

Social Impact of Solid Waste Temporary Storage Area in Addis Ababa City

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Abstract— Introduce innovative approaches for waste management that are cost effective and efficient. These include door-to-door collection system in Addis Ababa, plastic collection and recycling systems with community and private sector participation. Effective solid waste management was more than just cleaning the streets or collecting waste and dumping of the collected waste, as practiced by most municipalities or the city part. It required efficient combination of various components of solid waste management in an integrated manner. Integrated solid waste management was therefore a process of optimizing the waste management system as a whole with application of a variety of suitable technologies. Waste collection was generally considered to be the most important component of any waste management system because it was the most expensive and visible part of the system. Therefore, properly designed and executed waste collection systems can be resulted in significant savings and reduction in environmental and public health risks. The following issues generally need to be considered in designing a waste collection system: Containerization and on-site storage of waste, Source separation, Collection mechanism (roadside collection, door-to-door collection, communal containers, on-time collection etc.), Cleansing of streets and other public places, Time of collection, Type of vehicles used for collection, Frequency of collection, Route planning, No. of staff used for collection, Special collection for bulk waste generators, Separate collection for special waste such as medical waste and household hazardous waste. These best practices demonstrate that local initiatives with extensive participation of local communities and private sector can go a long way in addressing the problem of solid waste management in urban areas.

Keywords— Waste generators, waste, effective and efficient waste management.

I. INTRODUCTION

Municipal Solid Waste Management constituted one of the most crucial health and environmental problems facing governments of African cities (Achankeng, 2003). This was because, even though 7 African cities are using 20-50% of their budget in solid waste management, only 20-80% of the waste was collected. The uncollected or illegally dumped wastes constitute a disaster for human health and environmental degradation. According to Tsiboe and Marbell (2004). The problem of waste in urban cities of Africa can be better understood in the light of recent rapid urbanization worldwide and political pressures from outside Africa to deal with the governance and management problems related to waste (urbanization creates the waste and market forces serves as to the waste problem). Whilst urbanization was not a new phenomenon in Africa, the current rate of uncontrolled and unplanned urbanization in Africa has given rise to a huge amount of solid wastes being produced, so much so that these wastes have long outstripped the capacity of city authorities to collect and dispose of them safely and efficiently (Wetherel, 2003).

Addis Ababa, whose population grew from about 3.1 million in the year 2007 to 5.1 million in 2009, was one of the fastest growing cities in Africa. Its current population was estimated to be exceeding 5.1 million and, apart from its sheer population size, the city was playing significant economic, social and cultural roles both at the national and international levels. Accordingly, the City has significant contribution to the national GDP owing to the concentration of various urban-based service orientated and manufacturing activities. The city, which was the Federal Capital, accounts for almost a quarter of the national urban population that was a mosaic of Ethiopia's multi-ethnic and multi-cultural identities.

On the other hand, being the home of the African Union, the Economic Commission for Africa, several specialized UN agencies and other international organizations and more than one hundred diplomatic missions, it was among the few most culturally and ethnically diverse cities in the world.

The city's rapid population and economic growth, coupled with discernible changes in lifestyles and consumption patterns of its residents and visitors that are associated with globalization and improved information and communication technology, contribute to dynamic changes in both the quantity and composition of solid waste to be generated in the city. In particular, the rapid growth of industry, trade and services including the recent proliferation of ICT and expansion of mobile phones has accelerated the generation of industrial, hazardous/toxic and Electronic Waste (EW). Yet, the city did not have a comprehensive, integrated and sustainable solid waste management plan to effectively respond to the complexities associated with such dynamics.

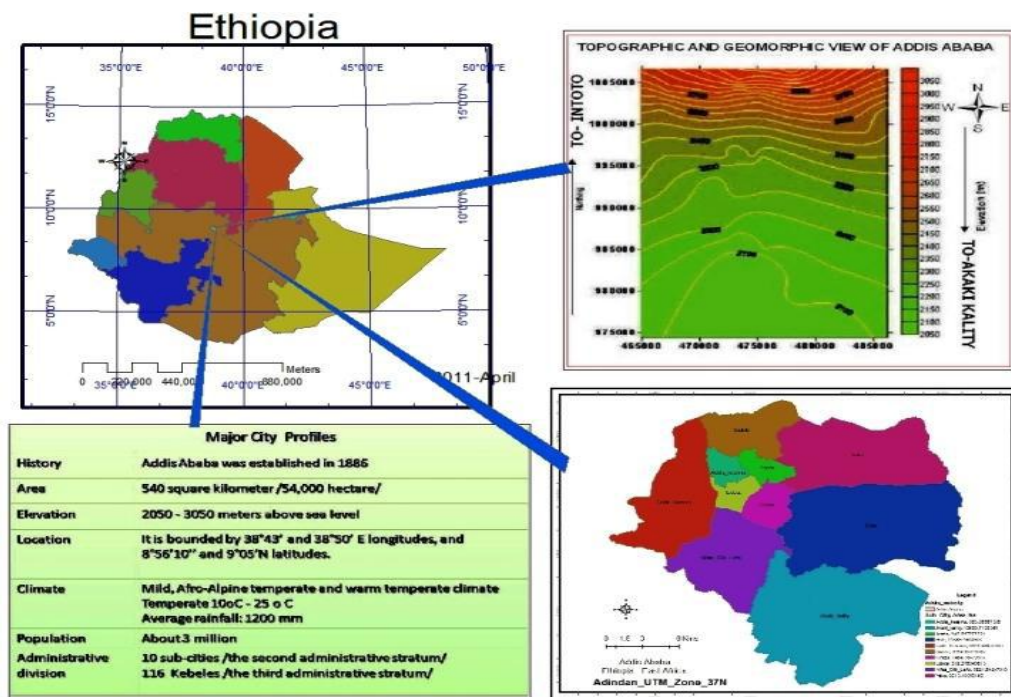
The city is divided by 10 subcity and they have 117 woreda administration. It's pop>5.1 million and its area 540 square meters he (source-Addis fana magazine No9 Sep, 20005) the area most crowded and highest population as a result there is difficult to manage sold waste. In addition to most of the people low economic growth and there was a lack of infrastructures (Example internal road with derange system) most of the house is old and resident for the past>47 years.

Most of the cities in Addis Ababa practice the open dump system of waste disposal, which was in a more or less uncontrolled manner. Since the system was not highly engineered, it posed numerous challenges to both public health and the environment. The areas so many organization and business activity as a result handling this municipal solid waste (MSW) has assumed the proportion a major's organization structure, financial, environmental, political,

public involvement and social specially the collection and storage area of the city as challenge

II. METHODS AND MATERIAL

2.1. Description of the studying Area



2.2. Vision

Seeing an ecologically balanced, clean, green, favorable environment suited to living and working of its people and the world as well as globally competitive and environmentally preferred city African diplomatic city."

2.3. Profile of the City

Addis Ababa has an area of 540 square kilometers, of which 18 square kilometers is rural. It lied between 2000 and 3,000 meters above sea level. Despite its proximity to the equator, Addis Ababa enjoys a mild, Afro-Alpine temperate and warm temperate climate. The lowest and the highest annual average temperature were about 10oC and 25o C. Annual rainfall is around 1200 mm.

TABLE 1. The whole importance of the city.

NO	Topic	Report
1	History	Addis Ababa was established in 1886
2	City Area	540 square kilometer (54,000 hectare) of which 18 square kilometer are rural
3	Elevation	2000 – 3000 meters above sea level
4	Location	Between 9 degrees long latitude and 38 degrees East longitude in a plateau
5	Climate	Mild, Afro-Alpine temperate and warm temperate climate <ul style="list-style-type: none"> ➢ Temperate 10 °C ➢ Average rainfall: 1200 mm
6	Population	3,035,138 with population growth of 2.8% (2003)
7	Household Size	Lower income 7.6 persons per household <ul style="list-style-type: none"> □ Middle income 6 persons per household □ High income 5 persons per house hold
8	Literacy rate	83%
9	Administrative division	<ul style="list-style-type: none"> ➢ 10 sub cities /the second administrative stratum/ ➢ 204 Kebeles /the third administrative stratum/

2.4. Demographics

2.4.1 Population

The urban population of Ethiopia was concentrated in few urban centers, predominantly in Addis Ababa. Addis Ababa, whose population grew from about 2.1 million in the year 1994 to 2.7 million in 2007 and the annual growth rate of 2.1%, was one of the fastest growing cities in Africa. Its current population was estimated to be exceeding 3 million. Due to certain reasons like other developing countries, the city has experienced highly accelerated population growth. The rapid population increased of the city has been mainly attributable to natural urban population increase and internal migration. According to the country's 1994 population and housing census, out of the total population of the city, 46.7% were migrants from rural and other urban areas in Ethiopia (CSA, 1999:161). Currently, CSA notifies that birth rate of Addis Ababa city administration was 2.1% with average family size 4.1 persons. At the start 2011; the city has a population of 2979206 and if no exaggerated rural urban migration faces, at 2020, it will expected to have a total population of 3599003. The distribution of population by sub-city is shown under.

III. RESULT AND DISCUSSION

3.1. Sources of Waste in Addis Ababa Municipality

The contribution to the total generation of waste by the different sources is estimated to be around 76% for households, 18% for commercial, institutional and industrial sources, and 6% from streets and public areas (Addis Ababa City Administration Health Bureau, 1997; UN-Habitat, 2007).

3.2. Collection of waste from street, household and small institution

Waste collected by the primary collectors and street sweepers is transported until municipal collection points. Collection points are not used by private companies collecting institutional and commercial. These companies transport waste

directly to the landfill. Actually, about 506 skip points exist in the territory of Addis Ababa City Administration and the coming year to minimize such number to 85 and below this they standardize skip place, representing around one skip point for 2900 capita and around 2 skip points by km².

TABLE 2. Distribution of skip point by sub-city.

No.	Sub city	Total area (km ²)	Population 2010	Nb of skip point 2009	After 2017/2018 to change 85	Density of skip point (nb/km ²)	Inhabitants/skip point
1	Akaki Kaliti	126	205345	41	6	0,7	2416
2	Nefass Silk Lafto	64	358 286	72	10	3,2	1756
3	Kolfe Keraniyo	65	485 854	98	15	1,4	5459
4	Gulele	33	303 166	108	6	2,7	3369
5	Lideta	12	228 501	7	3	4,4	4155
6	Kirkos	16	250 615	27	9	3,9	3978
7	Arada	12	239 590	26	5	5,2	3993
8	Addis Ketema	9	289 286	29	6	6,0	5357
9	yeka	82	392 702	65	10	2,2	2194
10	Bole	121	350 029	33	13	1,6	1795
	Total AACA	540	3 103 374	506	85	2	2890

SKIPS:-Collection points are equipped by skips of 8 ms. Skips are purchased by AACA who distributes equipment to sub cities.

In 1999, According to Yami Birke, in “Solid Waste Management in Ethiopia-paper presented in the Integrated Development for Water Supply and Sanitation”, a single container shared by 14934 people. Since this date number ok skip has been increased. In 2008, Amera and Genet cited by

Nicolas Escalante, Agata Rymkiewicz, Martin Kranert in “Understanding Waste Management in a Megacity - Experiences in Addis Ababa, Ethiopia” 2009,used 19 by 100,25 by 40 containing compactors and 112 8 m³ containing cars were used by the waste management administration, that is to say around one container by 1500 capita in 2008. In 2017, cleansing agency identifies 506 skip points.



Fig. 1. Menlesh Tera public disposing improper area.



Fig. 2. The collection material.

From the above figure 1 the waste dispose open and river side areas to avoid this problem to aware the public and to advance the integrated solid waste management system.

From the above figure 2 the waste collection material from road with push cart and the same for the household and transporting the waste from road and household transported by government cars.

3.3. Storage Areas and their Problem



Fig. 3. The storage area for Arada wored 6 and woreda 4.



Fig. 4. Woreda 7 around arat kilo and Banko mederine.



Fig. 5. Afnchobere around 6 kilo.



Fig. 7. Around kebena and A.ketema woreda 3 improper continar.



Fig. 10. chew bereeda and menalesh tera



Fig. 11. The improper of waste disposing around the container.



Fig. 12. The surrounding area.

From the above figures MSE collected waste from different household and stored in street for body condition and the waste segregated as further used to collect from different household and hold the reuse waste dispersed way. now I suggested the handling of waste after collection was improper management. so They worked to teach the collector to handling waste from household to temporary storage areas. Finally, the finding of this paper was the skip point waste management did not get attention for waste management and the waste collection controlling system was not strong punishment for violation of the regulation either public for surrounding or the respect of MSE.

IV. CONCLUSION

From the above it can be concluded that on the challenges confronting solid waste management practices, only institutional arrangement, legislation, and political factors were found not to be a hindrance. The rest: financial factors, personnel issues, technical issues, legislation enforcement, and good governance as well as civil society inactivity were detected to be a major hindrance to solid waste management system of Addis Ababa city. From the study carried out it was possible to understand considerable amount of waste was being illegally dumped into open space, river and gully sides and openly burnt out. Such practice affects public health and aesthetic of the environment in the study area. Solid waste

management was not top priority activity in the old settlements (pre urban areas) and newly established residential areas in the sub-city. In these areas the priority were given to issues including land and housing tenure security and basic amenities. Nevertheless this poor handling of solid waste poses environmental hazard.

At present, responsibility of solid waste management lied with the city's sanitation core process, the role of NGOs, CBOs and community was very low and involvement of private sector limited as it was based on relatively high standard requirements including acquisition of trucks that limits potential involvement of the jobless poor youth and the small MSEs. To sum up, the positives in solid waste management service in the study area were:

1. Collection of solid waste was outsourced to cooperatives. At present there were 578 cooperatives giving service over the entire city. These cooperatives mainly give door to door solid waste collection service to residential and commercial areas, transport collected waste to transfer station, and gave transportation service to solid waste collected by street sweepers.
2. Municipality was responsible for giving solid waste transportation service to major institutions
3. There were one transfer stations in different parts of the city. These transferred stations were well fenced and guarded. The municipality was responsible for the overall management of these sites. The transfer stations were established in place of the communal waste bins for better management of solid waste.
4. Transportation of solid waste from transfer station to landfills was the responsibility of the municipality. For this the municipality mobilizes the existing heavy trucks and whenever it was beyond its capacity outsourcing to private was another option followed.

The shortfalls in solid waste management in the study area include:

1. The strict criteria for involvement of MSEs was limiting opportunity for the small and resource poor MSEs to get engaged in the solid waste management activity
2. There was little activity and accomplishment in community awareness raising on safe disposal and proper management of solid waste

3. There was little effort to involve NGOs an CBOs in this sector
4. The insufficient solid waste management service coverage in old settlements and new settlements was encouraging residents to practice inappropriate disposal mechanism
5. No clarity on cost recovery system at present

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REFERENCE

- [1] .Arnold van de Klundert, (2000). The Sustainability of Alliances between Stakeholders in Waste Management: using the concept of integrated Sustainable Waste Management. Working paper for UWEP/CWG.
- [2] Achankeng, E. (2003) "Globalization, Urbanization and Municipal Solid Waste Management in Africa", Africa on a Global Stage, A Paper Presented at the Annual Conference of the African Studies Association of Australasia and the Pacific.
- [3] Tsiboe, A. I., and Marbel, E. (2004). "A look at Urban Waste Disposal Problem in Accra, Ghana", Master's Thesis, Roskilde University.
- [4] Wetherell, I. (2003): "Rubbish piling up", Zimbabwe Independent (Harare). March 28th, 2003, pp. 1, Available on line on AllAfrica.com/stories/, accessed on 3rd January 2013
- [5] A.A city government cleaning management 2002 E.C report
- [6] A.A city government solid waste management agency magazine/2003 E.C/
- [7] Community Participation in Solid Waste Management: Llideta Subcity, Addis Ababa.
- [8] Department for Environment, Food and Rural Affairs, (2004). Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes. UK
- [9] Department of Health and Environmental Control (DHEC) , (2009): Municipal Solid Waste Landfills
- [10] FDRE, (2005): Sanitation Millennium Development Goals Needs Assessment Final Report. Addis Ababa.
- [11] Saunders, M., Lewis, P., and Thornhill, A., (2007). "Research Methods for Business students", 4th Edn, Essex England, Pearson Education Limited.
- [12] Solid waste management: Lideta sub-city, Addis Ababa.
- [13] Solomon Demissie Yimer, (2005). Health care waste management in Ethiopia
- [14] Tadesse Kuma, (2004). Dry waste management in Addis Ababa city.