

UNITED REPUBLIC OF TANZANIA



VICE PRESIDENT'S OFFICE

**INVENTORY OF THE WASTE OPEN BURNING IN ARUSHA, TANGA
AND DAR ES SALAAM CITIES**

DECEMBER 2018

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1.0 INTRODUCTION

1.1 Background

Waste management is a widespread and growing challenge in the urban area and has significant deleterious effects on the quality of our environment. The uncontrolled dumping and improper waste handling cause a variety of problems including, attracting disease causing vectors, odours, fires and visual impacts. In addition, waste open burning in our environment has also being a challenge due to its effects of increases greenhouse gas emissions which contribute to climate change.

In order to have the current information on waste open burning in Tanzania, a team of experts were formed to carry out the national inventory of the waste open burning in the six cities of Arusha, Tanga, Dar es Salaam, Mwanza, Dodoma and Mbeya. The information from these six big cities will represent a national status of waste open burning practices which in turn will be used to inform one of the sources of the uPOPs releases in the country.

1.2 Objectives of the site visit

The overall objective of carrying out national inventory was to collect information related to feasibility to reduce open waste burning practices in the municipalities/cities. Specifically site visit intended to collect information related to location of dump sites/landfills, hotspots areas for open burning of wastes, existing waste management system and future plans, population served by waste collection systems, type and amount of wastes generated and solid waste final disposal among others.

2.0 APPROACH AND METHODS

2.1 Appointment of the Team of Experts

The Permanent Secretary, Vice President's Office appointed a team of three experts to undertake the assignment in Arusha, Tanga and Dar Es Salaam. The team drawn from the Vice President's Office (VPO), President's Office Regional Administration and Local Government (PORALG) and National Environment Management Council (NEMC) (refer **Annex I** for the name of the experts).

2.2 Site visit arrangement

The team of experts visited the three cities of Arusha, Tanga and Dar es Salaam from 12 - 23 December 2018.

The team consulted Regional Administrative Secretaries (RASs) and City/Municipal Directors, Waste Management Department staff. Landfill/Dump Managers, Waste Collectors as well as the scavengers found at the dumpsites in the respective cities and municipalities. During consultation, the team had the opportunity to consult technical officers whose list is presented in **Annex II**. The itinerary for the sites visit is presented in **Annex III**.

3.0 FINDINGS AND OBSERVATIONS

3.1 Existing situation

3.1.1 Arusha City Council (ACC)

Arusha city is located on the northern part of Tanzania has an estimated population of 416,442 according to census 2012. The total land area is about 272 km² and comprised of 19 wards. The city generates 550 tons per day and the amount collected is about 446 tons per day. This is equivalent to approximately 81% collection efficiency of the waste collection services covering 10 collection points in 9 wards and the CBD. The composition of solid waste includes, garden and wood waste representing 30%, food waste 37%, Papers 11%, plastic 7%, glass 4%, metal and tin 1%, textiles 2% and ash 8%. The main sources of solid waste are from: Residential sources (Households), Commercial sources (Hotels, restaurants, market places, shops, and bus stops), Institutional sources (Schools, Hospitals, colleges, offices and banks), and Industrial premises (light and heavy industries). In this composition at least 20 percent of the total waste disposed are retrieved for re-use and recycling.

The ACC provides kerbside collection service of waste and have also contracted out the private/CBOs service providers (16 contractors and 6 CBOs) to serve 22 wards. All private service providers are offered formal contracts through a tendering process. In case of emergency whereby a service provider has failed to fulfill their duty due to reasonable causes such as unforeseen breakdown of collection vehicles, the ACC intervenes and provide the required service. ACC provides collection services to two wards and to all market areas and institutions such as schools and hospitals which are within the CBD. The existing municipal solid waste management practice begins from point of generation at source, collection points (primary and secondary) and transportation to designated disposal site (Muriet Landfill). In total, ACC has allocated about 10 secondary collection points whereby 4 are open collection points at Elerai, Mbauda, Mapunda and Muriet markets whilst the remaining 6 have skip buckets placed

on skip pads. Waste from these secondary collection points is transported to the disposal site by tipper trucks and skip loader trucks. The official landfill (Muriet) is located about 6 KM from the city centre and on average it receive about 50 trips of solid waste trucks in a day.

The ACC owns 3 side loaders, 2 tipper trucks, 2 side loaders, 1 tipper truck, 3 skip loaders with 16 skip buckets and 1 wheel loader mainly geared for collection and transportation of waste from the city.



Muriet Landfill Weight Bridge – Arusha City Council



Weigh bridge office for data management

There are 20 solid waste services providers in ACC as shown in the table below:-

S/Nr	City Council and Private Service Providers	Wards Served
1	City council	Baraa, Moivaro and part of Moshono
2	Lemali Investment LTD	Levolosi and Kaloleni
3	Family connection group	Unga LTD
4	Sombetini youth sanitation	Murriet
5	Two MK & GM CO. LTD	Lemara
6	Bujumpola group	Sokon 1
7	Khadija Co LTD	Sakina
8	Olasiti Sanitation	Olasiti
9	Mtarakwani	Themi
10	GFM Holding Group	Moshono
11	Olmokea group	Sinoni
12	Osunyai Group	Osunyai
13	Atjodam Investment	Kimandolu

14	Arusha Travel Agency	Kati and Sekei
15	Longdong Mazingira	Olorien
16	Samanga Group	Elerai
17	ALM Company	Engutoto
18	Community Group	Ngarenaro
19	Sombetini youth group	Murriet
20	CBOs (Jamuhuri, Alinyanya, Sanare, Kati, Ndurovoi and Darajani groups)	Daraja Mbili

Materials recovery / Recycling

Material recovery practised in Arusha city is done by primary and secondary waste collectors (individual waste pickers and informal groups) within the City. The informal group picks such materials from market places, litter bins (mainly at the CBD, and at Muriet Landfill. The team was informed that, the individual waste pickers and informal groups are about 400 who visit the Muriet landfill in day. Materials picked at Muriet Landfill include plastic bottles and nylon; metals; sacks and bags; vegetables; textiles; food waste; mattresses and; tyres. The quantity of materials could not be established as none of the pickers were ready to share information on how much they actually earn from this activity.



Scavengers at work - Muriet Landfill Arusha City



Site preparation for top soil backfilling

The ACC owns 7 vehicles which are 3 side loaders and 2 tipper trucks. During this survey 1 tipper truck was found to be defective. ACC also owns 2 side loaders, 1 tipper

truck, 3 skip loaders with 16 skip buckets and 1 wheel loader mainly geared for collection and transportation of waste from the city to the landfill.



Landfill preparation (new cell ready to receive waste)

3.1.2 Tanga City Council

The city lies between 3810' East & 515' South and between 0 and 17 meters above sea level, It is bordered by Muheza District on the Western part, on the eastern part and on the Northern part is bordered by the Indian Ocean. The city has an Area of 600 square km² of which 62 square km² is covered by water bodies. It has an estimated population of 313,625 with an annual growth rate of about 1.89% and household size of 4.4 (as projected by Census reports of 2012). Economic activities in Tanga city includes agriculture, livestock keeping, fishing, tourism, and industrial development.

Quantity of solid waste generated stand at 217 t/d and only 190 t/d are disposed at Mwang'ombe dumpsite which is located about 5 KM from the city centre. Mwang'ombe dumpsite is the only official dumpsite which receive all solid waste collected from various sources of the city. The waste are disposed on the surface of the dumping site in an indiscriminate manner without any segregation or pre-processing. This situation attracts animals looking for edible stuffs and is a good media for microorganisms and insects growth. Animals observed feeding on the waste at dumpsite include dogs, cats and goats. it was also informed that, some part of the city especially remote areas are

not covered with waste management service and the waste from these areas are left on the environment or burned in open places within residential areas.

The waste collection services are done solely by Tanga City Council (TCC) and consists of two phases, primary collection and secondary collection. TCC is responsible for secondary waste collection that includes removing waste from the collection points, then transportation of the same waste up to the final disposal site. Residents are responsible for bringing their waste to the designated waste collection points where containers or collection bays are located. The TCC own 4 tipper trucks, 3 skips, 29 skip buckets and 3 tractors for primary and secondary collection of waste and transportation of waste from the city to the dumpsite. To increase the city efficient in solid waste management services, It was informed that, from next year (2019), the city is planning to engage the private service providers to provide solid waste management services in the city.

The city has both small and large industries that produces hazardous and non-hazardous waste. In practice, there is no site which is authorized for disposal of industrial waste in the city, therefore, some of the Industrial solid wastes are disposed of in an unscientific manner, often surreptitiously on the Mwang'ombe waste disposal site.



Existing situation at Mwangombe Dumpsite – Tanga City Council



Team of experts listening from the TCC official on the daily operations at Mwang'ombe Dumpsite

Materials recovery / Recycling

The recyclable wastes are segregated manually by waste collectors and individual waste material-pickers around the City. The waste pickers (scavengers) pick recyclables from market places, dustbins, and dumping sites, and sort them before selling off. It was observed that majority of scavengers are located at the dumping places. However, these recyclables are not segregated to the maximum extent.

Segregation of recyclable waste at source is not practiced at the source of generation. At least 15 to 20 percent of the total waste could be conveniently segregated at its source for recycling, if the practice of segregation of waste at source were adopted. Because no segregation of waste at its source takes place, domestic waste of all types, infectious waste from medical facilities, and even hazardous industrial waste are deposited at dumpsites that is actually intended for normal waste. The waste deposited at such sites is neither spread nor compacted. It is left uncovered to degrade under natural conditions. The sites generate leachate and thus pollute surrounding water bodies, contaminate the air with methane emissions and uncontrolled burning, and create serious health and environmental problems for the city as a whole and, more particularly, for the poor people living in the vicinity of the dumping ground.



Waste materials recovery for recycling at Mwang'ombe Dumpsite



Retrieved waste from the dumpsite for re - use /recycling



Scavengers (weman) picking some recyclable materials at Mwang'ombe dumpsite

3.1.3 Dar es Salaam City Council

Dar es Salaam City is located in the eastern part of Tanzania mainland between latitudes 6°36' and 7°0' South and longitudes 39°0 and 33°33' East. It is bounded by the Indian Ocean on the east and the Coast Region on the other sides. Dar es Salaam City is the economic hub of Tanzania with a population of 4,364,541 (official 2012 census). There are six Local Government Authorities which are the City Council and the five municipal councils of Ilala, Kinondoni, Temeke, Ubungo and Kigamboni.

The main sources of solid waste in the Dar es Salaam city are households, commercial, industries and markets activities. The waste composition comprises the following, kitchen (39%), Grass (10%), papers (8%), Ceramic and stone (6%), Metals (5%), Plastics (10%), Glass (2%), Leather and Rubber (6%), Textiles (5%) and others (3%). It is estimated that more than 50 percent of wastes generated are from households and largely composed of remains of foods and vegetables which contribute about 60 percent of the waste generated per day.

Statistics shows that, the city of Dar Es Salaam generate about 4,649 tonnes of solid waste per day, of which only 58 per cent is disposed of in Pugu - Kinyamwezi dumpsite. This dumpsite is located about 30 km from the city centre and is the only official dumpsite which receive all collected solid wastes from the city. The solid waste

collection services are done by both municipals and private service providers which own 8 and 130 trucks respectively. In a day a dumpsite receive an average of 150 trips of trucks from five municipalities. Before ferrying waste for final disposal, solid waste are placed in collection points located in various places in the city.

The DCC manage and supervise all operations at dumpsite for 24 hours while the five municipals provides waste collection service in collaboration with private / CBOs service providers. The private service providers including private companies and CBOs are offered formal contracts with respective municipality through a tendering process. The existing municipal solid waste management begins from point of generation at source, primary and secondary collection points and transportation to designated disposal site. The waste management activity within the city involve individuals from households, municipality and private companies employees working at the collection points and dumpsite also there are some resident group of waste pickers (scavengers) about 600 to 700 who live in terrible conditions on the site used to sort the waste. It is estimated that about 9 to 10 percent of the waste disposed are retrieved from the waste stream at the dumpsite.

To date, DCC has neither been able to secure appropriate sites for solid waste disposal nor properly manage existing disposal sites. Since 1961, the DCC has used over six 'dump sites' and all of them were located adjacent to residential areas, including Tabata 1961-1991, Mbagala 1992, Vingunguti 1992-2001, Mtoni 2001-2007, Kigogo 2007-2010 and Pugu-Kinyamwezi 2007- to date. The dumpsite is located about 100m from a residential area and it is poorly managed. Informal dumpsites are also found in various parts of the city, including along river valleys.



Dumpsite surrounded by residential area at Pugu Kinyamwezi

In most healthcare facilities, clinical wastes are not properly managed due to inadequate and inappropriate refuse storage facilities, lack of refuse collection services, improper disposal methods as well as lack of protective gears. Some of the collected clinical wastes are crudely dumped at the city waste disposal site leading into both public health and environmental hazards. The common used methods of clinical waste disposal are on-site dumping, open pit dumping (burning and burying) and incineration. Open pit burning leads to air pollution whereas burying of medical waste can cause ground water pollution.



Pugu Kinyamwezi Dumpsite





Waste Open Burning at Pugu Kinyamwezi Dumpsite



Meeting with dumpsite officials – Pugu Kinyamwezi

Materials recovery / Recycling

The recycling activities take place informally at point of generation, collection, illegal dump sites and final disposal sites and is done at a small scale and in a disorganized

manner. The recycled materials retrieved from the dumpsite is done haphazardly and according to the needs of the market. Those materials include paper, textile materials, metal, plastics, sacks, bags and glass with scrap metals and plastic bottles being the most recycled. The quantity of materials could not be established as none of the waste pickers were ready to volunteer information on how much they actually earn from this activity.



Scavengers at work – Pugu Kinyamwezi dumpsite



Some of the Waste Recycling Industries in Dar es Salaam City

Nr	Name Of The Industry	Location	Type of Waste Collected	Amount of Waste Collected / Day (Tons)	Type of Raw Material/Products
1.	Cheng Xing Investment Co. Ltd	Mbezi Light Industrial Area Makonde	Plastic Bottles, Plastic Bottle Labels	5	Cuts Of Plastics for export
2.	Yehehe Investment Co. Ltd	Salasala Magengeni	Plastic Nylon	5	Cuts Of Plastics for export
3.	Changyou Recycling Plastic Co. Ltd	Mikocheni, Light Industrial Area	Plastic Nylon	1	Plastic Pellets/Granulles For Selling To Local Industries
4.	Shun Tao Investmemt Co. Ltd	Mikocheni, Light Industrial Area	Plastic. Nylon	1	Cuts Of Plastics For Export
5.	Mmi Steel Mills Co. Ltd	Mikocheni Light Industrial Area	Metal Scrapers	40	Building Metal Bars
6.	Jiurong Products Co. Ltd	Tegeta, Wazo Hill Light Industrial Area	Pet Plastics	2	Cuts Of Plastics For Export
7.	Wenxing Plastic Cement Investment Co. Ltd	Tegeta, Wazo Hill Light Industrial Area	Pet Plastics	2	Cuts Of Plastics For Export
8.	Gaia Eco Solution (Tz)	Vingunguti	Batteries	10	Lead Processing only for

	Ltd	Industrial Area			Export Hard Plastics For Manufacturing of Mats And Carpets
9.	Taspa Limited	Nhc Ubungo	Bags	0.25	Raw Materials For Industries
10.	Samaki Plastic	Mabibo Ubungo	Sachets	5	Sachets (50 & 100 Kg)
11.	Ok Plastic Company Limited	Miembeni Vingunguti Ilala	Car Batteries	10	Lead Processing only for Export Hard Plastics for manufacturing of Mats And Carpets
12.	Tamour Industries Ltd	Miembeni Vingunguti Ilala	Sandals/Slippers	0.3	Soles For Shoes
13.	Anbang International Investment Ltd	Sukita Buguruni Ilala	Plastic Bags	10	Sachets (25&50 Kg)
14.	Tanzania Rudar – Co. Ltd	Kichangani Kisarawe Ii Kigamboni	Hard Plastic	5	Plastic Ropes, Conduit Pipes , Clean Water Supply Pipes
15.	Colourful Industry Limited – Mbagala	Kizinga Mbagala Temeke	Plastic Bags	5	Plastic Raw Materials
16.	Finidi Enterprises	Mangaya Mbagala Temeke	Hard Plastic	10	Raw Materials For Manufacturing Mats, Carperts, Buckets, Basin,

		Plot No. 185			Pvc & Plastic Bags
17.	Hua Yang Gang	Mbagala Mission Temeke	Water Pipes (Pvc), Conduit Pipes, Soles For Women Shoes & Electric Cables (Reject)	1.5	Soles For Sandals
18.	S. B. Plastics Limited	Banda La Ngozi Chang'ombe	Pet Bottles (Plastic Bottles)	10 - 15	Cuts Of Plastics For Export
19.	Colourful Industry Limited – Buza	Mashine Ya Maji - Buza Mbagala	Plastic Bags	10	Mats, Cleaning Brushes
20.	W. L. G. Investment Co. Limited	Mtoni Mtongani – Temeke	Plastic Bottles	10	Cuts Of Plastics For Export
21.	Teco Plastic Company	Kichangani Kisarawe Ii	Plastic (Ppe)	1	Mats
22.	A. M Steel & Iron Mills Ltd	Industrial Area Mbagala	Metal Scrapers	20	Metal Bars For Building
23.	Nestling Company Limited	Kiwalani Minazi Mirefu	Nylon & Plastic Bags	1	Cuts Of Plastics For Export
24.	Seif Complex Company Limited	Msongola Ilala	Hard Plastic/ Plastic Botlles	40	Plastic Dishes, Chairs, Tables And Plumbing Pipes
25.	Jiafeng Jiang	External	Plastic Bottles	4	Cuts Of Plastics For

	Company Ltd	Ubungo			Export
26.	Metro Steel	Kiwalani Industrial Area Ilala	Metal Scrapers	6	Metal Bars For Building
27.	Nestlin Company Ltd	Mtaa Wa Tengeneza Mwanagati Ilala	Plastic Bags, Plastic Bottles Hard Plastics	5	Plastic Pellets/Granulles For Selling To Local Industries
28.	Kisoka Company Ltd	Ubungo External	Hard Plastics	5	Plastic Pellets/Granulles For Selling To Local Industries
29.	Kisoka Company Ltd	Ubungo Kibangu	Hard Plastic	5	Plastic Pellets/Granulles For Selling To Local Industries
30.	Kikuza Company Ltd	Ilala	Market Wastes And Vegetable Wastes	0.4	Composting
31.	Dolin Company Limited	Migombani Minazi Mirefu Ilala	Old Shoes		Soles For Sandals

4.0 Conclusion

Waste open burning of waste in all three cities surveyed reveals that, two cities of Tanga and Dar es Salaam their final disposal sites are open dumping (crude dumping) and are at the vicinity of the residential areas. It is only Arusha which has a controlled landfill.

Furthermore, solid waste generated in a day for Arusha, Tanga and Dar es Salaam are about 550, 217 and 4,649 tonnes respectively and at least 40% are left un attended and ends up in the environment or burned at homes. It was also revealed that, currently solid waste management services for Arusha and Dar es Salaam cities are done by responsible city authorities in collaboration with private service providers

(companies) while for Tanga city, this services are provided by only city responsible authority. Further, It was noted that, the two dumpsites of Pugu Kinyamwezi (Dar Es Salaam) and Mwang'ombe (Tanga) are experiences of open wastes burning challenges at different frequencies. These tendency of uncontrolled open burning of the mixed waste considered to be one of the main sources of UPOPs release to the environment.

5.0 Recommendations

The report therefore, recommends the following points of action:-

- i . To raise public awareness on solid waste management especially residents at the periphery in order to reduce open burning practices; and
- ii. To undertake further inventory covering all dumpsites country-wide

ANNEXES

ANNEX I: LIST OF EXPERTS INVOLVED IN THE SITE VISIT

Name	Institution	Designation
1. Eng. Onespholy Kamukuru	Vice President's Office	Team Leader
2. Mr. Stanford Kway	President's Office Regional Administration and Local Government	Member
3. Rogate Enock	NEMC	Member

ANNEX II: LIST OF STAKEHOLDERS CONSULTED

Name	Designation
A. ARUSHA REGIONAL ADMINISTRATION SECRETARY OFFICE	
1. Hergency Chitukuro	Ag. RAS
2. Flora Assey	Regional Environmental Management Expert
B. ARUSHA CITY COUNCIL	
3. Sigfrid Mbuya	Environmental Management Officer - ACC
4. Michael Ndaisaba	Environmental Management Officer- ACC
5. Marko Chacha	Landfill Manager
6. David Mwaisabula	Data Entry officer (Weight Bridge Controller)
C. TANGA ADMINISTRATIVE SECRETARY OFFICE	
7. Mrs. Monica Kinala	Ag. RAS
8. Hassan Juma	Assistant Regional Administrative Secretary, Economic and Productive Sector
D. TANGA CITY COUNCIL	
9. Kizito Nkwabi	City Environmental and sanitation Officer - TCC
10. Zamoyoni Mohamed	City Environmental Management Officer- TCC
11. Mariam Ismail	City Environmental Management Officer- TCC
12. Juma Haziota	Dump site Supervisor- TCC
E. DAR ES SALAAM ADMINISTRATIVE SECRETARY OFFICE	
13. Churchil Mjuni	Ag. RAS
F. DAR ES SALAAM CITY COUNCIL	
14. Cleopa Shadrack	Head Waste Management Department - DCC
15. Richard Kishere	Dumpsite Manager - DCC
16. Abdon Mapunda	Environmental Management Expert - DCC

ANNEX III: ITINERARY FOR THE SITE VISIT

DATE	ACTIVITY	RESPONSIBLE	
11 December 2018	Departure to Arusha	Team of Experts	
12 December 2018	<ul style="list-style-type: none"> • Courtesy call with the Regional Administration Secretary Arusha 		
	<ul style="list-style-type: none"> • Discussion with officials at the RAS Office 		
	<ul style="list-style-type: none"> • Courtesy call with City Director – Arusha City Council 		
	<ul style="list-style-type: none"> • Discussion and document review with Waste Management Department official - City Office 		
13-14 December 2018	<ul style="list-style-type: none"> • Land fill visit and discussion with landfill officials, waste collector contractors and scavengers - Muriet Land fill 	Landfill Manager – Arusha City Council	
15 December 2018	<ul style="list-style-type: none"> • Departure to Tanga 	Team of Experts and Dump site officials	
17 December 2018	<ul style="list-style-type: none"> • Courtesy call with RAS-Tanga • Discussion with officials at the RAS Office • Courtesy call with City Director – Tanga City Council • Discussion and document review with Waste Management Department officials -City Office 		
	<ul style="list-style-type: none"> • Dump site visit and discussion with dump site officials, waste collector contractors and scavengers – Mwangombe Dump site 		
			<ul style="list-style-type: none"> • Departure to Dar Es Salaam
	20 December 2018		<ul style="list-style-type: none"> • Courtesy call with RAS-Dar Es Salaam • Discussion with officials at the RAS Office • Courtesy call with City Director –Dar Es Salaam City Council • Discussion and document review with Waste Management

DATE	ACTIVITY	RESPONSIBLE
	Department officials -City Office	
21 - 22 December 2018	<ul style="list-style-type: none"> • Dump site visit and discussion with dump site officials, waste collector contractors and scavengers – Pugu Kinyamwezi Dump site 	Team of Experts and Dump site officials
24 December 2018	<ul style="list-style-type: none"> • Departure to Dodoma 	Team of Experts