



ISSN 2278 – 0211 (Online)

Not In My Backyard (NIMBY)? : The Accumulation of Solid Waste in the Avenues Area, Harare, Zimbabwe

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Abstract:

The study sought to identify the problems of solid waste accumulation in the Avenues area of Harare, Zimbabwe. Interviews and personal observations were used to collect data. Factors contributing to the accumulation of solid waste were identified. Wrong attitudes and perceptions of the people about sanitation issues contributed to solid waste accumulation. Enforcement or emphasis on majority of the households did not education on the need for clean surroundings. Virtually, all the people depended on the City of Harare (CoH) facilities for the disposal of their household refuse. Solid waste management problems were mainly the results of CoH inability to cope with the situation because of lack of equipment and personnel. In addition, lack of proper incentives for the CoH workers working in also partly explained the problem. The study recommends that more education should be provided by the CoH and Environmental Management Agency (EMA) to sensitise the people on the need to keep their surroundings clean. Measures should be taken to compel residents to pay their bills/ rates on time.

Keywords: City of Harare, service delivery, solid waste, waste accumulation, refuse

1. Introduction

Harare residents always urge the City of Harare (CoH) speed up its garbage collection program so as to prevent disease outbreak such as cholera, typhoid and dysentery (Chibanda, 1990). Dumpsites have sprouted around the city. Humanity has always produced waste but the rate at which it is produced has surpassed the collection levels. Cities in developing countries have limited storage facilities, inefficient treatment technologies and inadequate methods of waste disposal with deficient public services (UN Habitat, 2006). Problems of waste accumulation are compounded by poor / inadequate urban infrastructure e.g. poor drainage, sub-standard housing, limited maintenance of amenities, and increased risk to environmental hazards (UNCHS, 2001). Urban poor settlements are often located in areas of unsuitable terrain e.g. wetlands, valleys or hill slopes. The residents are usually poor and often vulnerable to natural disasters such as flooding during heavy rains, and damage to dwelling units by hail stones and high winds (TARC, 2010). The urban poor usually rely on environmental resources to generate income or goods and services. This is linked to the mushrooming of informal activities and unplanned (and often illegal) land uses which result in accumulation of waste as these areas are undesignated for the services that they are providing. Urbanization is therefore causing more pressures on the provision of environmental services and infrastructure, as well as on the environment and natural resources, leading to increased poverty and risks (Gourlay, 1992). Poor urban populations also often lack access to education, health facilities and employment opportunities. The poor struggle through a variety of coping strategies and adapt their behaviour and activities to reduce the negative impacts of the risks to sustain their livelihoods (Practical Action, 2006).

2. Problem Statement

Generally, waste is a human concept. In the natural system recycling is predominant, and nutrient cycles endlessly support the next cycles of production. Waste is usually raw products for other processes and organisms, hence in the natural system stability and sustainability is ensured. In man-made systems however, emphasis is on the economic value of materials and energy, systems that are rather destructive to the environment through waste generation, that in itself a sign of overconsumption and inefficient use of resources. In all urban areas in the developing countries there has been a challenge in terms of waste collection (Ejaz and Janjua, 2012). There are a plethora of problems that have led to accumulation of waste. There is dearth in literature on the accumulation of waste in the Avenues suburb, Harare. The intention of this paper is to fill this gap by analysing the reasons for waste accumulation in the area and how this problem can be minimized or eradicated to increase the welfare of residents.

3. Objectives of the Study

The objectives of the study were to:

- Identify the reasons for the accumulation of waste in the street and sanitary lanes
- Determine the attitudes and perceptions of people towards solid waste accumulation

4. Literature Review

Almost half of the solid waste generated in developing countries is not taken to the dumpsites but usually end up as illegal dumps on streets, open spaces, and waste lands (UNCHS, 1996). This is mainly attributed to the erratic collection of waste by city authorities. City authorities usually cite non-payment of rates as the main reason for non collection, thus in most cases litter continuously accumulates. The main methods adopted by residents to reduce waste are burning, composting, or indiscriminate dumping. Zimbabwe has been facing a myriad of challenges since 2000. These challenges are exacerbated by corruption infrastructure decay, inadequate structures for environmental administration, lopsided planning policies and disregard for basic aesthetics and a general increase in population which requires more services. In general, socio-cultural practices determine the way household waste is treated and this mainly depends on whether the space is private or public, climatic conditions, the level of education, the community served and financial capacity of the city council (Stirrup, 1965).

4.1. What is Solid Waste?

Solid waste is man-made material on the ground that has been improperly disposed of (EMA, 2007). Solid waste management is one of the main environmental challenges in the developing world with detrimental effects on both the natural and human environment. Municipal solid wastes (MSWs) consist of discards from human product packaging, furniture, clothing, newspapers, cans, bottles, batteries and electronic appliances. Small items such as gum, cigarette butts and used airtime vouchers are also part of waste that is largely littered objects on streets. Consumers can minimize waste by eliminating the use of non-biodegradable items through recycling, reduction and reusing some materials. In addition slogans such as *Bin it, don't Drop It - Keep Zimbabwe Clean* also help (EMA, 2011). Money spent on managing solid wastes could be used for other purposes.

4.2. Methods of Solid Waste Disposal

4.2.1. Source Reduction Techniques

- Refuse – there is need for environmental education to consumers to buy products and implements that are compostable or biodegradable where possible. This goes a long way in reduction of waste (EMA, 2007).
- Bans and restrictions - Residents who use non-biodegradable materials should be responsible for their proper disposal e.g. the use kelites and other light plastic carrier bags have been banned in Zimbabwe. The ban was motivated by high levels of environmental pollution, high costs in providing and maintaining solid waste management solutions and facilities for proper waste disposal.
- Deposit and refund systems - the deposit and refund system allows the producer to recycle, reuse and reduce the containers and packages so as to ensure their return. Consumers pay fees to be refunded upon the return of the non-biodegradable material, thereby facilitating the collection and authorized return of packaging materials to its producer.
- Donation, sale and disposal – Materials that are normally discarded and included in landfills are donated to materials exchange centers. Here, they can be properly distributed for recycling, repurposing, and reclaiming methods. These are ways to reduce solid waste accumulation e.g. building materials and making of shoes from old tyres
- Laws and mandates – laws can be made and enforced to reduce waste e.g. the prohibition of manufacture of certain products within the state's jurisdiction e.g. reusability of plastic containers and recycling at household levels help reduce the amount of solid wastes

4.2.2. Recycling Methods Including Composting

There are different methods of recycling but this depends on the type of waste, the main methods are:

- Composting involves cautious selection of materials regarded as compostable, and biodegradable, certain types of paper, leaves and vegetable waste.
- Repurposing and Reclaiming scrap components for further use as secondary supply of reusable materials e.g. sustainable methods of recycling pet bottles to be used in textile manufacturing.

4.2.3. Combustion or Incineration of Solid Wastes

This process involves burning MSWs in a way that generates energy and at the same time reduce the amount of solid waste left in open landfills. However, in Zimbabwe incineration needs permission / authority from the Environmental Management Agency.

4.2.4. Landfills

Landfills are the least preferred option in the hierarchy of solid waste management options. The aim is to decrease the quantity of landfills operating on Zimbabwe's soil. Landfills are managed primarily by central and local government laws as well as CoH (EMA, 2007). EMA sets the standards which landfill operations should meet.

4.3. *The Law and Waste Accumulation in Zimbabwe*

The mandate of the Environmental Management Agency is to guarantee every citizen a right to a clean and safe environment which is pro-health. EMA encourages every Local Authority to implement effective waste management practices. Section 83 of the Environmental Management Act [Cap 20:27] makes it an offence to discard, dump or leave any litter on any land, street or road except in a container provided for such purposes or at a place which has specifically been designated for such purpose. Section 23 subsection (3) of Statutory Instrument 6 of 2007 authorises the imposition penalties and fines against offenders who dump litter in violation of its provisions. CoH is flouting its by-laws in this regard. The Public Health Act Ch 15: 09 Section 83 states that "it is the duty of every local authority to take lawful, necessary and reasonably practical measures to maintain its district at all times in a clean and sanitary condition, and for preventing the occurrence therein of, or for remedying or causing to be remedied, any nuisance or condition liable to be injurious or dangerous to health and to take proceeding to law against any person causing or responsible for the continuance of any such nuisance or condition". There is need to enforce the City's by-laws, especially the Anti-litter (Amendment) By-Laws, 1986(No.1) and the Waste Management (Amendment) By-Laws, 1987 (No.2) regulations and the sections of the Urban Councils' Act and the Regional, Town and Country Planning Act (Chapter 29.12). All these statutes give provision for a clean environment. Incidences of corruption and pilfering of council resources are quite common and these have an impact on waste collection.

5. Materials and Methods

This paper presents a case study of Harare's Avenues area. The exploratory research design method was used for this study thus field work and desk research were used to collect secondary data on the CoH. Archival research for information on waste management and official documents on the approach of CoH towards waste were sought. Data collection strategies included observation, key informant interviews with 2 CoH officials from the waste management department and 2 EMA officials. For collection of the primary data a structured questionnaire was used with questions such as why and how waste accumulates, its effects on the Avenues. The target population was residents of the Avenues 30 females and 20 males were interviewed because it was observed that females were mainly responsible for waste handling. The data gathered from various sources were processed and analysed. Simple descriptive statistical and analytical tools such as frequencies, percentages, and pie charts were employed in the analysis of the data. Relationships were established by cross tabulations.

5.1. *The Avenues Area, Harare*

The Avenues is a suburb in Harare which consists of blocks of apartments, businesses and diplomatic missions. Harare, a colonial city, officially called Salisbury until 1982 is located at coordinates: 17°51'50"S 31°1'47"E. Harare was proclaimed a municipality in 1897 and a city in 1935. Harare is the capital and therefore the nerve centre of Zimbabwe. The suburb has a rectangular grid, measuring about 1 km to the north of the CBD on the other side of the Harare Gardens (shown by a purple boundary on Fig 1 below). The Avenues are traversed by all the major thoroughfares to the northern suburbs i.e. Prince Edward St (western boundary), Leopold Takawira Avenue, Sam Nujoma Street (Second Street), Fourth Street, Seventh Street (Borrowdale Road). These thoroughfares partition the suburb into rectangular grids. The streets run north to south, and the tree lined avenues run east to west. The main avenues include Josiah Tongogara (Northern boundary), Josiah Chinamano, and Hebert Chitepo, Central and Samora Machel, the busiest avenue / street in Harare. Milton Park and Belgravia, Alexandra Park to the north, Belvedere to the west, Eastlea and Newlands to the East and the CBD to the south are the main neighbouring suburbs / areas. The Avenues main residents are Africans though all races live there. The Avenues is endowed with many facilities: shopping centres e.g. Montague, Fife Avenue and Travel Plaza; Schools e.g. Dominican Convent, David Livingstone Primary and Colleges e.g. Speciss, Trust and Ilsa; premium private hospitals / clinics e.g. Avenues, Montague, Westend and Medical Chambers, entertainment places e.g. National Gallery, Book Cafe and sporting facilities e.g. Harare Sports Club and the Royal Golf Club Central Registry and the Passport Office.

For young professionals the Avenues is a prime choice of residence (residential units are apartment blocks or flats ranging from bedsitters to family sized apartments, garden flats, town houses to luxury penthouses, a few single unit houses are set on sizable gardens, but most have been turned into commercial premises or restaurants) due to the suburbs' proximity to the CBD and availability of many amenities. The Harare Gardens and Greenwood are the main parks in the area. The suburb has many restaurants, guest houses, lodges as well as Hotels e.g. Bronte, Selous, Russell and Holiday Inn. Pubs and clubs are also there. The Avenues occupies the "Red Light District" of Harare especially along Josiah Chinamano and Fife Avenue.

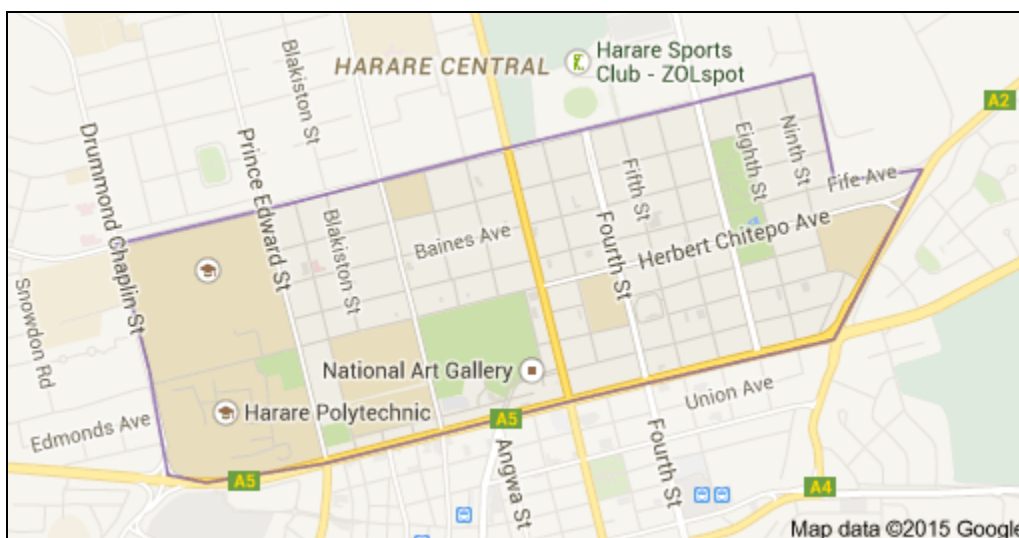


Figure 1: Map of the Avenues, Harare
Source: Google Maps

6. Results and Discussion

6.1. Reasons for Solid Waste in the Avenues

Zimbabwe's politically engineered economic depression resulted in a severe collapse of solid waste management in most urban areas resulting in accumulation of trash. Most municipalities have failed to provide an efficient waste collection and disposal system resulting in residents' indiscriminately dumping waste. Residents in major cities like Harare are now resorting to burning and digging deep trenches for dumping waste, these trenches are usually left open and are a potential breeding ground for flies and mosquitoes with the potential for disease outbreak.

6.2. Attitudes and Perceptions of the People towards Solid Waste Accumulation

Issues of attitudes and perceptions appear to take primacy in the management of solid waste in Harare with concerns such as the need for a clean environment, the influence of education on the need for a clean surroundings and who and how solid waste is disposed of and why it accumulates / goes uncollected. Some of these issues are shown below.

Response	Frequency	Percentage
CoH	2	100
EMA	2	100
Residents	50	100

Table 1: Opinions on who should clean the surroundings
n=54

EMA, CoH and residents all agree that CoH is solely responsible for ensuring clean surroundings, it is likely that the people may not support clean up campaigns meant for making the surroundings clean. The population is too heterogeneous for social capital to develop well; this may partly explain why the Avenues has dumps of solid waste. In order to change this trend it is suggested that the people be educated to see the problem as a shared responsibility of both the individual in the respective communities and the CoH. Further analysis of the data showed that about 37% of the total respondents thought it were appropriate for individuals to share in the responsibility of cleaning their own surroundings while about 63% thought it was not appropriate. The 37% respondents who thought individuals must be responsible for cleaning their own surroundings gave their reasons as indicated in Table 2 below.

Response	Frequency	%
Affected by odour from the environment	49	98
Dirty environment cause diseases	43	86
Recycling to save money	19	38
Other Reasons e.g. To keep the aesthetic beauty of the environment	28	56

Table 2: Reasons for Individuals cleaning their environment
n=50

The majority of residents feared that trash leads to the outbreak of disease, do not want trash in their backyards and want a green environment. Residents want to restore the aesthetic appeal of the area, and to lessen the choking of drainage channels which resulted in flash floods and flooding as happened in central Harare in the 2014 /15 seasons. Respondents showed limited knowledge concerning sanitation issues, with only 19 people bringing about the issue of recycling, hence the need to involve all stakeholders to educate them.

Sector (s)	Frequency of Collection
Household, industrial sites , hospitals , schools , colleges	Once a week
Central Business District (CBD), market place, Hotels	Daily

Table 3: Frequency of refuse collection in Harare

Refuse collection in residential areas remains inconsistent and erratic due to breakdown of refuse trucks and limited financial resources. The once a week collection is not adequate for the avenues due to increase in people living and working there. A number of flats or apartments have been turned into offices with the resultant increase in waste. Refuse is thus dumped in open areas with the resulting heaps of trash. Residents complained about speeding refuse trucks which can endanger the life of children playing in the street and the throwing of litter during collection. CoH operates with less than 20 refuse compactors therefore heaps of uncollected garbage remains visible at street corners as strict adherence to refuse collection schedules becomes unattainable. In some suburbs like Glen view, Glen Norah, Tafara and Mabvuku community driven clean up campaigns through there has been positive engagement between the waste management department, civic organisations and the residents are held and the result is an emerging clean and pleasant environment, reduction of solid waste related diseases such as cholera and typhoid, increased community cohesion and an empowered citizenry. Clean up campaigns are a rare practise in the Avenues. Nearly all trash collected in Harare is discarded at the Pomona dumpsite near Hatcliffe (30 km from the CBD), a long distance which has implications on fuel allocation of at least 100 litres of fuel a week per vehicle, an expensive undertaking by any standard. Plate 1 below shows accumulated of refuse that has not been collected for a while.



Figure 2: Uncollected waste in the Avenues

Figure 2 above shows accumulation of waste over a period of time leading to the creation of dumpsites. This is contrary to the CoHs mission statement which reads *to provide a fully serviced, sustainable, safe, vibrant, beautiful and multicultural environment.*

Educational level	Response (%)
Tertiary (university, college etc)	100
Ordinary and Advanced Level	80
Zimbabwe Junior Certificate (ZJC)	53
Primary /Nursery School	14
Never been to any form of formal schooling	5

Table 4: Individuals involvement in environmental cleaning versus educational levels
n=50

There is a relationship between the level of education and the resident's attitude and perceptions. Environmental education will go a long way to improve sanitation; this is supported by the view that perceptions and attitudes are changed by education (Agbola, 1993). More than 50% of the respondents do not educate their households on the need to clean their environment though about 15% do so. All the respondents with tertiary education were interested in being involved in clean ups. Children therefore do not get role models because behavioral patterns are derived from the socialisation process at school, home and in the in the community. Environmental education should focus more on women as their education is a precondition for change in sanitation behaviour. Some lessons taught on the need for clean surroundings shown in Table 4 below.

Lessons	%
(1) Dirty environment cause diseases	64
(2) Households must not litter	91
(3)Both (1) and (2)	55

Table 5: Sanitation lessons taught to household members
N=50

All respondents echoed that there is need for more education on respect for sanitary laws through clean up campaigns, talk shows and even in formal schooling as well. There are no private contractors to remove waste as these were removed a long time ago due to inefficiency. This leaves the CoH with unmanageable pressure on the equipment and insufficient work force. Field works showed about 70% of the respondents ask their children, some below 16 to dispose of household waste. With the probability of haphazard disposal of waste, this partly explains the accumulation of solid waste in the avenue as 40% of the respondents argued that it is the duty of children to remove trash.

Containers	Frequency	%
Sacks	8	16
Plastic Containers	4	8
Baskets	3	6
Old Buckets	2	4
Polythene Bags	29	58
Dustbins	4	8

Table 6: Containers used to store household waste
n=50

Table 5 shows that sacks and plastic containers are normally used (cheaper and perhaps could store more waste) for storing waste save for dustbins; all the containers had no covers. Some trash is put into polythene bags before kept in the storage containers. These methods of waste collection contribute to poor sanitation as much refuse is littered before reaching the sanitary sites. Most of the refuse is kept close to kitchens and rooms, which may cause diseases like cholera and typhoid fever. All residents argued that CoH used to provide dustbins and plastic refuse papers hence waste was more manageable. In conjunction with Environment Africa and other stakeholders, CoH is trying to subsidize the prices of ordinary bins and offering environmental education to residents on the need to store refuse in bins. Human waste is common as there no public toilet facilities in the area.

6.3 Role of CoH in Solid Waste Removal

Generally, all waste produced in the Avenues is collected for final disposal at various designated sanitary sites by CoH. By Zimbabwean standards the Avenues is relatively an affluent area because rentals are on the expensive side due to the proximity of the area to the city centre. Some residents even walk to and fro the city centre.

Description	Available	Optimal Required
Power Tiller	6	12
Refuse Trucks	27	60
Compaction Trucks	20	42
Roll Ons	3	10
Containers	20	50

Table 7: Equipment for solid waste management used by CoH

One of the problems the CoH is limited financial resources to finance operations. Central government through the Ministry of Local Government, Rural and Urban Development announced the cancellation of all debts in all urban areas prior to the general elections in August 2013 and there is a feeling among residents that the same could extended in the 2018 general elections. Hence some residents are not paying rates waiting for a waiver in 2018. Enforcement towards payment of bills is very difficult in politically polarised environment such as Zimbabwe. The problem is worsened by corruption, bureaucracy, ineptitude, political subservience and incompetent among a host of reasons

Labour Description	Current Number	Optimal Number
Street Sweepers (Women)	120	200
Refuse Workers	100	250

Table 8: CoHs waste management department labour force

The CoH has failed to collect waste on time hence the continued accumulation of waste. the problem of waste accumulation is exacerbated by frequent break of refuse vehicles, demotivated workers due to poor working conditions, hostile and uncooperative residents (evidence from the field showed that about 80% of the respondents did not appreciate the work of the CoH waste management department to be important while about 29% saw their work as important) and the throwaway society that has been created in most urban areas of the countries e.g. not so long ago empty bottles were returnable for deposit but the use of cans and plastics has taken over resulting in more waste being produced. Waste continues to pile up for days and weeks and sometimes even months in most sanitary sites before the final disposal.

7. Conclusion

Generally, residents of the Avenues have poor attitudes and perceptions toward solid waste handling they depend virtually on CoH equipment and personnel for handling solid waste of which these are barely adequate. Household refuse in substandard refuse containers such as old buckets, sacks, baskets, polythene bags, and boxes that have no coverings there are no public toilet facilities in the area. Residents are not prepared to help CoH in any possible way to enable them carry out their work in the area.

8. Recommendations

- The public should be educated by EMA on solid waste and its related issues, hygiene practices should be taught both formally and informally especially on radios, televisions, in news papers, and in schools to educate people on proper ways of handling solid waste and keeping their surrounding clean.
- Stricter enforcement of by- laws should be ensured by the CoH, EMA and NGOs where administrative penalties for minor violations should be taken seriously and with urgency. The by-laws on sanitation should be made to require CoH to always keep the city clean in line with its mission statement.
- The use of standard bins with lid for domestic and commercial areas should be encouraged in the Avenues. Local and central government, donor countries, Non-governmental Organisations (NGOs) and other stakeholders should donate money and equipment to CoH to enable the waste management department to acquire effective equipment and hiring of efficient personnel.
- Community clean up exercises should be continuous so that the residents become watchdogs and not a onetime event management for politicians to campaign. Women do a greater part of solid waste handling and disposal and should therefore be made to play an important role in solid waste management. However, a clean environment should be seen as everyone's responsibility.

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