512 of year 2015 by the President's Office, Regional Administration and Local Government as an autonomous body. Ubungo Municipal Council came into existence due the large operating area and rapid increase of population at Kinondoni Municipal Council which in turn affected the council to provide quality services to its citizen. Hence the establishment of the new Council will improve service provision and reach community demands easily.

The Municipal Council is responsible, to maintain and facilitate the maintenance of peace, order and good governance within its area of jurisdiction; to promote the social welfare and economic well-being of all persons within its area of jurisdiction for further social and economic development. Ubungo Municipal Council is one of the five local government authorities that constitute the Dar-es-Salaam region which is the major business city of Tanzania.

1.1.1 Geographical Location and administrative borders

The Municipality is bordered by the Kibaha district to the north, Kinondoni district to the east, Ilala district to the south and Kisarawe district to the west. The Municipality is well linked by roads and other communication network to other parts of the country. Major road links are: - Morogoro Road, Mandela Road and Sam Nujoma Road.

1.1.2 Administrative setting

Ubungo Municipal Council is divided into fourteen (14) wards, which in turn are sub divided into sub wards commonly known as Mtaa (singular) or Mitaa (plural). There are 90 mitaa. The Municipality also has 2 electoral constituencies namely: Ubungo and Kibamba. The Municipal governing body is the Full Council which comprises 14 Councillors who are elected Ward representatives, 2 are Members of Parliament elected constituencies representatives (MPs), while Members of Parliament(MPs) (women special seats) and Presidential Appointees are not yet distributed

The Municipality executes its administrative duties through

- The Municipal Council,
- Ward Development Committees under the Chairmanship of the Councilors and
- Sub-Ward (Mitaa) Development Committee



Figure 1: Ubungo Municipality wards

1.1.3 Climatic Condition, Topography, Geology and Soil condition

The Municipal Council has humid temperatures that vary from 26⁰C in August to 35⁰C in December and January each year. The long rain season (March – May), receives an average monthly rainfall of 150mm – 300mm. The short rain season is between October and December with monthly average rainfall ranging from 75mm – 100mm.

The humidity of air is related to the rainfall pattern and is highest during the long rains. Daily maximum humidity occurs at dawn, averaging 96% while minimum humidity is experienced in the afternoons, averaging 67%. The wind system of Ubungo Municipality is typical of the wind regime of the Western Indian Ocean, which is characterized by a complete clockwise wind system over the northern Indian Ocean. Topography in Ubungo Municipality is generally plain mixed with small hills in the southern part.

1.1.4 Land Area, Population Size, Growth and Density

The Municipality has a total area of 260.40km². According to the 2012 population Census, the Municipality had a population of 845,368 where male was 409,149 and female was 436,219 but with the population projection of 2016 Ubungo Municipal has a total population of 1,031,349 where by male are 499,161 and female are 532,188 with a growth rate of 5.0% per annum with a population density 4,911people/km². The Municipality is estimated to have 257,837 households with an average of 4

persons per household. Table 1 presents the estimated population Census distribution by sex and wards in basing to the census of 2012.

Table 1: Distribution of the population by wards and sex

S/n	Ward	Population by sex 2012			Population by sex 2017		
		Male	Female	Total	Male	Female	Total
1	Mburahati	16,784	17,339	34,123	21,421	22,129	43,550
2	Sinza	18,892	21,654	40,546	24,112	27,637	51,749
3	Makuburi	28,021	29,387	57,408	35,763	37,506	73,269
4	Mabibo	41,824	43,911	85,735	53,379	56,043	109,422
5	Manzese	34,495	36,012	70,507	44,025	45,961	89,986
6	Ubungo	27,221	28,794	56,015	34,742	36,749	71,491
7	Makurumla	30,933	32,419	63,352	39,479	41,376	80,855
8	Mbezi	35,637	37,777	73,414	45,483	48,214	93,697
9	Msigani	26,479	28,632	55,111	33,795	36,749	70,337
10	Kimara	36,654	39,923	76,577	46,781	50,953	97,734
11	Saranga	49,263	54,864	104,127	62,873	70,022	132,895
12	Goba	21,066	21,603	42,669	26,886	27,572	54,458
13	Kibamba	13,840	15,045	28,885	17,664	19,202	36,866
14	Kwembe	28,040	28,859	56,889	35,787	36,832	72,619
TOTAL		409,149	436,219	845,368	522,190	556,738	1,078,928

Source: 2012 National Population and Housing Census.

1.1.5 Ethnic Groups

The main native' ethnic groups in Ubungo Municipality are Zaramo but due to urbanization many people of different ethnicity have immigrated in making heterogonous tribal composition whereby no single ethnic group accounts for more than 50% of the total population. The rapid economic growth of the city also attracts Rural- Urban Migration from different corners of the country and outside the country.

1.1.6 Socio-economic activities

It is estimated that 733,671 of Ubungo residents are manpower whereby 61% are engaged in private sector, 35% are self-employed and 4% are employed in public sector. The activities engaged are private companies, institutions, business, petty traders, fish farming, livestock keeping and agricultural activities.

1.1.7 Education

The delivery of education services in Ubungo Municipal is undertaken by both the Government and non-Government institutions. The Municipal council is directly involved in the management of delivery of primary and secondary education. The number of pupils in primary schools are 145, 347 (Males 72,962 and Female 72,385) where as the number of students enrolled in secondary schools are 34,154 (Males 16,575 and Female 16,579).

Ubungo Municipality hosts a total of 12 vocational and higher learning institutions which includes universities and colleges which are estimated to accommodate more than 62,000 students. Table 1.2 summarizes the number of learning institutions located within Ubungo municipality.

Table 1.2: Number of learning institutions in Ubungo Municipality

S/n	Type of Institution	Owner		Total
		Public	Private	
1	Primary schools	66	125	191
2	Secondary school	31	34	65
3	Vocational & Higher learning	4	8	12

1.1.8 Health facilities

Ubungo Municipal council has 116 Health facilities where by 21 are Government owned health facilities (1 National hospital, 1 district hospital, 3 health centers Namely Makurumla, Kimara and Mbezi, 15 Dispensaries and 1 RCH Clinic) and 95 private health facilities. Out of 116 both public and Private Health facilities only 13 provides admission services and only 4 has major operating Theatres In medical field there are different substances used to cure/eliminate infection to human being or an animal, treatment was carried out in Out Patient Department (OPD) and in Patient Department (IPD). For OPD, Malaria for under five children does not exist in top ten deadly diseases, while in above five years of age ranked at 8 (13,692) position this might be due to the different malaria interventions

1.1.9 Trade

Ubungo Municipal Council currently has managed to register 18,592 legal businesses. Within Ubungo there are total of 104 industries ranging from large, medium and small. Out of 104 industries 64 are in Manzese Ward making it the most industrialized Ward in the Council. While about 61.5% of all industries are concentrated in Manzese, some Wards such as Mburahati and Makurumla have no even a single industry.

Ubungo Municipal Council has around 12 markets with known 8,172 traders. The largest market is Ubungo Banana market with 4300 traders in Ubungo Ward followed Mwasiliano-Simu 2000 in Sinza Ward with 1,836 traders. Other markets with a number of traders in brackets are; Shekilango (361), Mbezi (287), Mabibo-Garmex (255), Manzese (250), Sinza I (208), Big Brother (196), Kapera (152), Mburahati (150), Kimara (116), Kagera (61).

1.2.0 WASTE MANAGEMENT

Principally, waste management in Tanzania is liable directly to the local authority's responsibility. The local Government (Urban authorities) Act 1982 imposes under urban authorities the responsibility "to remove refuse and filth from any public or private place" (sect. 55 g) and to provide and maintain public refuse containers for the temporary deposit and collection of rubbish. The Municipal Council plays a role in the planning, financing and providing waste collection and disposal services.

1.2.1 Solid waste generation

Ubungo Municipality is estimated to generate about 827.4 tons of waste per day (equivalent to 302,001 tons/year) which gives about 0.9kg/per capital per day according to the current generation projections based on the other informal sectors comprise this amount. The waste generation in all wards of the Municipality is shown in Table 1.3 below

Table 1. 3: Estimated amounts of solid waste generated per ward

S/n	Ward	No.of subward(mitaa)	Population (2012)	Generation(t/day)
1	Makurumla	6	63,352	114
2	Mburahati	3	34,123	70.5
3	Sinza	5	40,546	105
4	Manzese	10	70,507	132
5	Mabibo	6	85,735	85
6	Makuburi	5	57,408	42
7	Ubungo	5	56,015	85
8	Kimara	6	76,577	41
9	Mbezi	8	73,414	18.5
10	Msigani	5	55,111	12
11	Kwembe	10	56,899	10
12	Kibamba	5	28,885	15
13	Goba	8	42,669	18
14	Saranga	9	104,127	59.4
TOTAL		91	845,368	827.4

With regard to where the source originates, household account for almost 80% followed by market waste (2%). Since waste generated in these areas are mainly organic, it explains why the main fraction of the waste being generated in Ubungo being Organic. Table 1.4 summarizes waste generators in Ubungo Municipality.

Table 1.4: Solid waste generators

No	Source of Waste	Tons/day
1.	Household waste	661
2.	Commercial waste	12.4
3.	Institutional waste	4.9
4.	Market waste	16.5
5.	Streets waste	0.74
6.	Informal sector waste	131.6
TOTAL		827.4

1.2.2 Solid wastes composition

Organic waste constitutes a large proportion of the solid waste stream in the Municipality. The Calorific (Heating) value of the waste is estimated to be as low as 10,000 to 12,000 kJ/kg which is too low to be considered for Refuse Derived Fuel (RDF). Moisture contents ranges from 30 to 40% depending on the time of year and the waste density average at 390kg/m³. Table 1.4 summarizes the composition and trends of changes of the waste.

Table 1.5 Waste composition and trend of changes in the composition

Type of waste	JICA 1997 (%)	ERC 2004 (%)
Kitchen waste	45	39
Textile	17	6
Grass and woods	24	10
Metal	2	5
Ceramic and stones	1	5
Paper	4	8
Plastic	2	16
Leather and rubber	1	6
Glass	3	2
Other	1	3

1.3.0 Waste management technologies

Basically, the current system of managing solid waste in Ubungo Municipality consists of three major components namely: solid waste generation and storage, solid waste collection and solid waste disposal. Solid waste is generally collected at curbside from households, commercial establishments, institutions, markets, and street sweeping collection points. It is then taken directly to the Pugu- Kinyamwezi dump site however in between there are informal waste pickers, who are non-registered individuals

(scavengers) which recover recyclables mainly plastic, papers and metals from either storage area, during transportation or at the dumpsite. Usually, the collected recyclables are taken to middle men or collection centers who then transport to processing facilities. The current existing waste management system practices can be summarized as follows;



Figure 2: Conceptual framework of waste management in Ubungo Municipality

1.3.1 Waste storage

Waste storage is under the direct responsibility of the waste producer; waste is stored in different types of containers, e.g. dustbin, plastic bags, old plastic buckets, baskets, boxes, open piles, but invariably some people discharge waste without even any storage facility, indiscriminately dump waste in open spaces, storm water drains, valleys and along the roads.

1.3.1 Waste collection and transportation

In Ubungo, waste management services are delivered in two system. Firstly, at Municipal level through Department of Environment and Solid Waste Management with the use of available resources it carries out the activities of cleaning, waste collection, transportation and fee collection in public areas i.e main roads, markets, hospitals, and open spaces. Market waste is usually collected in skip bins which are collected by trucks and transferred to the disposal site. Currently, Ubungo municipal council has three tipper trucks, two skip container truck and six skip bin containers for collection and transportation of solid waste.

Secondly, through the engagement of private operators at subward (mtaa) level. Private operators which could be a company, NGOs or CBOs are selected via competitive tender processes managed by Mtaa/Ward Executive offices. Waste management fees commonly called Refuse collection fee provided within the bylaws are sometimes determined and agreed in the Mtaa formal meetings with stakeholders and stipulated in the service contracts. The fees are collected by Mtaa Executive Office electronically using Point of Sales, POS machine. The sub ward (mtaa) Mtaa Executive Officer are responsible for cleaning, waste collection, transportation at the households, private sectors, commercial centers and institutions.

Currently there are no transfer stations within Ubungo municipality and generally speaking, waste is collected at curbside from households, commercial establishments, institutions, markets, and street sweeping collection points. Types of vehicles used for waste transportation are such as such as lorries, compactor trucks, pushcarts and wheelbarrows. Where access by collection vehicle is impractical, collected waste from these areas is taken initially to neighborhoods collection sites by handcarts for secondary storage before transportation to the dumpsite. In planned and unplanned areas of the municipality where the populations are less affluent and the neighborhoods more congested, waste is collected using handcarts for delivery to neighborhoods collection sites or taken directly to these sites by householders.

The frequency of waste collection varies across the Municipality from daily collection services to every other day and up to once a week but delays can be up to a frequency of once a month. The low MSW collection rates are due to a combination of factors including but not limited to the lack of equipment and financial resources and the lack of transfer stations. Open burning, illegal dumping on land, water or in storm drains/drainage systems is a common practice in some areas.

1.3. 2 Size of population served by current waste collection

Based on the surveys and investigations conducted in 2020, the population that is served by the waste collection service is 360,972 which is 35% of the total population while the remaining 670,000 people (equal to 65% of the total) are not served by the municipal council waste collection system.

1.3.3 Solid waste disposal

Currently Ubungo Municipality does not have a sanitary landfill or any other disposal facility and so the collected solid waste has to be transported to Pugu-Kinyamwezi dump site which is the only authorized waste disposal site in Dar es Salaam. The dumpsite is located about 40 km from the center of Ubungo municipality and this makes the round trip to be about 80 km long. The infrastructures leading to the dumpsite gate is not well-maintained. In rainy season, it can be very difficult to access the dumpsite and often it is also impossible to access it for the waste haulers which mean that waste disposal activities need to be stopped for some time even weeks. Though it is wall fenced, the Pugu dumpsite is easily accessible to informal waste pickers searching for recyclables. The site is operated as controlled open dumpsite, without a designated working face and waste is dumped all over the surface of the dumping area. No leachate treatment or gas management system exists.

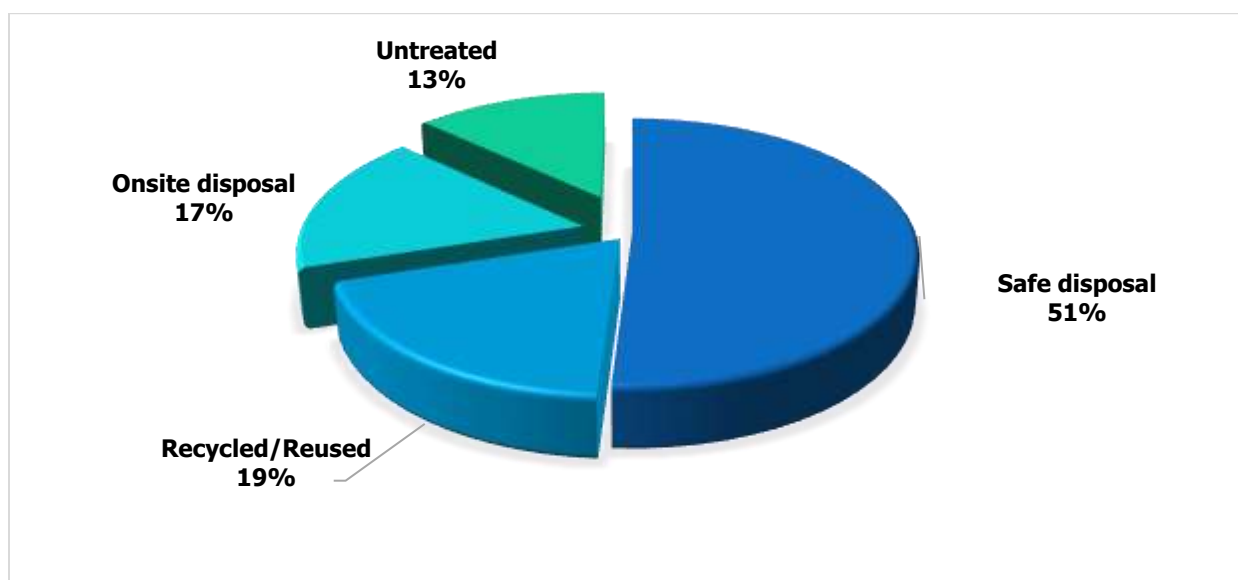


Figure 3: Waste disposal methods

1.4.0 Institutions involved in Solid Waste Management

In Ubungo municipality there are number of institutions currently involved in solid waste management. These institutions are either involved directly in waste management activities or indirectly by contributing resources, assist with regulatory development and implementation, mobilizing sanitation campaign or in any other means influence in the management of solid waste.

Table 1.8 Institutions involved in solid waste management

Name of institution	Involved in Mgt of SW	Influence in SWM	Contributing resources
NIDA Textile			V
SUMA JKT	V	V	V
Nipe Fagio	V	V	V
AK Transport			V
SONGAS			V
UDSM	V	V	
NIT	V		V
LEAT		V	
CBOs	V	V	V
Waste contractors	V	V	V
St. Joseph University	V		
Regional Commissioner		V	
District Commissioner		V	
Roots and Shoots	V	V	
Prisons Force	V	V	

1.4.1 Waste management responsibilities at Municipal level

The department of Environment conservation and solid waste management headed by the head of department, assisted by other officers perform functions of planning, monitoring and control, the coordination of municipal operations, vehicles and equipment supplies. The department's responsibilities are to support the planning and delivery of waste management services, development of clear policies and guidelines for the provision of services by the contractors.

Other responsibilities include: enforcement and compliance to environmental health regulations, deployment and development of competent personnel, and improvement of solid waste management rules and regulations. Figures 4 below show the arrangement of responsibilities at Municipal levels. The department under the full council and the Municipal director, provide directions to the ward, sub-ward and the public concerning waste management.

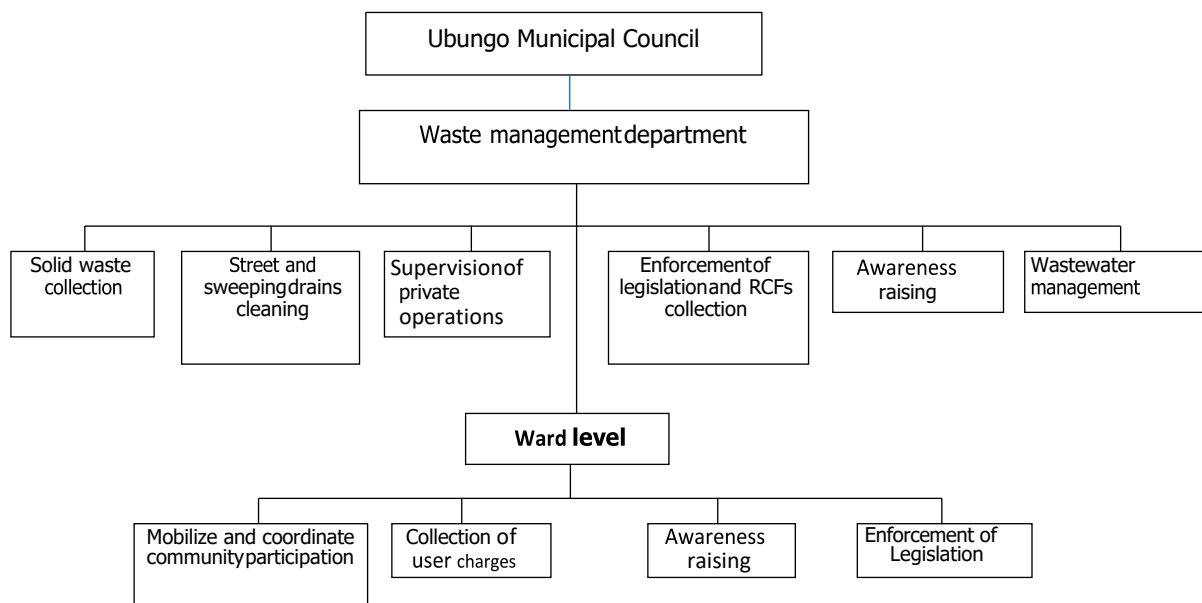


Figure 4: Arrangement of waste management responsibilities at municipal level

1.5.0 Solid waste stakeholders and their participation

There are several stakeholders who actively participate in waste management activities within Ubungo Municipality. Basically, they can be grouped into six categories and their roles as follows

- i. **The Ubungo Municipal Council;** required by the law, is responsible for managing waste, particularly ensuring availability of sufficient services for refuse collection, removal and disposal. Administering Municipal by-laws and parent laws regarding environmental management and pollution control as well as involving various stakeholders in plans and various waste management development projects. Depending on resources availability, the Ubungo Municipal Council increase waste management equipment by budgeting each financial year
- ii. **Ministries (VPO-Environment, PO-LARG, MoH);** provides necessary guidance (legislation and policy) to Municipal council, technical & financial aid and other resources when available.
- iii. **Waste management companies, NGOs and CBOs;** provides wastes collections services to their respective areas as directed by the Mtaa/Ward Executive Officer and the Municipal council and as per contract. They are entitled to receiving payment for waste collection in the mtaa/ward in accordance to the work done within the agreement/contract.
- iv. **Ubungo residents;** are required to cooperate in the waste management programs and pay their refuse collection charges (RCC). Also, they are required to keep their surroundings clean wherever they are.
- v. **Supporting groups (including NGOs, CBOs, Academic institutions and development partners);** Their roles include financing, moral and promotional support, research, technological and marketing. They do research and run projects in relation to solid waste management.
- vi. **Informal waste pickers;** Though not recognized legally, they play a very important role in waste management especially in recovering recyclable from waste. They do this by collecting recyclable from private waste bins or dumpsters, along streets and waterways or at dumpsite. Some rummage in search of necessities which eventually collect and sell recyclables to middlemen or businesses. It is estimated that about 25% of waste and 90%-95% of the materials recovered are done by the informal sector.

1.6.0 Costs and financing of the waste management system

It is the duty of every resident to pay for waste collection fee common called refuse collection charge. Stipulated in the by-law, there are different fees charged depending on the income level areas; high, low, medium income level. Generally, waste operators (Mtaa/Ward Executive Officer and Municipal council) experience challenges with collecting fees from low-income areas. The low refuse collection charge rates are due to a combination of factors including but not limited to poor waste collection services, limited

financial resources among residents, weak enforcement of the authorities and cultural behavior of residents.

Furthermore, Ubungo Municipal Council, through the department in charge of solid waste management issues the department of Environment and Solid Waste Management every financial year allocates a budget to manage waste activities including hiring of waste cleaning companies, mobilization of the communities and purchase equipment.

1.6.1 Waste collection service fees and payment for contractors

Solid waste collection service fees by waste generators range from TZS 2,000 to TZS 200,000 per month. The payment for the services rendered by the contractors is determined on the basis of number of trips made and size of truck used. The payment per trip using a standard compactor truck is TZS 400,000 while that for a standard (Tata) tipper truck is TZS 350,000 per trip.

1.7.0 Policies and Legislation framework for Solid Waste Management

This section discusses existing policies and legislations relevant to solid waste management as applicable in Ubungo Municipality. First part of the section provides overview of relevant legislations and later discuss nine component areas of waste management system. The area of focus are waste reduction, segregation and sorting, storage, transport, treatment, refuse charges, recycling, composting and waste management practices.

1.7.1 Policies

In Tanzania, the solid waste management policy framework is embodied in number sector policies which provide guidelines in the sanitation and environmental management. In other words, there is no single comprehensive document of solid waste management policy. The most important national policies containing sections on solid waste management and sanitation are the National Environmental Policy (NEP) 2021, the National Health Policy (NHP), 2017 and the National Human Settlements Development Policy (NHSDP) ,2000.

1.7.1.1 National Environment Policy 2021

It is the main policy governing environmental management in Tanzania. It aimed to provide a national framework for guiding harmonized and coordinated environmental management for the improvement of the welfare of present and future generations.

In addressing environmental deterioration in urban areas, the policy sets out the following objectives: integrated planning, improved management of urban centers and designation of urban land uses to be based on environmental impact considerations, control of indiscriminate urban development particularly in vulnerable sites as coastal beaches, flood-prone and hilly areas and development of environmentally sound solid waste management systems

1.7.1.2 National Health Policy 2017

The main objective of the National Health Policy 2017 is to achieve the highest possible level of good health and well-being, through a preventive and promotive health care orientation in all developmental policies, and to achieve universal access to good quality health care services without anyone having to face.

The objectives of the NHP include: (1) sensitize the community on common preventive health problems, and improve the capabilities at all levels of society to access and to analyze problems and design appropriate action through genuine community involvement; (2) promote awareness within the government and the community at large that health problems can only be adequately solved through multi-sectoral cooperation, involving such sectors as education, agriculture, water and sanitation, community development, women organizations, and non-governmental organizations; and (3)

promote sound use of water, encourage basic hygiene practices in families, promote construction of latrines and their use in all households, health centers and educational institutions, and encourage the maintenance of clean environment around houses and institutions.

1.7.1.3 National Human Settlements Development Policy, (NHSDP) 2000

The objectives of NHSDP relevant to sanitation and solid waste management include: to protect the environment of human settlements and of ecosystems from pollution, degradation and destruction in order to attain sustainable development and to encourage development of housing areas that are functional, healthy, aesthetically pleasant and environmentally friendly. The policy also provides guidelines to the main actors (the Ministry responsible for Land and Human Settlements, local authorities and the non-state actors (private sector) so as to maintain environmentally friendly human settlements.

1.7.4 The National Waste Management Strategy (NWMS)

NWMS was adopted in December 2018. The vision of the strategy is to “actively mobilize the people and other resources to achieve: sustainable clean; safe and healthy environment to the people of Tanzania; efficient use of resources; and protection of environment to the social-economic development with minimum solid waste generation and efficient handling technologies by 2025. It is envisaged that the framework provided by the strategy will improve significantly the waste management systems”.

The strategy sets us specific targets on the long, medium and short term. These are:

- 80% waste recovery (re-use, recycling, composting and energy recovery) and 20% landfilling in a Sanitary landfill (inert material) by 2030
- 50% waste recovery (re-use, recycling, composting and energy recovery) and 50% improved disposal by 2025
- 30% waste recovery (re-use, recycling, composting) and 70% controlled dumping (tipping, compacting and covering) in key urban areas by 2020

The NSWM strategy identifies Dar es Salaam as a convenient location for the implementation of composting and anaerobic digestion with biogas production, Waste to Energy is also listed as an option.

1. 7.2 Legislations

1.7.2.1 Environmental Management Act, 2004

Divided into 20 parts, each part of this Act deals with a broader subject and has sections that talk about particular areas of concern. Part IX focus on waste management by charging local government with the duty to manage and minimize solid waste at source Part IX has five main sections: 1) Solid Waste, 2) Litter, 3) Liquid Waste, 4) Gaseous Waste, and 5) Hazardous Waste.

Sections 114-119 specifically deal with solid waste. Section 114 stipulates that 'it is the duty of the Local Government to manage and minimize solid waste'; whereas Section 139 sets out powers of the Local Government authorities to minimize wastes; 'that each Local Government Authority shall have all powers necessary for purposes of preventing or minimizing waste.

1.7.2.2 The Local Government (Urban Authorities) Acts Cap 288 of Revised Edition 2002

This act provides for a detailed responsibility for the urban councils on administration of day-to-day activities. Urban authorities have the duty of taking measures to safeguard and promote public health and take all necessary and reasonably practicable measures for maintaining the area of the authority in clean and sanitary condition and for preventing the occurrence of or for remedying or causing to be remedied any nuisance or condition likely to be injurious or dangerous to health.

The Act it requires urban authorities to, among other things, 'remove refuse and filth from any public or private place' (section 55 (g)). Also, urban authorities are required to provide and maintain public dustbins and other receptacles for the temporary deposit and collection of rubbish. Section 55 (j) provides for the prevention and abatement of public nuisances that may be injurious to public health or to good order. Urban authorities are also empowered to ensure that residents keep their premises and surroundings clean.

The Act provides the provisions to local government authorities to make subsidiary legislation (by-laws) relevant to any issue including waste management

1.7.2.3 The Public Health Act, 2009

Part IV of the act provides for the need to maintain cleanliness, hygiene, and prevent nuisance. It calls for effective management of solids, liquid, gaseous hazardous and gaseous wastes. Section 76 of the Act specifically requires every local government authority to undertake periodic studies to determine the type of solids and liquid wastes and determine appropriate methods for sorting and storage of the waste.

1.7.2.4 Environmental Management (Solid Waste) Regulations, 2009

Details the requirements and responsibilities for managing solid waste in Tanzania. Highlights waste minimization and cleaner production principles alongside the duty to safeguard public health and environment from adverse effects of solid waste.

Lists the permit requirements (Part III) — any person dealing with solid waste as collector, transporter, waste depositor or manager of a transfer station must apply to the local government authority for a permit. The local authority will also issue licences/permits to operate solid waste disposal sites.

1.7.2.5 Environmental Impact Assessment and Audit Regulations, 2005 as amended 2018

The First Schedule, in the Type A projects category for which it is mandatory to undertake environmental impact assessment, includes construction of municipal solid waste landfill facilities. Furthermore, it makes an offence to begin, finance, permit or license any projects listed in the regulations without the developer submitting to the licensing or permitting authority an application for an EIA certificate in the format of a project brief.

1.7.2.6 Environmental Management (Fee and Charges) (Amendment) Regulations, 2016

Amends the Environmental Management (Fee and Charges) Regulations of 2008. Among others it prescribes fees with respect to EIA, environmental compliance monitoring and audit, registration of environmental experts, environmental quality standards, management of wastes and other activities related the environment.

1.7.2.7 The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000

As pointed out earlier, Ubungo Municipal Council was established by subdividing Kinondoni Municipal Council into two councils namely Kinondoni Municipal Council and Ubungo Municipal Council. After this division, Ubungo Municipal Council adopted bylaws of Kinndoni Municipal Council which it has been creating its own bylaws from time to time. Currently, The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000 is still bylaw in use in relation to solid waste management within Ubungo Municipality.

The by-laws provides the obligations of residents (who are beneficiaries of SWM services) and service providers are as such: occupiers of premises should maintain receptacles to keep waste, people are prohibited from causing a nuisance and throwing or depositing waste on streets or in open spaces not designated as collection points, beneficiaries are

required to provide and maintain to the satisfaction of the authority receptacle for domestic refuse, of a sufficient size and fitted with good and effective lid, pronounces penalties (fines and/or imprisonment) for defaulters and define where and how collection charges should be paid by the residents, with the respect of amounts for different generators.

Legislation in relation to waste management system components

S/n	Waste management component	Policy/ Legislation	Remarks	Recommendations
1	Waste reduction	National Environmental Policy, 2021	It aimed to manage pollution for safe and healthy environment and promote green technologies and integrated management of municipal waste	Ubungo Municipal Council should plan and take all necessary steps to minimize amount of solid waste transferred to disposal site
		Environmental Management Act, 2004;	It is the duty of local government not only to manage but also minimize solid waste and that each local government Authority shall have all powers necessary for purposes of preventing or minimizing waste	
		Public Health Act, 2009	each local government authority to ensure minimization of solid wastes,	
		Solid Waste regulations, 2009;	Highlights waste minimization and cleaner production principles	
2	Waste storage	Environmental Management Act, 2004;	It requires every local government authority to ensure that waste generators located within their respective	Ubungo Municipal Council should plan and take all necessary steps to ensure every waste

			areas of jurisdiction are provided with adequate space and facilities for storing solid waste	generator has appropriate waste storage facilities
		The Public Health Act, 2009	It determines appropriate methods for storage of the wastes by mandating local government to make standards to guide the type, size, shape, color and other specifications for waste containers used and approve equipment used for wastes collection	
		Solid Waste regulations, 2009;	It provides obligation to occupier of any premises to use approved receptacles by Council or local government authority	
		The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000	Occupiers of premises are required to provide and maintain to the satisfaction of the Ubungo Municipal Council a receptacle for domestic refuse, of a sufficient size and fitted with good and effective lid	The by law should be updated and enforced to improve existing waste storage facilities
3	Waste segregation /sorting	National Environmental Policy, 2021	Promotes investment in appropriate waste management technologies and this could include waste segregation	Ubungo Municipal Council to use environmentally and socially appropriate technologies in waste management

		<p>Environmental Management Act, 2004;</p>	<p>It requires ensuring the appropriate sorting of waste is made right at the source and in accordance with standards or specifications prescribed by the local government authority concerned.</p>	<p>Ubungo Municipal Council to design a model for waste segregation at source</p>
<p>Public Health Act, 2009</p>	<p>Requires each local government authority to determine appropriate methods for sorting of wastes.</p> <p>Furthermore, it prescribes a requirement for the separation at source different types or kinds of waste</p>			
<p>Solid Waste regulations, 2009</p>	<p>It requires each local government authority to designate specific areas where segregated solid wastes is removed from point of generation and take measures to prevent the mixing up of solid wastes emanating from point of generation</p> <p>In addition, it requires solid waste collection contractors to assist in</p>			

			separation of solid waste at source	
		The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000	There is no any clause with regard to waste segregation	To update/revise the by law to mandate segregating at source
4	Waste collection and transport	Environmental Management Act, 2004;	local government authorities shall prescribe best ways possible for the collection of solid waste from sources and appropriate equipment, times and routes for solid waste collection.	Designate at least one transfer station within Ubungo Municipality and design a model to improve waste collection and transportation
		Public Health Act, 2009	<p>local government authorities shall prescribe best ways possible for the collection of various categories of solid wastes from generation sources</p> <p>local government authority to approve collection times and routes used for waste collection.</p> <p>Local government authorities shall designate transfer stations to serve as collection centers of</p>	

			<p>solid waste and conduct EIA prior to it's establishment</p>	
		<p>Solid Waste regulations, 2009;</p>	<p>Requires an occupier of premises to comply with days and approximate times for collection of waste as shall be specified from time to time by the local government authority</p> <p>It also ensures that any uncollected waste during the days and times for collection prescribed by the local government does not remain in the public</p> <p>It mandates each local government authority shall with respect to its own area of jurisdiction designate solid waste collection centers and transfer stations</p>	
		<p>The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000</p>	<p>There is no any clause specifying requirement for waste transportation equipment</p>	<p>To update/revise the by law to prescribe specific requirement for waste transportation equipment</p>
5	Waste treatment	<p>Environmental Management Act, 2004;</p>	<p>The local government authorities to prescribe appropriate processes</p>	<p>To design a waste management model that use appropriate</p>

		Public Health Act, 2009	and treatment method to reduce or minimize its adverse effects of solid waste to human health and the environment.	processes and treatment method Update/revise the current bylaw to fit the current waste management cost
		Solid Waste regulations, 2009;		
		The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000		
6	Waste recycling	Environmental Management Act, 2004;	Absence of legal framework encouraging recycling	Design a waste management model that facilitate waste recycling
		Public Health Act, 2009		
		Solid Waste regulations, 2009;	The local government authorities shall commission studies and prescribe best ways of recovery and recycling of wastes as part of integrated solid waste management.	
		The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000	Absence of clause encouraging recycling	Update/revise the current bylaw to encourage recycling

7	Waste disposal	Environmental Management Act, 2004;	<p>It provides factors to consider for the local government authorities in choosing the best method of solid waste disposal</p> <p>Furthermore, Under EMA, 2004, The EIA&Audit regulation, 2005 as amended 2018 provides projects category for which it is mandatory to undertake EIA, including construction of municipal solid waste management facilities</p>	Ubungo Municipal Council to ensure establishment of any municipal solid waste disposal facilities be done after EIA
		Public Health Act, 2009	Provides factors (guidance) to consider when the local government authorities select wastes disposal methods and facilities	
		Solid Waste regulations, 2009;	The local government authorities to select or approve designs of sanitary landfill sites investigations; develop respective waste disposal plans; design site preparation and land filling operations in a way that minimizes environment effects	
		The Kinondoni Municipal Council (Waste	Prohibit residents from causing a nuisance and throwing or depositing waste on streets or in	

		Management and Refuse Collection Fees) By-Laws, 2000	open spaces not designated as collection points or disposal facility	
8	Refuse fee/charges	Environmental Management Act, 2004;	Provide obligation to local government authority to arrange ways to recover the cost incurred in collection of the solid waste	Ubungo Municipal Council to prescribe updated RCF to be paid
		Public Health Act, 2009		
		Solid Waste regulations, 2009;	Prescribe fees for applications for relevant licenses and permits	
		The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000	Provides the obligations of residents to pay RCF define where and how collection charges should be paid by the residents, with the respect of amounts for different generators. It also pronounces penalties (fines and/or imprisonment) for defaulters	
9	Inclusive waste management practices	Environmental Management Act, 2004;	Absence of legal framework recognizing informal waste collectors	To identify and register informal waste pickers working in Ubungo Municipality Design a model for integration which will
		Public Health Act, 2009		
		Solid Waste regulations, 2009;		

		The Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) By-Laws, 2000		include formation of waste picker member-based organizations Provide provision of legal framework recognizing informal waste pickers
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CHAPTER TWO

2. THE GOAL AND OBJECTIVES OF THE WASTE MANAGEMENT PLAN

Based on the current situation detailed in chapter one above, the following are the objective of the Waste Management Plan towards improving waste management system in Ubungo Municipality. It provides targets for each specific objective.

Main Objective

To enhance waste management services to ensure protection of environment and human health

Specific Objectives

(i) Formalization of informal solid waste collection service providers

Targets

- Conduct assessment and mapping of informal waste collectors by 2024;
- Develop and implement plan on awareness to at least 50% of informal waste collectors on health and environmental impact of improper hazardous waste management by 2025; and
- Establish legal framework (bylaw) recognizing informal waste collection service and waste picking as formal livelihoods by 2025;

(ii) Enhancement of Solid Waste Management infrastructure;

Targets

- Establish at least three (3) Material Recovery Facilities by 2025;
- Establish at least one (1) transfer station by 2025; and
- Enhance availability of waste management equipment by 2025.

(iii) Promotion and adoption of waste minimization approaches;

Targets

- Develop and implement plan for public awareness and participation on source r education and recycling initiatives to at least 50% of households by 2025;
- Establish at least one source reduction and reuse project by 2025; and
- Promote implementation of reduce, reuse, and recycling (3Rs) approach in at least 50% of the households, industries, institutions and commercial areas by 2025;

(iv) Promotion and adoption of waste segregation at source

Targets

- Develop and implement plan for public awareness and participation on waste segregation at source to at least 50% of households by 2025;

- Establish legal framework (bylaw) encouraging waste segregation at source by 2025;

(v) **Establishment of waste management information system**

Targets

- To build capacity for collection, analysis and access of solid waste management data and statistics for at least 50% of wards by 2025;
- To establish a central information waste management system by 2024.

(vi) **Enhancement of solid waste management financing**

Targets

- Conduct an assessment of the existing financing and waste collection charges systems by 2024; and
- Adopt and implement best option waste management financing systems by 2025

CHAPTER THREE

3.0 AN OVERVIEW OF THE EXISTING SOLID WASTE MANAGEMENT SYSTEM

3.1 Overview of waste management system

Solid waste is generally collected at curbside from households, commercial establishments, institutions, markets, and street sweeping collection points. It is then taken directly to the Pugu- Kinyamwezi dump site.

3.2 Waste collection and transportation

Solid waste collection is carried out by both the municipal council, some private companies, community-based organizations and the informal sector. Currently the municipal council has three tipper trucks, two skip vehicle container and six skip bins for transportation of solid waste from public areas (market, public hospitals and open space) to the current dumpsite.

There private entities (companies, NGOs and CBOs) provide waste collection and transportation services in about 70% of 90 sub ward (mitaa). For the rest, where formal collection services is not available, waste collection service is provided by either informal sector, burying at the site especially in peri urban areas, burning or illegal dumping in streets. The waste collection routes depend on the accessibility of the service areas. The routes are not specific designed mainly because of the informal nature of most parts of the municipality.

3.3 Solid waste disposal

Currently Ubungo Municipality does not have a sanitary landfill so the collected solid waste has to be transported to Pugu-Kinyamwezi dump site which is the only authorized site in Dar es Salaam region.

3.4 Segregation, and sorting practices

Currently there is no waste segregation/separation or sorting system. All waste is collected in a single container before transported to the disposal facility. The current system could be adapted to a four-bin system; 1. Organic waste, 2. recyclables (plastic, papers, metals), 3. Hazardous waste and 4. Others (the remaining fraction). The benefits of this system among others is that, it will ensure each fraction will remain clean from cross-contamination and eventually add value to the particular segregated waste.

3.5 Recyclable collection activities

There are number of recyclables collection centers. The recyclable collected are market demand driven as the results the existing collection centers are of plastic, papers and metals although there is a large proportion of soft nylon and textiles in the waste and since there is no market for these materials, they end up in the dump sites, burned or buried at home. The existing centers are owned by individuals and some of them are

located far from the main road which increases transportation costs and causes transportation difficulties during the rainy season.

Currently there six recyclable processing facilities located in Ubungo municipality estimated to process more than 150 tones of recyclables each week. Table 3.1 presents data on the quantities of recyclables processed by these facilities.

Table 3.1: Solid waste recycling facilities

S/n	Name	Input material	Output produce	Tones processed/ week	Ward
1	TASIPA	Poly sacks	Polybags		Ubungo
2	IKALE Waste Plastic Recycling Material	PET&HDPE	Plastic pellets	20 - 35	Makuburi
3	HEGJI	Poly sacks	Polysacks	30 - 70	Ubungo
4	MKUMBARA Co. Ltd	PET & HDPE	Plastic pellets	20 - 50	Mabibo
5	NDABIHEYO Family Co. Ltd	Poly sack PET	Plastic pellets Plastic bags	30 - 50	Kwembe
6	Xi Li	PET	Strip	60	Ubungo

3.6 Challenges facing waste management

Challenges associated with solid waste management in Ubungo municipality includes: 1) long distance and traffic congestion to the official disposal site whereby the round trip averages 80 km, 2) unwillingness of the community to pay for refuse collection fees, 3) informal settlements and informal business premises which make it difficult to carry out collection and transportation of the solid waste 4) lack of suitable sanitary landfill, 5) insufficient/limited SWM budget, 6) insufficient solid waste collection and transportation equipment, 6) poor road infrastructure makes the transportation difficult and 7). No waste segregation which in turn lower the quality and value of recyclables

CHAPTER FOUR

4.0 SOLID WASTE MANAGEMENT ALTERNATIVES

This chapter discusses waste management alternative existing and recommended options. Furthermore, in order to harness the potential amount of recyclables in Ubungo it provide explanation on possibilities of establishing Material Recovery facilities, MRFs

Existing Waste management system

4.1.1 Collection from source to disposal

This is the primitive way of waste management. Though it is most practiced in Ubungo, it is high in fuel consumption as well as time consuming. In addition, it requires high manpower. It is performed in all areas; formal and informal settlement, institutions and commercial.

4.1.2 Collection – Collection Point – Disposal

This method is mostly used in public areas such as markets and it is highly dependence on skip loader technology which increases risk of pollution in case of breakdown. Among other issues, it is difficult to collect RCF and recognized to be source of pollution in some areas.

Other possible waste management system

4.2.1 Collection - Transfer Station – Disposal

Long distances between the waste generation areas and the disposal site (up to 80km round trip) in Ubungo necessitate the need for a system of transfer stations. One transfer station within Ubungo Municipality could be located strategically and feeding specialized recovery facilities would provide great opportunities for waste diversion from landfill, cost optimization and expansion of collection services to areas currently not served. This option is considered as one of the systems to be employed.

4.2.2 Collection – MRF – Disposal

If cost recovery is implemented as part of an improved waste management system, it will further stimulate opportunities to divert waste from landfill and to reduce gate fees/operational costs and that of the disposal site and of the collection/transfer system. The waste recovery system consists of a number of facilities dealing with a wide range of waste materials (plastics, paper, metals, etc.).

4.2.3 Collection – Recycling Facilities

This system involves taking waste that has already been separated to a recycling facility.

4.3 Waste management system and recommended options

Based on current situation in Ubungo Municipality, the following are recommended options to be considered in improving waste management system

Table 4.0: Existing management system and recommended options

Area	Existing Collection Option	Challenges	Recommended Option
Formal Settlement (High, medium, low)	Collection from source to Disposal	-High consumption of fuel -Time consuming -High Manpower	-Collection - Transfer Station – Disposal -Collection – MRF – Disposal
	Collection – Collection Point – Disposal	-Highly polluting in existing area -Difficult to collect solid waste charges -Highly dependence on skip loader technology which increases risk of pollution in case of breakdown	
Informal Settlement	Collection – Collection Point – Disposal	-Highly polluting in existing area -Difficult to collect solid waste charges -Highly dependence on skip loader technology which increases risk of pollution in case of breakdown - High running cost of skip loader which carry small amount of waste.	-Collection – MRF – Disposal
	Collection from source - Disposal	-High consumption of fuel -Time consuming -High Manpower	
Commercial	Collection from source - Disposal	-High consumption of fuel -Time consuming -High Manpower -It works on specific time	-Collection – Collection Point – Disposal
Markets	Collection – Collection Point – Disposal	-Highly polluting in existing area -Difficult to collect solid waste charges -Highly dependence on skip loader technology which increases risk of pollution in case of breakdown -Space for establishment of collecting point	-Collection – Collection Point – Disposal
Institutional and Offices	Collection from source - Disposal	-High consumption of fuel -Time consuming -High Manpower -It works on specific time	-Collection – Collection Point – Disposal

4.4 Establishment of Material Recovery Facilities (MRF)

In order to harness the potential amount of recyclables in Ubungo those recyclables, a network of small scale MRFs can be established. Organic waste treatment facility (e.g. small scale anaerobic digestion, home composting, black-soldier flies, etc) is needed to recover the organic waste generated. It can be said that out of 50% of those amounts can be realistically recovered if investment in collection and transportation systems are put in place together with proper source separation execution.

A strong collaboration between the formal and informal sector in Ubungo Municipality is required to maximize efforts in the area of waste recovery. Construction of MRFs and operation of the new facilities in an association or alliance of recyclers and waste management operators would give the industry sector a stronger voice, and incentivize coordinated initiatives and investments from private sector. Due to the relatively low maturity of MRFs in Dar es Salaam and Tanzania at large, it is obvious that small scale, low tech, flexible, modular systems are adopted. This way, the facilities can be adapted and grow together with the market and demand for secondary materials.

CHAPTER FIVE

SOLID WASTE MANAGEMENT LEGISLATION TO BE DEVELOPED/REVIEWED

Since Ubungo Municipal Council is a local government authority, the responsibilities lies in its area of jurisdiction. The Local Government (Urban Authorities) Acts Cap 288 of Revised Edition 2002 provides the provisions to local government authorities to make subsidiary legislation (by-laws) relevant to any issue including waste management hence the existing municipal by law is hereby recommended to be reviewed to incorporate the following;

- i.** Recognizing informal waste pickers as important component in waste management system
- ii.** To mandate waste segregating at source
- iii.** Update RCF to fit the current waste management cost
- iv.** Prescribe specific requirement for waste transportation equipment
- v.** To encourage recycling
- vi.** Establish Municipal information waste management system

CHAPTER SIX

6.0 IMPLEMENTATION PLAN

Based on objectives stipulated in chapter two above, the following table provides implementation plan towards improving waste management system in Ubungo Municipality

Objective 1: Formalization of informal solid waste collection service providers				
Target	Activity	Output	Timeframe	Budget (Tsh)
Conduct assessment and mapping of informal waste collectors by 2024	Identify and register informal waste collectors and waste pickers	Number of informal waste collectors and waste pickers registered	3 months	120,000,000
Develop and implement plan on awareness to at least 50% of informal waste collectors on health and environmental impact of improper hazardous waste management by 2025	Conduct environmental health education on impact of improper management of hazardous waste management to waste collectors	Number of informal waste collectors/pickers sensitized	6 months	30,000,000
Establish legal framework (bylaw) recognizing informal waste collection service and waste picking as formal livelihoods by 2025	Update existing bylaw to recognize informal waste pickers	Bylaw recognizing informal waste pickers	2 years	25,000,000
Sub Total				175,000,000
Objective 2: Enhancement of Solid Waste Management infrastructure				
Target	Activity	Output	Timeframe	Budget (Tsh)
	Securing Land	Secured land		

Establish at least three (3) Material Recovery Facilities by 2025	Designing of MRF	Approved MRF architectural and structural drawings	3 years	600,000,000
	Conduct EIA	EIA certificate		
	Construction of MRF	Constructed MRF		
Establish one (1) transfer station by 2025	Acquire Land	Land acquired	3 years	3,000,000,000
	Designing of transfer station	Approved Transfer Station architectural and structural drawings		
	EIA	Secured EIA certificate		
	Construction of transfer station	Constructed Transfer Station		
Enhance availability of waste management equipment by 2025	Purchase Vehicles and machines for collection and transportation of machines	Waste Management equipment (Vehicles and machines) purchased	3 years	4,500,000,000
	Purchase of two supervision vehicle	Supervision vehicles purchased	3 years	240,000,000
Sub Total				8,340,000,000
Objective 3: Promotion and adoption of waste minimization approaches				
Target	Activity	Output	Timeframe	Budget (Tsh)
Develop and implement plan for public awareness and participation on source reduction and recycling initiatives to at least 50% of households by 2025	Conduct meetings, workshop, weekly radio and TV program on solid waste minimization campaign	Number of meetings, workshop, radio and TV shows	1 year	60,000,000
Establish at least one source reduction and	Securing Land	Secured land	3 years	250,000,000
	Designing of MRF	Approved architectural and structural drawings		

reuse center by 2025	Establishing one source reduction and reuse center	Source reduction center and reuse established		
Promote implementation of Reduce, Reuse, and recycling (3Rs) approach in at least 50% of the households, industries, institutions and commercial areas by 2025	Conduct sensitization meetings at community level on important of applying 3Rs approaches	Sensitization meetings at community level conducted	3 years	50,000,000
Sub Total				360,000,000
Objective 4: Promotion and adoption of waste segregation at source				
Target	Activity	Output	Timeframe	Budget (Tsh)
Develop and implement plan for public awareness and participation on waste segregation at source to at least 50% of household by 2025	Conduct meetings, workshop, weekly radio and TV program on solid waste segregation at source	Meetings, workshop, radio and TV shows conducted	1 year	120,000,000
Establish legal framework (bylaw) encouraging waste segregation at source by 2025;	Update existing bylaw to mandating waste segregation at source	Bylaw mandating waste segregation at source	3 years	35,000,000
Sub Total				155,000,000
Objective 5: Establishment of waste management information system				
Target	Activity	Output	Timeframe	Budget (Tsh)
To build capacity for collection, analysis and access of solid waste management	Conduct meetings, workshop and training on solid waste management	Meetings, workshop and training conducted	1 year	30,000,000

data and statistics for at least 50% of wards by 2025	data and statistics			
To establish a central (Municipal) information waste management system by 2024	Establishing and launching of Municipal information waste management system	Municipal information waste management system launched	1 year	55,000,000
Sub Total				85,000,000
Objective 6: Enhancement of solid waste management financing				
Target	Activity	Output	Timeframe	Budget (Tsh)
Conduct an assessment of the existing financing and waste collection charges system by 2024	Assessment of the existing financing and waste collection charges system	Assessment report on financing and waste collection charges	1 year	60,000,000
Establish legal framework (bylaw) best option waste management financing system by 2024	Update existing bylaw to incorporate best waste management financing system	Bylaw incorporated with best waste management financing system	2 years	30,000,000
Adopt and implement best option waste management financing systems by 2025	Implement best option waste management financing systems	Best option waste management financing systems implemented	1 year	40,000,000
Sub Total				130,000,000
Grand Total				9,245,000,000