

**THE ROLE OF COMMUNITY BASED ORGANIZATIONS IN SOLID
WASTE MANAGEMENT. A CASE OF MASVINGO URBAN,
ZIMBABWE.**

BY

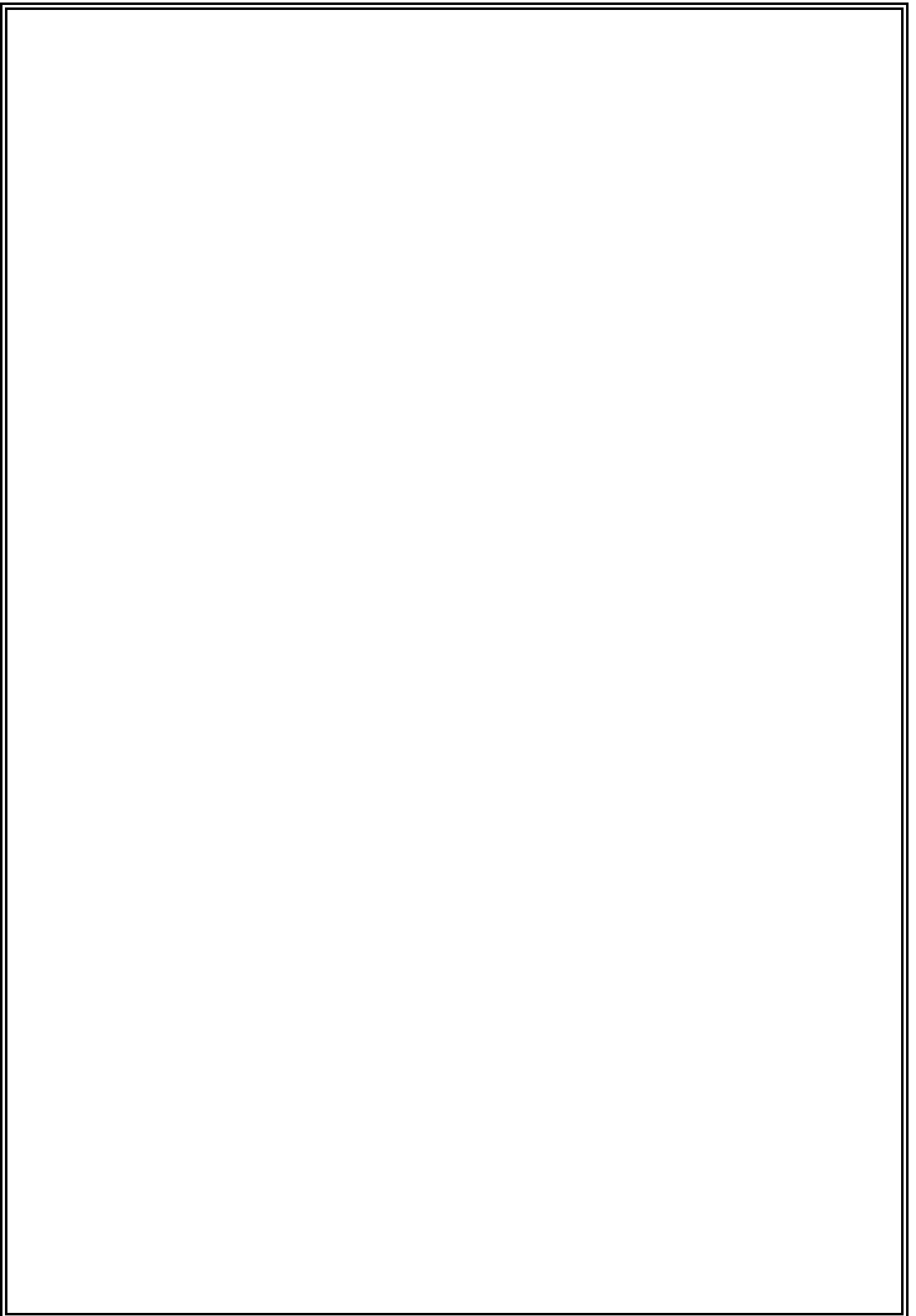
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**A DISSERTATION PRESENTED TO THE DEPARTMENT OF GEOGRAPHY AND
ENVIRONMENTAL STUDIES IN PARTIAL FULFILLMENT OF THE BACHELOR
OF SCIENCE HONOURS IN GEOGRAPHY AND ENVIRONMENTAL STUDIES.**



MIDLANDS STATE UNIVERSITY

OCTOBER 2015



DECLARATION FORM
MIDLANDS STATE UNIVERSITY



FACULTY OF SOCIAL SCIENCES
Department of Geography and Environmental Studies

The undersigned certify that they have read and recommended to the Midlands State University acceptance of a research entitled:

The role of community based organizations in solid waste management. A Case of
MasvingoUrban, Zimbabwe.

By

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Submitted in partial fulfilment of the requirement of the Bachelor of Science Honours Degree
in Geography and Environmental Studies.

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DISSERTATION TITLE: THE ROLE OF COMMUNITY BASED ORGANIZATIONS IN SUSTAINABLE SOLID WASTE MANAGEMENT: A CASE OF MASVINGO URBAN, ZIMBABWE.

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DECLARATION

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Student.....Date.....

Supervisor.....Date.....

Chairperson.....Date.....

DEDICATION

This dissertation is dedicated to my beloved mother, grandmother and uncle Tranos, who made this fulfilment of the degree possible.

ACKNOWLEDGEMENTS

Firstly I would like to thank the Almighty in whom everything is possible for guiding me through the study period. In particular I extend my profound credit and thanks to my supervisor, Dr S. Jerie who guided me in conducting the research and compiling this dissertation. I thank him for his generosity with time, patience and encouragement through this process. I would like to express my sincere and profound gratitude to my mother, grandmother and uncle Transos whose invaluable support is beyond comprehension. I also give many thanks to my classmates for their moral support and encouragement especially during hard times.

Last but not least, I also extend my thanks to all other people whose names are not indicated here whose positive attitude towards my behaviour and physical appearance constantly boosted my self-confidence in education and social functioning.

ABSTRACT

The study investigated the role of community based organizations in sustainable solid waste management. Solid waste management has become a big issue in our day and age at local, national, regional and even at global scale. Community based organizations in developing countries have been done but there are gaps in the real documentation in their full participation in solid waste management, constraints affecting them as well as suggested solutions. The study's main aim was/is to identify the role of community based organizations in solid waste management and assess their effectiveness and also to come up with solutions to make their role effective. The study area was basically in Masvingo urban which is made up of 7 wards and in these 7 wards that is where the collective name Community Based Organizations came into being. The area was also selected as a result of ever growing population be it by reproduction or migration, unsustainable waste handling and poor disposal practices which are likely to make Masvingo vulnerable to disease outbreak like cholera. The study made use of self administered questionnaires, interviews, photographs and observations. Information gathered was analysed and interpreted using descriptive statistics, graphs, tables and inferential statistics in the form of the chi-square test. The main findings showed that the community based organizations manage waste mainly by recycling or re-using it amongst other waste management activities and this also revealed that Masvingo City council is failing to manage solid waste in Masvingo urban. The study also revealed that the private sector is also taking part in trying to manage solid waste through clean-up campaigns, education awareness, recycling. Awareness on legislation and institutional aspects varied from person to person. In conclusion to the above findings the researcher recommends technical and financial support to be given to the community based organizations in all their aims to manage solid waste and wanting to make Masvingo urban a clean town. Environmentally sustainable solid waste management practices guided by the principles of the integrated approach and invigorated by environmental education must be fully adopted.

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LIST OF ABBREVIATIONS/ACRONYMS

CBD	Central Business District
CBO	Community Based Organisation
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMA	Environmental Management Agency
ISWM	Integrated Solid Waste Management
MURC	Masvingo Urban Recycling Club
NGO	Non Governmental Organisation
UNEP	United Nations Environment Programme
ZRP	Zimbabwe Republic Police

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Middlemiss (2009) defines Community Based Organizations as 'groups that exist within a community (either interest or place) with a local focus, with a prevalently wilful nature, and separate from the other exercises of state and business associations'. Thake (2004) (quoted in Middlemiss 2009) also defines them as 'Organizations situated inside of groups or spaces of interest and intended to address the needs of those communities'. The role of Community Based Organizations in solid waste management systems can be categorised as social, economic and environmental. Despite the fact that the income and living states of informal waste labourers contrast altogether as indicated by their principle exercises, the majority of informal waste workers (dump and street waste pickers) are stood up to with extremely perilous working and living conditions. They generally need clean administrations, medicinal services and social advantages. Child labour is exceptionally continuous, and life expectancy is low.

The informal division accomplishes high recuperation rates (up to 80%) in light of the fact that the capacity to reuse is imperative for the general population's vocations included. However, these reusing exercises do regularly not regard environmental principles furthermore may add to contamination. Although informal sector exercises regularly happen outside official and formal channels, unlicensed and untaxed, they nevertheless contribute fundamentally to the national economy (Gunsilius, 2010).

MET (2007) has highlighted that through community participation, it has been noted that about 40% of the population is made aware of sustainable waste management practices and legislative requirements pertaining to waste management. Community based organizations can raise public awareness and share knowledge to cultivate values skills and behaviour among the population which is consistent with sustainable environmental management. Negative attitudes on wanton littering inherent in some communities are changed. The participatory approach to promote integrated sustainable development planning by communities empowers them to manage their environment sustainably. They collect waste, plastic and scrap metal collection and selling, plastic and paper recycling, production of petroleum based products such as candles and floor polish. These groups are involved in

clean up campaigns, waste separation and supplying recycling companies with different types of waste, making artefacts from various types of waste and the collection biodegradable waste for use in nutritional gardens.

Solid waste management refers to the gathering, transport, handling, reusing or transfer, and checking of solid waste materials produced by human activity, and is for the most part attempted to decrease their impact on wellbeing and the environment (UNEP, 2006b). Waste Management identifies with materials delivered by human exercises and is embraced to decrease their impacts on human wellbeing, the environment and aesthetics. In the event that inadequately oversaw, waste can taint water supplies. Waste can be solid or fluid and in both structures can either be biodegradable or non-biodegradable for example sustenance build ups like bread pieces, meat and natural products are biodegradable whilst glass, plastic, bones, tins and jars are non biodegradable to mention but a few (Harday et al. 2001).

In many developing and transitional countries, the infrastructure and organizational system of waste management is insufficient. Municipalities and formal service providers can thus neither provide collection service to all households, nor guarantee an environmentally sound disposal of wastes. Only half of the population in these countries is provided with sufficient and regular waste collection services (Gunsilius, 2010). Gunsilius (2010), also points out that in many of these countries, informal waste pickers contribute significantly to waste management and resource efficiency by collecting, sorting, trading and sometimes even processing waste materials. These activities not only provide an income opportunity for as much as 1% of the urban population in many countries, but also serve the protection of natural resources and the environment by recovering up to 20% of municipal wastes in a self-financing system.

Gerold (2009) shows that the everyday produced amounts of waste are permanently expanding in urban territories of developing nations and transitional nations. This is just incompletely the after effect of as yet proceeding with development of populace; it can for the most part be clarified by the expanding rate of urbanization of these nations. In the year 2000 around 42% of the number of inhabitants in middle and low income nations lived in urban ranges; comparing to previsions of the United Nations and the World Bank around 57% of the number of inhabitants in these nations will live in towns and urban areas in 2030. This implies that the urban populace will increment by 92% amid the period 2000-2030. Utilization examples of the families are changed by their day of work to urban zones. Urban

family units expend extensively more pressed and wrapped (sustenance) items (PET-bottles, plastic sacks, aluminum jars and so forth.) than families which live in rustic territories; ranch family units create an expansive piece of the nourishment all alone, merchandise of everyday use are somewhat delivered by local artisans and customary compartments as wicker container are utilized for transportation. Developing nations and transition nations, however, append just subordinate significance to solid waste management in their political agenda.

The historical background of solid waste pickers overall goes a long way into the seventeenth century. In Brazil, waste pickers traditionally collected organic material in order to feed animals. They lived in informal settlements everywhere throughout the nation, with shacks for homes, making due by rubbish picking and pig cultivating. Waste recuperation later developed to incorporate recyclable materials, for example, plastic waste, scrap metal. For quite a long time this informal gathering of reusing materials has occurred in two fundamental ways: 1) street waste picking exercises by street occupants utilizing refuse packs found on the check or taken from workplaces and shops; and 2) waste picking at open dumps in significant urban communities. There is broad experience of waste pickers arranging and building up formal associations with metropolitan and national governments. After an initial time of mutual mistrust and strife, different working models of collaboration and association between waste picker associations and formal powers have evolved.

Waste collection in India goes back to the 17th century, where bones, rags and paper were among the first commodities to be collected. Solid waste management was traditionally the responsibility of municipal bodies. Across the country, the workforce carrying out solid waste collection and transport activities consisted primarily of socially excluded communities on the margins of society. Nowadays large numbers of people are associated with waste management in India. Researchers estimate that about 1% of the urban population in India is active in the informal recycling sector. The informal waste sector is socially stratified in a pyramid with scrap collectors (waste pickers and itinerant waste buyers) at the bottom and re-processors at the top. Various factors such as retailers, stockists and wholesalers occupy the strata in between. The majority of retailers are former waste pickers who have managed to assemble some capital and to take up another activity.

The development of the informal waste management sector in Egypt goes back to the early 1940's, where oasis migrants in Cairo (Waahis) started organising a collection service for

household paper, which was then sold as fuel for public baths and local kitchens. Up to today the collection itself is the domain mainly of men and children; the task of manually sorting the garbage into separate piles of recyclables falls to the women and adolescent girls who do not accompany their fathers on the garbage route. There is a sizeable informal recycling sector, thriving economically and extending across the entire country. It recovers, trades in, processes and re-manufactures plastic, scrap metal, paper, cardboard and bones. The waste collectors sort and recycle around 80- 85% of the resources/waste they collect, making a living from recovering, recycling and trading recyclable materials (Gerdes & Gunsilius, 2010).

The challenge of waste management has been a growing concern for the national government, local authorities, environmentalists, researchers and the communities at large. Throughout Zimbabwe there has been an increase in the amount of waste generated at household level yet there has not been the requisite collection and disposal services, let alone an effective waste management strategy to meet the rising challenge. At present about 2.5 million tonnes of both industrial and household waste is generated per annum and only 30% of this waste is collected and disposed off in many large towns and cities. This is a far cry from the previous case of 80% in the mid 90s, which was considered adequate given the urban population then. The situation has been compounded by the rapid urbanisation, which stands at 30% for Zimbabwe that has seen the demand soaring on the available resources and facilities offered by the Local Authorities in the country. These challenges in urban waste management have continued unabated despite the existence of a conducive policy and legislative environment, which is provided for by, a number of policies and legislative instruments that deal with waste management issues, such as the Environmental Impact Assessment (EIA) Policy, National Sustainable Development Policy, Science and Technology Policy, and the Draft National Environmental Policy, Environmental Management Act (CAP 20:27), Urban Councils Act (CAP 29:15), Water Act (CAP 20:22), Public Health Act (CAP 15:09) and Municipal By-laws. The absence of an effective enforcement strategy coupled with the lack of innovative initiatives of handling waste has left the local authorities with a mammoth task in their hands. The community based waste management model has so far proved to work when there is full Local Authority support and success is possible when the members of Community Based Organizations offering the service are from within the same community. The model has not only addressed the environmental problems resulting from poor waste management but has to a great extent

contributed to the establishment of good health and hygienic standards which have led to the reduction of diseases such as fever, dysentery, diarrhoea, cholera and malaria (Mubaiwa, NA).

Community Based Organizations came to being in Masvingo as a result of the high levels of solid waste left lying around. Waste in Masvingo is not being collected on fixed allocated collection days. The Masvingo City Council is failing to collect waste and this has resulted in people seeking other alternatives to manage waste and a good example is of burning the waste. Waste is being seen all over street corners and along the Mucheke River.

The waste management challenge that the country is faced with requires stakeholder participation and the Community Based Organizations have come on board as a key stakeholder. These groups are involved in clean-up activities and awareness campaigns, waste separation and supplying recycling companies with different types of waste, making artefacts from various types of waste and the collection of biodegradable waste for use in nutritional gardens.

The national goal of community based organizations is to make sustainable development a national priority, to take a proactive role in environmental issues and to respond to environmental challenges facing Zimbabwe at personal, local, national, regional and global levels through waste management processes. The Community Based Organizations also value the EM Act Statutory Instrument (SI 6) of 2007, which is of Effluent and Solid Waste Disposal Regulations which regulates the disposal of waste (solid waste and effluent). In this domain Community Based Organizations, receive support from different stakeholders like EMA, Masvingo City Council, CARE International Zimbabwe to mention just a few. The broader understanding of the term Community Based Organizations should therefore not be taken as a given or final butan evolving from the past to give meaning to the present and pointing to the future. According to UN-Habitat (2006), less than 20% of urban solid waste is collected and disposed of properly. In an effort to solve the problem of refuse, communities had been empowered through the Community Based Organisations to manage waste in their areas.

1.2 Statementoftheproblem

Several studies have shown that these informal recycling activities play an important role in the society and have positive effects on the environment, reduce the costs of waste management systems and provide income opportunities for large numbers of poor people.

However, several enabling conditions need to be explored so as to promote and increase support of Community Based Organizations by Local Authorities and National Government. Various political, legal, cultural and social conditions determine the best possible approach to informal sector integration taking into account local, regional and national contexts. The Community Based Organizations need to be given a voice, it is important for the informal sector workers within Community Based Organizations to be accountable for their activities and to be represented at relevant policymaking institutions. Being an organisation becomes a key component of being recognised and integrated into the solid waste management system. Also, there is need for increased visibility of the Community Based Organizations within government systems through official recognition of the economic contribution of informal sector workers, resulting from improved labour force and other economic statistics and from policy research. Clearly Community Based Organizations should substantiate their presence and need for recognition. The validity of the Community Based Organizations has to be backed by political power. There is need for Legal identity and formal recognition of informal sector workers and their membership-based organisations. The commercial viability of the informal solid waste management sector is the single most important reason informal waste enterprises can continue to flourish under existing competitive market conditions. Finally it is important to build capacity of the Community Based Organizations in project management and entrepreneurship, and to ensure proper economic incentives are in place for the informal workers to take the necessary risk and work hard. The entrepreneurial capacities of informal sector workers and organisations will be an important factor in the sustainability of informal sector intervention. The capacity to structure their activity and comply with regular working hours enhances informal actors' potential to act as a contracting partner for municipal governments and formal enterprises. Not many studies have been undertaken on the roles of community based organizations.

1.3 Objectives of the study

General Objective

1. To assess the role of Community Based Organizations in sustainable solid waste management in the urban environment.

Specific Objectives

2. Establish the types and sources of waste generated in Masvingo Urban

3. Identify current strategies that are being implemented by Community Based Organizations to reduce solid waste
4. Assess the effectiveness of strategies used by Community Based Organizations to reduce solid waste
5. To recommend appropriate interventions and approaches for urban development practitioners on the effective strengthening of Community Based Organizations as strategy for sustainable solid waste management.

1.4 Justification of study

Given the absence of research on the impact and effectiveness of the role of Community Based Organizations in sustainable urban waste management this type of research is important. Most previous studies have tended to concentrate on national waste management problems in general without considering other tools that can be used to manage solid waste. The study therefore seeks to explore another paradigm dimension of examining the role of Community Based Organizations in sustainable waste management as a solution that can be fully implemented by residents at household level to sustainably manage waste. Results of this study will be critical in promoting social acceptance of informal workers. An understanding of the integration of the informal sector into the waste management system will help create positive public and political attitude towards waste pickers. The legal recognition of informal waste management structures will pave way for further development on social, organisational and technical structures. This will help reduce the risk of waste-borne diseases like cholera, diarrhoea to residents of Masvingo urban. Above all the results of the research will help in improving the general waste management system of the City of Masvingo and possibly be adopted by other local authorities across the country to manage solid waste. The Community Based Organizations are expected to benefit from the study results through identification of various stakeholders in the waste management sector who can play pivotal role in promoting awareness on principles of Recycling, Reusing and Reducing waste. The study will also benefit the researcher by exposure to community based waste management situations thereby affording experience, knowledge and skills of Community Based Organizations and local community perceptions of waste management and how they are or can be actively involved in sustainable waste management. The research will also open up room for further researchers pertaining to sustainable waste management through the use of Community Based Organizations. As asserted by Muparange (2011), the biggest population of high density suburbs is regarded as ignorant concerning solid waste

management issues. It is therefore against this background that the researcher has been triggered to investigate on the role of Community Based Organizations in sustainable solid waste management in Masvingo urban. Having cited all the above, it is clear that this research is worthy and will benefit many stakeholder including the Ministry of Environment, Water and Climate-Zimbabwe, Ministry of Health and Child Welfare, EMA, Masvingo City Council as well as local residents. Reduction in water pollution will reduce vector load and subsequently diseases within the population will be reduced. A clean environment will reduce pressure on the Authorities responsible for management and also create model cities on waste management. Hospitals will not be overwhelmed by patients suffering from water borne diseases, and information dissemination will be improved through the integration of the Community Based Organizations who will play a major role in promoting disease prevention through proper waste management and environmental clean-up.

1.5 Study Area

1.5.1 Physical Environment

Masvingo town is situated in Masvingo Province in Zimbabwe. It is 292km south of Harare and 300km north of Beitbridge. It is found on the coordinates of 20°03'45"S 30°49'25" / 20.06250°S 30.82361°E, and at an elevation of 1.075m. Masvingo is situated near Lake Mutirikwi and lies near Mucheke River. Masvingo town is less than 20 kilometres from the Great Zimbabwe monuments and the Great Zimbabwe Hotel.

The province is located in the lowveldt of the country where rainfall is minimal and uncertain. A large portion of the southern part of the province is prone to drought, set as region 5 in the country's climatic regions. Most parts of the province are therefore generally dry with average rainfall of 600mm per year (Dube, 2003). Summers are hot and wet with temperatures ranging from 25 to 35 degrees during November to March while winters are typically cold with temperature of 12 degrees. The province has an area of 56,566 km². The altitude of the district ranges from 450m to 1240m above sea level. The average annual temperature for the district is about 20 degrees Celsius. On the other hand, winter air temperatures can be as low as 10 degrees Celsius.

Vegetation

The vegetation varies from small patches of evergreen riverine species, through thicket woodland, open woodland, grassland and rocky hills to a barren zone along the lake shore which is subject to periodic inundation which supports only a sparse cover of annual herbs

and grasses. The vegetation changes from predominance of miombo woodland with *brachystegiaspiciformis* and *julbernadiaglobiflora* to thickets dominated by *peltophorumafricanum*, *terminaliasericea*, *comberetum* and *acacia karoo*.

Soils

The soils in the area are of the fersiallitic type. These soils are the most extensive soil types in Zimbabwe. The terrain in the district ranges from moderate to steep slopes. In areas where slopes are high, soils are shallow and of poor texture, the potential for erosion hazards exist. Most areas with great potential to warm water, fish farming have poor soils prone to erosion.

1.5.2 Human Environment

The city of Masvingo consists of a wide range of land uses which are designated for forests, residential uses, commercial purposes, agriculture, educational and tourism. Residential areas include Rujeko, Mucheke, Morningside, Target Kopje, Eastvale and Rhodene.

The population was approximately 1500 in 1970 (Bridger, 1973), 30 523 in 1982 and rose to 51 743 in 1992 and most of the local population belongs to the Karanga Shona ethnic group (the most populace group in Zimbabwe). Most of the people in Masvingo are mostly rural communal farmers and they use water from the nearby Lake Mutirikwi to irrigate their fields and most have formed themselves into cooperatives for more effective use of resources (for instance the Mushandike cooperative). People in Masvingo also considered marriage as a survival strategy and some are involved in food vending as their source of income. This allowed them to stay in town while maintaining a foot in their home village. Many of the house-holds are female headed and 33, 7% of women in Masvingo aged 15-64 with very few employed as teachers, nurses, beer brewers, marketers of fresh produce and some engaged in prostitution.

The study will be carried out in Masvingo district, which is comprised of 35 wards but the main focus will be on the 7 wards which make up the Masvingo town. Masvingo town is divided into suburbs including Mucheke, Rujeko. Rhodene, Target Kopje and Eastvale. The 7 wards are found in Mucheke, Rujeko, were 6 wards are in Mucheke suburb and 1 ward is in Rujeko suburb. Mucheke, the oldest township and Rujeko are the most populous high density suburb.

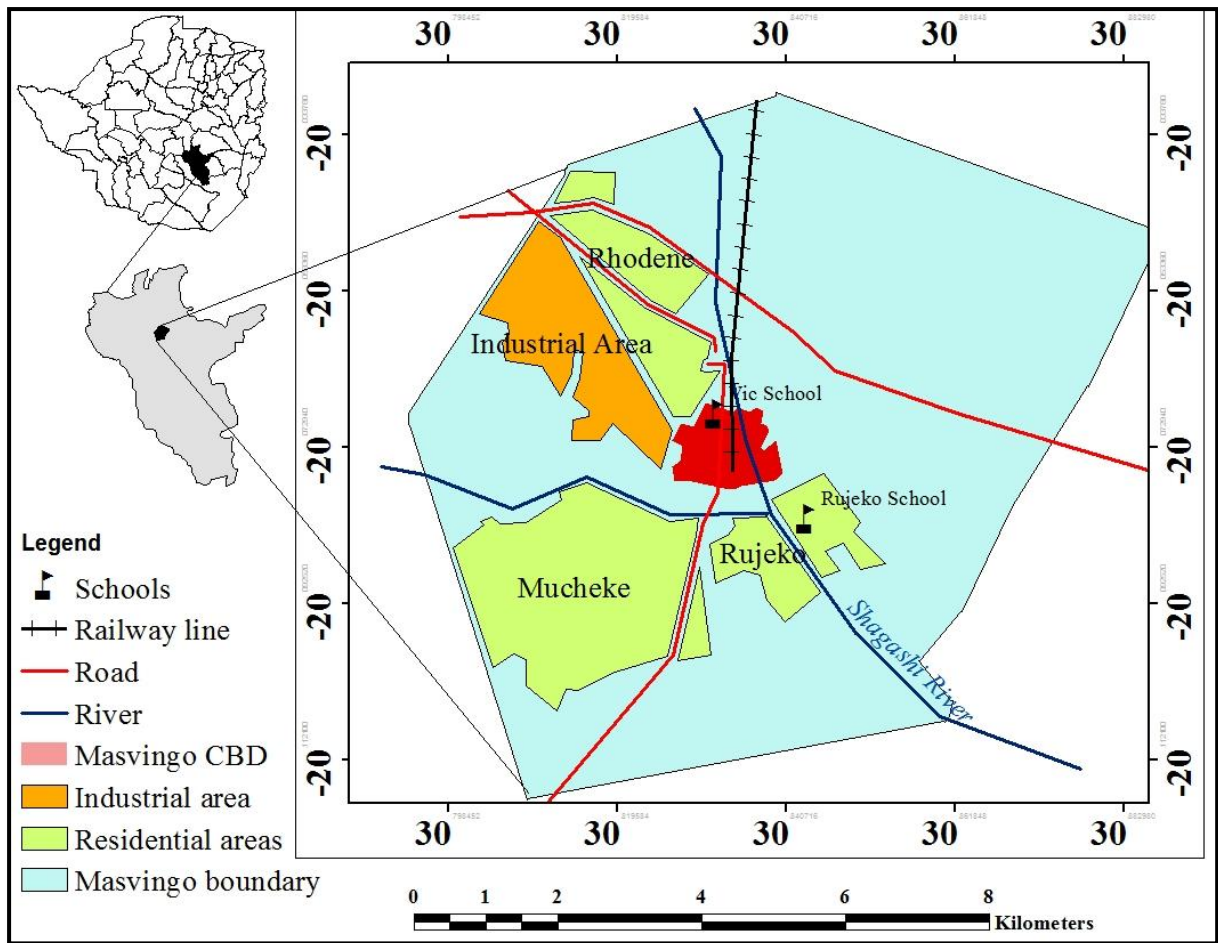


Figure 1.1: Study Area Map :

Source: Field data (2015)

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This section of the study looks at writing identified with the issue under study. Along these lines the study investigates different literary works on community based organizations and solid waste administration. It inspects key ideas connected to community based organizations and solid waste administration in both the developed and developing world and varieties that exist between them. The exceptional focus of community based organizations in solid waste management in order to concoct practical waste management choices. The essential target being to discover information gaps that may exist

2.1 Definition of Waste

What is considered waste by one individual will be necessarily 'waste' to another individual. ILO and SIRDC (2007) and Gourlay (1992) both agree that waste is matter thrown away or something that is no longer useful or no longer required by the original owner and therefore is discarded. DEFRA (2012) defined waste as any substance or object which the holder discards or intends or is required to discard. Waste is an inevitable by-product of any process and it is predominantly found in solid and liquid form. However it can be categorized as domestic waste, commercial, industrial, mine waste, hazardous waste, medical waste, agricultural and E-waste.

2.1.2 Definition of Solid Waste

Solid waste is defined as non-streaming natural and inorganic materials which include residues, by-products or end products in the production, distribution or consumption of goods and procurement of administrations that are disposed of by their typical proprietors without hoping to be made up for their intrinsic worth (Cointreau 1982). Srivastava (2012) characterized solid waste as a term typically connected to a heterogeneous gathering of waste delivered in urban ranges, the nature of which differs from locale to area. The characteristics and quantity of the solid waste generated in a region is not only a function of the living standard and lifestyle of the region's inhabitants, but also of the abundance and type of the region's natural resources. Different terms, for example, litter garbage or refuse can be utilized by diverse researchers to portray solid waste in different circumstances.

2.2 Overview of solid waste management

2.2.1 Overview of solid waste management in developed countries

Urban centres in all the more monetarily created nations produce immense amounts of strong waste and they have satisfactory offices and capable foundations for dealing with their solid waste (Srinivas, 2003). Research has demonstrated that solid waste that is created in developed nations is evacuated and arranged in a protected and proficient way as proved in urban areas. UNEP (2002) highlighted that most solid waste created in these urban communities are dealt with preceding transfer at well picked, secure and outlined landfills. In opposition to this, urban centres in developing nations in Sub-Saharan Region, for example, Harare (Zimbabwe) are still in the process of accomplishing better solid waste administration frameworks since they currently have inadequate strong waste gathering and poor transfer frameworks (Srinivas, 2003).

2.2.2 Overview of solid waste management in developing countries

The primary difference between wastes generated in developing nations and those generated in industrialised countries is the higher organic content characteristic of the former. The local authorities or municipalities in developing nations face monetary difficulties to successfully deal with their waste from era up to transfer since 80-90% of their financial plan represents waste gathering just leaving different administrations in the whole chain solid waste management not legitimately attended to. The critical circumstance is further exacerbated by the unpredictable dumping of domestic and mechanical waste, restricted regulation of the private part and low need given to solid waste management. Administration conveyance is adversely influenced as a result of restricted monetary assets apportioned to the solid waste administration division by the local governments.

Negative environmental impacts such as pollution in its various form and health related problems such as typhoid and cholera have resulted from poor solid waste management practices from its generation to final disposal into the environment. The lack of human and monetary assets in the neighbourhood power and untrustworthy conduct by inhabitants on wanton littering further exasperates waste administration challenges. In spite of the fact that there are endeavours to actualize cost recuperation techniques in solid waste administration in creating nations they are undermined by absence of eagerness to pay for waste disposal. The failure of legislative frameworks to course to neighbourhood powers and also obsolete by laws that don't supplement the national systems make implementation of enactment and

proficient administration of solid waste in developing nations poor as it is the situation in Zimbabwe.

2.2.3 Overview of solid waste management in Zimbabwe

The issue of solid waste management has turned into a reason for worry to different partners, for example, Non-Governmental Organizations, government services, private sector, corporate segment and the community at large. In Zimbabwe most urban local authorities, for example, Harare, Kwekwe, Gweru, Masvingo and Chiredzi think about the issues of high volumes of waste, expense included, transfer advances and approaches and also the unfavourable impacts of the waste on the environment. This challenge has been compounded by the generation of solid waste which has gone beyond the handling capacities of the Masvingo City Council especially in the high density area of Mucheke. It is further worsened by reckless behaviour of residents, economic decline and urban population growth at an unprecedented rate over the last decade and this has placed tremendous pressure on the municipalities. It is against this foundation that has further motivated the researcher to dig more into the role of community based organizations in solid waste management in order to come up with a few choices that may help to enhance solid waste management in urban areas of Zimbabwe.

2.3 Waste Management practises

Waste management relates to materials produced by human activities and is undertaken to reduce their effects on human health, the environment and aesthetics. Waste management usually differs from developed and developing countries, from urban to rural areas. Developed nations produce colossal amounts of solid waste however sufficient facilities and skilled foundations for dealing with their solid waste exist (Srinivas, 2003). Research has proven that solid waste that is produced in developed countries is removed and disposed in a safe and efficient manner. Urban centres in developing nations in the Sub-Saharan Region, for example, Harare, Bulawayo, Mutare, Kwekwe, Kadoma and Masvingo (Zimbabwe) are in the process of accomplishing better solid waste management strategies since they have inadequate solid waste collection and poor disposal frameworks (Srinivas, 2003). Waste practises like sorting, recycling, reducing, and refuse are undertaken whilst most developing countries usually concentrate on collection, transportation and disposal of waste at the waste dumpsites because of limited financial, human resources and expertise. Zimbabwe is

adopting the Three Rs Concept and the sorting system and the other waste management practises. The waste management practises which are common globally are:

2.3.1 Sorting

Sorting is the separation of waste according to type and it is then placed in separate and clearly labelled collecting bins for instance one can have four litter bins, one for plastics, another for paper, another one for the bones and the last one being for glass or metal. This form of waste management is usually practised in developed countries and requires a lot of resources. Developing nations do not usually practise this type of waste management due to lack of resources. Sorting can be shown in Plate 1, where the community based organizations have sorted out plastic papers which they later sell to the recycling company.



Plate 2.1 :Sorting bins.

(Source; EMA Bulletin March 2011).

2.3.2 Three Rs Concept

The 3Rs concept also highlights some concepts of waste management which vary in their usage between countries or regions. The concept of 3R's (reduce, recycle, reuse) in waste management is widely practised in developed countries like Britain, Germany and most European countries due to availability of resources and expertise, developing countries like Zimbabwe have also adopted this concept but due to lack of financial resources and limited expertise in recycling technology the concept is not fully used. The 3R's concept takes a paradigm shift from the notion of considering waste as useless but as something that has no value but rather considers waste as valuable material.

In the 3R's approach:

- ✓ Reducing-means choosing to use items which care after planning what you intend to use or buying what you need rather than what you want and also purchasing products with less packaging materials to reduce the amount of waste generated.
- ✓ Reuse- involves the repeated use of items or parts of items or gadgets which still have usable aspects for instance one may have to use cloth napkins and towels instead of disposable ones (pampers).
- ✓ Recycling-means the use of waste itself as a resource and in this case waste can be used as part of raw materials to manufacture required items, examples of things that can be recycled are glass, paper, plastic, metals and cloths to mention but a few.

Example of products made from reused materials can be identified in plate 2.2



Plate 2.2: Reused metal cans

Source: Field data (2015)

2.3.3 Burning

Burning is a waste management practice which is commonly practised in developing countries and this is mainly attributed to lack of knowledge and ignorance, as burning only converts solid waste into gaseous noxious fumes to the human health and environment. This practice is prohibited by most environmental laws for instance Environmental Management Act (20:27) of Zimbabwe.

2.3.4 Dumping

This is when waste is dumped mostly at illegal dumpsites and these maybe at street corners and in roads. The practice is common in most developing nations and it is usually an eventual occurrence due to factors like lack of environmental education and irregular collection of refuse by responsible authorities but is prohibited



Plate 2.3: An open dumpsite in the high density of Muccheke

Source: Field data (2015)

2.4 Definition of Community Based Organizations

Middlemiss (2009) characterizes Community Based Organizations as 'gatherings that exist inside of a group (either interest or place) with a neighbourhood focus, with an overwhelmingly deliberate nature, and separate from the core exercises of state and business associations'. As enunciated in the 1992 Rio Declaration, Principle 10 it has been stated that to achieve sustainability in environmental issues participation of interested partners at different levels is critical. The obligations, intrigues and power structures included in solid waste administration ought to be very much perceived. At national level, people ought to have the chance to take an interest in choice making procedures on solid waste management, however in Zimbabwe negligible support of the community based organizations exists because of outdated approaches that don't plainly stipulate their parts in waste management which for this situation requires pressing consideration and readdress (Squires, 2006). On this notion The Rio Principle therefore laid the basis for Agenda 21 which makes stakeholder participation in solid waste management inevitable.

Everyone has a part to play to guarantee a sheltered and clean environment. Makwara (2011) recommended that the viability of solid waste management strategies rely on upon important cooperation of different partners, for example, governments, NGOs, private division, districts, industrialists, people and the communities among others. Full participation and facilitated endeavours between the previously stated partners or stakeholders upgrade maintainability of solid waste management frameworksthrough sharing of obligations.

Civilians are primary stakeholders that are directly affected either positively or negatively by the implementation of solid waste management projects. Community participation is not a new phenomenon, but emphasis is on conscientising decision makers that community participation in solid waste management would add value and reduce costs and all the risks that are associated with poor solid waste management practises as they are the key factors for sustainable solid waste management. Human development is promoted by community development through ‘empowering communities and strengthening their capacity for self-sustaining activities’, and this has been historically been practised by local communities since the existence of human societies (Monaheng, 2000).

As compared to developed nations which have solid waste management frameworks, in Zimbabwe the issue of community participation is not viewed as a good framework hence the little information explored about them. Gaps still exist in documentation on the projects which are undertaken by the community based organizations in developing countries like Zimbabwe. The challenges that they face, even solutions that can be implemented are dealt with in a superficial manner in developing nations. Participation of communities or community based organizations can be influenced by arranging open dialogs, discussions and negotiations. Allowing the participation of community based organizations is viewed as a bottom-up approach, whereby they are enabled to make their own decisions that involve their well being in as much as solid waste management issues are concerned. Involving helpless individuals in arranging and usage of fundamental frameworks is critical (Hope 1998), and it has credited to the way that community inclusion in such projects which are gone for ensuring the earth upgrades their self regard and feeling of community possession. Supporting community participation influences sanitation conduct and their counsel brings administration of waste management into realization (Mansoor and Saywell, 1995).

Adverse effects of poor solid waste management strategies affect the local people and hence community participation should be taken into consideration as a primary focus in the issues of solid waste management. Community based organizations with the help of the local people have the best knowledge of their local surroundings in terms of demography of their community and their local and traditional organization and their involvement gives them great confidence in their capabilities to act in the event of disaster.

Participation of both the local community and the community based organizations makes them enlightened to the modern knowledge presented to them. A bottom-up approach allows for decentralization and in this respect, it allows the decentralization on the issues to do with solid waste management. This approach's effectiveness is dependent on efficiency, flexibility and responsiveness to local requirements (Schubeler, 2006). Community is an indispensable asset as well as a store of social capital since its participation contributes to people's empowerment to possess physical safety, access to control of resources, participate in decision making processes that affect their personal life to enjoy the benefits of a healthy environment as stressed out by (Figueroa 1995). Involving community based management models in issues of solid waste management allows for the alleviation of problems caused by poor solid waste management strategies since they are the ones that are mainly affected by impacts of solid waste.

2.5 Local Authorities

Section 83 of the Public Health Act of Zimbabwe of 1996 states that every local authority is mandated to take all lawful, necessary and reasonably practical measures to maintain clean and sanitary conditions in its district at all time as to prevent accumulation of waste which may be hazardous to health (Jerie 2006). The local authorities are responsible for solid waste collection, street cleaning services, cleansing inspection, issuance of waste disposal permits as well as waste disposal services in the urban areas under their jurisdiction as enshrined in the Urban Councils Act. Schubeler (1996) and Feresu (2010) expressed that local authorities are in charge of directing city by-laws that help them to control and manage exercises in their areas of jurisdiction in order to improve environmental wellbeing and insurance. In developing countries the Local Authorities' capacity to deliver services is greatly caused by financial constraints, weak technical and administrative capacity and inappropriate technologies in solid waste management and limited resources which are not commensurate with the high rate of waste generation and this according to (Hope 1998 and Mangizvo 2008).

The Local Authorities and the Community Based Organizations can team up and work together in attempting to fight solid waste since they appear to neglect to meet their obligations in collection of the solid waste. In Zimbabwe, the Urban Councils Act (Chapter 29:15) does not completely grasp the privileges of citizens to take part and it is in this way related to note that survey of the Act must be attempted to incorporate their perspective and commitments therefore covering the present holes influencing full community participation in solid waste management.

2.6 Non Governmental Organizations (NGOs)

Non-governmental organizations are secondary stakeholders that play a crucial role in solid waste management through working with the Local Authorities and other parastatals like Environmental Management Agency (EMA) and increasing the capacity of the communities in solid waste management (Ali and Snell 1999). The role of NGOs include capacity building to the community at large, provision of cleaning equipment, funds, receptacles, protective clothing, clean up campaigns, and information dissemination thus informing residents on the socio-economic benefits and the harmful imprints associated with poor solid waste management. In Masvingo Zimbabwe there is Care International which is a non-governmental organization has works hand on hand with the community based organizations in trying to combat solid waste. Schubeler (1996) on another notion, states that non-administrative associations are fundamentally inspired by philanthropic or formative concerns instead of a change which can be viewed as a disadvantage about NGOs. In Zimbabwe, non-governmental organizations, for example, Care International, Oxfam, Environment Africa, Zimbabwe Ahead work with groups and Local Authorities, in Masvingo there is Care International as highlighted by the researcher above. They offer support in clean up campaigns, composing and education awareness programmes in the high density residential area so as to make communities valuable partners of the government in the local waste management.

2.7 Private Sector Participation

The private sector plays a crucial role in solid waste management in many countries worldwide. The private sector is participating in different activities and these include provision of receptacles, street cleaning equipment and especially financial resources. The private organizations in Masvingo that are involved in solid waste management include Innscor which is better known as Chicken Inn, Montana Meats, Clester Cleaners, Nyaradzo

Funeral Assurance and Delta Corporation. These stakeholders have joined EMA, Local Authorities and community based organizations in various activities of solid waste management. The private sector shareholders participated in the annual event of the Environmental Management Agency, the Clean-Up Zimbabwe which is held on the 17th of September every year. The campaign was held in 2014 in Masvingo and it ran under the theme 'A Clean Zimbabwe: Everyone's Responsibility'. Private waste collectors may be directly contracted by individual households, business organizations and the local authority. Gourlay (1992) highlighted that for privatization to be successful proper regulatory structures are needed so that private service providers do not violate environmental guidelines widely accepted for proper solid waste disposal. Transparency, competition and accountability also determine the success of privatization in solid waste management.

2.8 The knowledge gap; researcher's analysis

A closer look into the chapter shows that developed countries manage solid waste better than developing countries due to the following reasons:

- Environmentalists take it as a fact that there is relationship between solid waste and occurrence of diseases.
- Governments heavily subsidize and prioritize solid waste management in the developed world.
- There is collective action in management of solid waste issues in the developed world.
- Intensive investment in environmental education and awareness and provision of supporting materials in developed countries whilst in Africa and other developing countries little emphasis is placed on environmental issues but on social, economic and political dimensions.
- While limited studies have been carried out in Zimbabwe on impacts of solid waste dumps on local vegetation, inferences can be made from studies on mine dumps which produce similar levels of heavy metals.

It is against this background that has further inspired the researcher to delve more into the role of community based organizations in solid waste management so as to come up with some options that may help to improve sold waste management in urban areas of Zimbabwe.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the various methods that were employed by the researcher to collect and analyse raw data. Discussion in this chapter is also focused on clarifying the research design adopted; sampling techniques used as well field observations, interviews, questionnaires and document analysis as instruments in collecting data in order to address the research objectives.

3.2 Research Design

A case study approach of Masvingo City was utilised in the research. The triangulation strategy which utilizes both the subjective and quantitative methodologies was utilized as a part of information accumulation as analyst utilized surveys, semi-organized meetings, field perceptions and report examination. In addition, a triangulation configuration gives premise of examination and in addition elucidation of data from differing instruments ,both quantitative and qualitative methodologies additionally supplement one another in the later phases of the exploration where subjective information is evaluated. This exploration outline was vital in that it takes into account top to bottom portrayal of the wonder under scrutiny (Best and Kahn, 1993). The expressive exploration configuration was utilized as a part of this examination. The examination outline is crucial in that it allows a start to finish delineation of the marvel under study to depict what exists on the ground (Key, 1997).

The qualitative examination model which is elucidating in nature was utilized by the researcher to pick up a more profound comprehension of individuals' perspectives, sentiments and understandings relating to the part of group based associations in the management of solid waste. Data was acquired from the Environmental Management Agency, Masvingo City Council, CARE International Zimbabwe, Clester Cleaners and chose inhabitants included in strong waste administration in Masvingo City. Polls, photographs, perceptions, talks with and existing data helped the analyst to uncover what is as of now on the ground.

The quantitative exploration model was likewise utilized as a part of this examination basing on the reason that social wonders can be evaluated, measured and communicated numerically subsequently making the information at risk to be broke down by factual strategies. Factual tests, viability of group based associations, feasible solid waste management procedures and

legitimate perspectives was basic in the creation of measurable tables, diagrams and outlines that represented the research results.

3.3 Population and Sample

Creswell (2009) portrayed target population as "the entire gathering of individuals or items in which researchers are intrigued with summing up the conclusions". The target population are the people that form the community based organizations for questionnaire surveys which are the members since the research focuses on the role of community based organizations in solid waste management, while for the interviews Environmental Management Agency Provincial Manager and the environmental monitoring and planning officer, the apex committee of the community based organizations, Masvingo City Council Health and Waste Management are targeted.

3.4 Sample size

Creswell (2009) suggests an example size of between 10-20% to get results. This certain percentage was selected due to the fact that the area under study or rather the people studied exceeded 300 people and this included the non active portion of the population. An extent of 10% is generally acknowledged when managing a given populace which is above 100. Precision and unwavering quality of the outcomes speaking to the group's interest based organizations in solid waste management in Masvingo City was accomplished.

3.5 Methods of data collection

The research instruments utilised by the researcher include questionnaires, guided interviews, field observations and photographs.

3.5.1 Questionnaires surveys

A total of 35 semi- structured questionnaires were self administered to attain adequate information from residents on solid waste management activities undertaken by the community based organizations and their effectiveness, environmentally sustainable solid waste management practises as well as legal and institutional aspects involved in solid waste management. They allowed the respondents to make their considerations carefully without interference from the researcher; they allowed the residents to express their views guided by the structured questions and in full confidentiality and anonymity as they did not have to write their names. Milne (1999) suggested that questionnaires allowed responses to be

gathered in a standardised way and in this case questionnaires were more objective. The questionnaires enabled uniformity as each respondent received an identical set of questions and this made it easier for the researcher to interpret the results on the role of community based organizations in solid waste management.

3.5.2 Interviews

Purposive sampling was utilised in choosing candidates for interviewing stakeholders such as the Environmental Management Agency’s Environmental Planning and Monitoring officer, Clester cleaners, the apex committee of the community based organizations, and the Masvingo City Council health and waste management director. Interviews were undertaken so as to allow acquisition of some confidential data that could not be revealed through questionnaires.

Table 3.1: Key informants and the reasons for their selection

Key Informants	Reasons for selection
Environmental Management Agency’s Environmental Planning and Monitoring Officer	<ul style="list-style-type: none"> • One of the initiators for the formation of the community based organizations and signed the Memorandum of Understanding with the Apex committee of the community based organizations • Responsible for coordinating environmental protection activities by giving knowledge and understanding of environmental rights, legal procedures and relevant Statutory Instruments and Regulations to different stakeholders.
Masvingo City Council Health and Waste Management Director	<ul style="list-style-type: none"> • Responsible for day to day management of waste management services in Masvingo.
Apex committee of the community based organizations	<ul style="list-style-type: none"> • Mobilizing the community in waste management activities aimed at keeping the environment clean • Involved in the recycling of the solid waste.
Clester Cleaners	<ul style="list-style-type: none"> • Responsible for recycling the solid waste especially plastic paper.

3.5.3 Observations

Participatory and non participatory observations were done in this study. The emphasis was on discovering the meanings of the reactions exhibited by people towards actions of other people or change of situation. It allowed the researcher to look at people's actions and situations' noting what is going on without asking questions. In the case of the research under study, observations assisted the researcher to view day to day solid waste management activities that were being undertaken by the community based organizations with also the aid from Environmental Management Agency and Masvingo City Council. Activities taking place at cooperative recycling points were also observed by the researcher and thus revealed the ways communities are involved in solid waste management.

3.5.4 Focus Group Discussions

They also made important contribution to the research study. Well facilitated and organized group discussions were held by the researcher with the residents of Masvingo urban. They assisted the researcher in bringing to the surface various activities undertaken by communities, challenges affecting their full participation, solid waste disposal practices employed and environmentally sustainable solid waste management strategies that must be adopted at community and national level. The discussion also allowed the researcher to probe more questions during discussions. In this regard, the effectiveness of community participation was assessed and it paved way for the researcher to find recommendations and solutions that must be taken abroad to ameliorate solid waste management problems affecting Masvingo City.

3.5.6 Photographs

Photographs were also used to obtain data on the solid waste being produced and also on the activities done by the community based organizations. Photographs were used because they capture phenomena and quite well depicted pictures could tell a big story about the phenomena or aspects being investigated.

3.6 Data Analysis and Presentation

According to Sapsen and Jupp (2008) data presentation and analysis "is the procedure of changing crude data variables that can be analysed to produce the data found in results". This study consisted of both qualitative and quantitative data which was presented and analysed differently. Quantitative or numerical data extracted from questionnaire and interview responses was analysed using the Statistical Package for Social Sciences (SPSS) and data

presentation was done using various tables, charts, graphs and figures. Microsoft Excel was also essential in the production of other graphs. Significance tests for different variables were done using Chi Square test which is a non parametric test. The data presentation will cover the following aspects wastecollection, activities undertaken by the community based organizations as well as effectiveness of community participation in solid waste management in Masvingo City.

CHAPTER FOUR:RESULTS AND DISCUSSION

4.0 Introduction

This section shows the research discoveries. The information gathered from directed meetings and managed surveys was examined and deciphered to get which means from the discoveries. Amid information presentation the specialist concentrates on the study's destinations in order to analyse and interpret the outcomes in accordance with the research objectives.

4.1 Community Participation

This idea of community participation in solid waste management forms the core part of the research study since the researcher intended to examine the roles and effectiveness of community participation in solid waste management in order to come up with sustainable solid waste management options in Masvingo Urban.

Table 4.1:Community Based Organisations in Masvingo Urban.

Seven Clubs established in Wards 1 to 7 (high density).

Ward	Suburb	Name of Club	Current Membership
1	Mucheke A	Smart	50 (4 males; 46 females)
2	Mucheke A	Jekesafungwa	30 (3 males; 27 females)
3	Chesvingo	Kushinga	35 females
4	Yeukai	Uchapakuda	130 (2 males; 128 females)
5	Pangolin	Batanai	22 (1male; 21 females)
6	Hillside	Kurongeka	27 (2 males; 25 females)
7	Rujeko	Tasimukira	56 (3 males; 53 females)
Total			350 (15males; 335females)

Source: Field (2015).

4.2 Types and sources of waste generated in Masvingo urban.

From the interview conducted to one of the member of the Apex committee, it was indicated that the types of waste that they manage is recyclable waste which they process into new useful products, organic waste which is used for composting and solid type which usually is later put to the dumpsite.

Table4.2:Sources and types of waste generated.

Source	Typical waste generators	Types of solid waste
Residential	Single and multifamily dwellings	Food wastes, paper, cardboard, plastics, glass, metals
Industrial	Light and heavy manufacturing, fabrication, construction sites	Housekeeping wastes, packaging, food wastes, construction
Commercial	Stores, hotels, restaurants, markets, office buildings	Paper, Cardboard, plastics, wood, food wastes, glass, metals
Institutional	Schools, hospitals, prisons, government centres	Paper, Cardboard, plastics, wood, food wastes, glass, metals
Municipal services	Street cleaning, landscaping, parks, other recreational areas, water and wastewater treatment plants	Street sweepings, landscape, and tree trimmings, general waste
Process (manufacturing)	Heavy and light manufacturing, refineries, power plants	Industrial process wastes, scrap materials, off-specification products.

Masvingo Provincial Hospital has an incinerator and all the waste is incinerated and the ash goes to the city council dump. It was noted that, upon collection of waste the CBOs do not have actual estimated quantities of the waste they manage but rather the amount of waste that they sell to Clester Cleaners after they have washed the papers. Upon weighing they sell 1 kilogram of plastics at \$0.30 but in order to make profit and cutting costs they usually sell the plastics in tonnes and 1 tonne is sold at \$70.00 which take them 2 weeks to fill up a tonne of plastics and also it applies to cardboard boxes.

The amount of waste disposed can be as a result of number of residents that is increasing and this has resulted in the increase of waste. The introduction of community participation has

gradually increased over the past 4 years resulting in more awareness and demand for various wastes being reduced, reused and recycled.

The Masvingo City Council Health and Waste Management Director indicated that per week they record roughly 1450 tonnes of waste.

4.3 Strategies being done to manage solid waste by Community Based Organizations.

Figure 4.1 reveals that waste sorting is the most dominant activities undertaken by the CBOs on a regular basis as reflected by a frequency of 36, 7% respondents followed by clean-up campaigns reflected by a frequency of 26, 7%. They also do waste recycling as reflected by 16, 7% of the respondents. 13, 3% of the respondents indicated that they do composting whilst 6, 7% of the respondents take part in education awareness campaigns. They are sponsored by Environmental Management Agency, CARE and Masvingo City in which they were able to build a waste sorting site in Mucheke high density suburb.

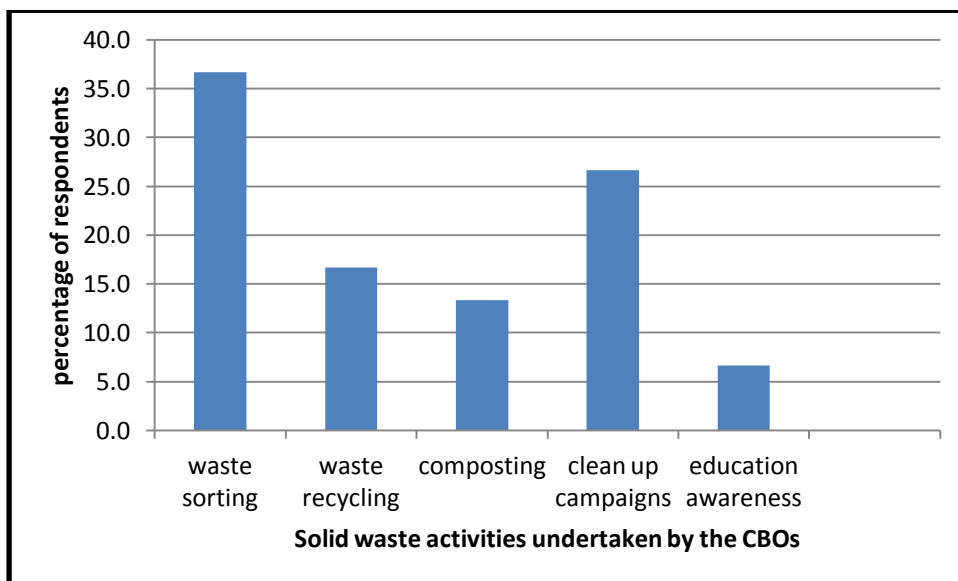


Figure 4.1:Solid waste management activities.

Source: Field data (2015)

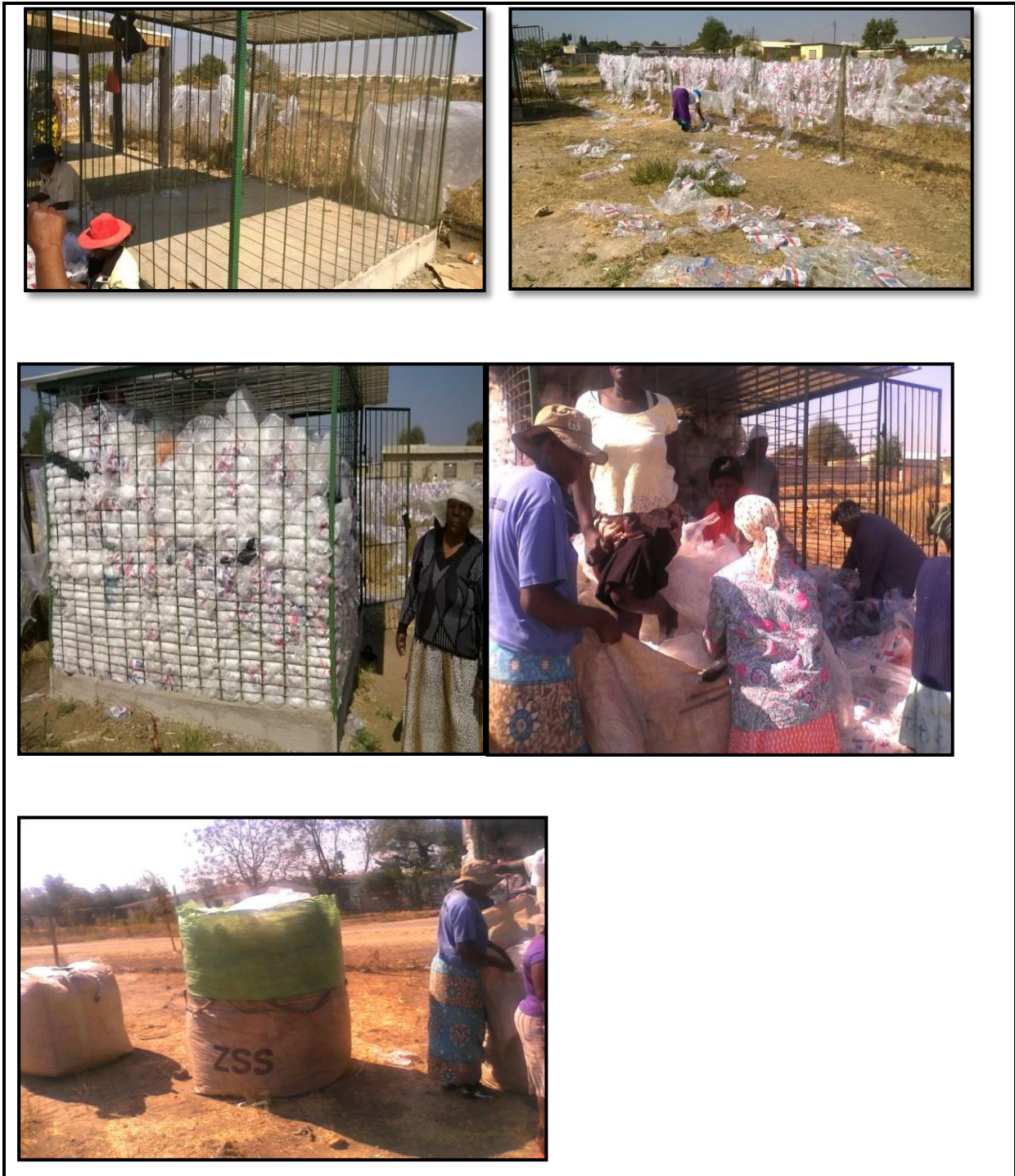


Plate 4.1: Shows the plastic sorting process

Source: Field data (2015)

The above pictures show the process of plastic sorting done by the CBOs at their waste sorting site in Mucheke residential area. The process starts from the storage cage being shown, drying the plastics after washing, plastics put in a cage, packing of the plastics in sacks and lastly the plastics in the sacks waiting to be collected by Clester Cleaners. Clester

Cleaners are responsible for recycling the plastics into bin liners, plastic bags to mention just a few.

Clean-up campaigns are also undertaken by the CBOs and they are supported by Masvingo City Council, EMA and CARE. EMA is responsible for providing brooms, T-shirts, pamphlets disposable plastic gloves, face masks and bin liners. Masvingo City Council is responsible for providing refuse removal trucks during the clean-up campaigns and also additional brooms and gloves. CARE is responsible for providing shovels, wheelbarrows. Training of people on proper solid waste management principles such as pre-sorting, disposable methods, education awareness exercises during the clean-up campaigns was done by EMA. CARE provided food for the people and each were given bar of soap.

From the interviews held between the researcher and the project officers from EMA, CARE, Masvingo City Council Health and Waste Management Director, it was noted that they all subscribe to the view that clean-up campaigns promote a sense of community ownership, social cohesion and discourage indiscriminate littering among residents and at the same time they make the environment clean. The interviewees mentioned above also asserted that clean up campaigns are useful tools in solid waste management as they are meant to conscientise residents on the importance of a clean environment. Clean up campaigns also reinforce Millennium Development Goal 7 (MDG 7), which is aimed at ensuring environmental sustainability.

Composting is also another activity that is being practiced by the community in Masvingo urban. From the administered questionnaires, respondents highlighted that it is one of the emerging solid waste management strategy that has drawn attention of many residents. This is practised by some members in the CBOs under the Community Health Clubs. During clean-ups bio-degradable waste is collected for composting rather than binning.

Results obtained from conducted interviews and administered questionnaires have shown that waste recycling in Masvingo urban has also drawn much attention of residents to an extent that they have established recycling cooperatives in a bid to improve solid waste management services in the urban areas as well as alleviating poverty since it is an income generating activity. One of the Apex Committee members pointed out that they collect various solid wastes ranging from plastic bags, polythene bottles and bottles caps. They make floor polish using plastic bags, litter bins from metal bottle caps and doormats using plastic bottle caps.

This has become a source of income for the CBOs. In an interview the Environmental Management Agency’s Environmental Planning and Monitoring Officer the Clester Cleaners Manager said, *“the waste recycling initiative came into effect after the understanding that communities can better understand solid waste management issues if they actively participate in solid waste management activities”*. Waste recycling is aimed at making purposeful and far reaching contribution to fight against urban poverty by promoting community participation in Masvingo urban.



Plate 4.2: Shows recycled products

Source: Field data (2015)

Environmental education awareness was also acknowledged as a solid waste management activity undertaken in Masvingo urban. This is due to the fact that EMA and Masvingo City Council are responsible for conducting education awareness conducted occasional, outreach programmes to promote community awareness on waste management.

“Solid waste should be managed through a number of activities—waste prevention, recycling, composting, controlled burning, or land filling. Using a combination of these activities together in a way that best protects your community and the local environment is referred to as integrated solid waste management (ISWM). An ISWM program can help reduce greenhouse gas emissions and slow the effects of climate change”. (www.epa.gov/osw).

4.3.1 Activities done by the community based organizations and the supporting organizations

Table4.3 :Activity and supporting organizations

Community activity	Period undertaken	Where	Supporting organizations
Clean up campaigns	Twice a month	Chitima Market Place	EMA, Masvingo City Council, CARE
Compositing	N/A	Homesteads	Masvingo City Council, CARE
Waste recycling	<ul style="list-style-type: none"> • Clester Cleaners buy the plastics from the CBOs after they have packed the bags and collect them for recycling. • The CBOs recycle the plastics whenever they are not busy doing more important work. 	Clester Cleaners Workplace, CBOs' workplace	Clester Cleaners
Waste sorting	Monday to Friday from half past 8 to half past 2	Done at the waste sorting site in Mucheke high density suburb	EMA, Masvingo City Council and CARE
Education awareness	Twice a month	Done at schools, community meeting halls, functions like the World Environment Day	EMA

Full support from these organizations invigorates the concept of Integrated Solid Waste Management (IWRM) aimed at giving various stakeholders a shared responsibility thereby enhancing sustainable management of solid waste in urban centres.

4.4 Effectiveness of community based organizations in solid waste management

- **Levels of source of separation**

Separation of waste is usually done from household unit, street or block separation on a common point where there maybe bins labelled, CBO separation at workstation after collection of various wastes, separation at dumpsite before disposal.

- **Re-use**

The concept of the 3Rs has become the backbone of the project. Collection of solid waste and separating it has resulted in the concept of re-using some of the useful wastes were they work under the term “WASTE IS MONEY”. A few points on re-using waste are as follows:

- Don't throw away glass jars-wash and save glass jars for handy use as storage, vases and food leftover containers.
- Use cloth napkins and towels instead of disposable one. (**No to diapers**).
- Try to find a use for everything you would normally throw away, such as old t-shirts as cleaning scrubs.
- Re-use paper, convert printer misprints into great to do-list scratch paper.
- Shoe boxes and yoghurt containers can be turned into herb planters, file storage and more.
- When going for shopping, use your non-disposable shopping bags. (**No to flimsy plastics, No to littering**).

- **Recycling**

The Waste Recycling Project component of the Waste Minimisation project is being done by the Masvingo Urban Recycling Club (MURC). This club is made up of members of Ward Health Clubs who came together to form a recycling entity despite the activities done in each individual Health club. Masvingo Urban Recycling Club (MURC) has over **169 members** drawn from six wards (Ward 1 – 6).

Recycling is usually done at the Community based work station where members meet and produce products.

Points on recycling waste:

- Recycle all glass, metal, paper and plastic. Compost all bio-degradable- a lot more than food can go into the compost.

Recycling protects the environment by:

- ✓ Reducing the use of raw materials.

- ✓ Reducing the impact of landfill on the environment.
- ✓ Reduce air pollution, less iron ore and oxygen that generate carbon dioxide is reduced.
- ✓ Reducing energy expenditure because less energy is required to use recovered recyclable materials than to produce products from virgin materials.
- ✓ Reducing unsightly and unhealthy litter particularly in pristine areas and living environment.

- **Composting**

During observation, it was observed that composting is being practised and they engaged in doing household composts and also community composting. The compost is for both for individual use and is also sold as manure to interested individuals. Biodegradable products are used especially those that have are produced at household level.

Project started in Masvingo City in 2010 through a partnership with a local NGO called ZimAhead. After the established of the project, EMA and Masvingo City Council then took over, EMA being the main stakeholder of the project. The idea of the term of Community Based Organizations came as result of the collaboration of the 7 clubs, hence the name CBOs. From the interview conducted to one of the Apex committee members pointed out that the levels of participation is greatly increasing. Many voluntary participants are also taking part in the clean up and also helping in the collection of plastics and also metal containers. Schools like Helen McGhie Primary School have engaged in a ‘ZERO TOLERANCE ON WASTE PROGRAMME’, whereby they punish anyone who is seen littering. Supported by the Agency to the tune of \$11 549.10. Partners include: MCC- co- implementing, monitoring and provision of land.CARE-co- implementing and financing (purchased 4 pushcarts and waste storage cages).

- **Community awareness**

The community is now aware of the solid waste management activities as compared to the last 3 years. The aim to manage waste in Masvingo has reached the ears of the Mayor of Masvingo, Mr.Fidze who has been seen participating in some clean-ups which are hosted by EMA. The participation of the Mayor has increased the

community awareness on the issues of solid waste management and this has increased the community participation.

Statistical testing on types of waste collected or managed and the strategies to improve solid waste management was undertaken by the researcher using Chi-Square Test.

Hypothesis

Ho – There is no association between the types of waste collected and the strategies that are used to improve solid waste.

H₁ – There is an association between the types of waste collected and the strategies that are used to improve solid waste,

Table 4.4: Chi-square test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.479 ^a	6	.612
Likelihood Ratio	6.311	6	.389
N of Valid Cases	30		
a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is .20.			

Basing on the information shown in Table 4.4 for the Chi-Square test for the two variables was 0.61 and it is greater than 0.05. This shows that there is no association between the types of waste managed or collected and the strategies that they use to improve solid. This means that there is no one unique strategy that is used but rather all the strategies can be used to improve solid waste despite the type of solid waste. The main objective is that the waste be managed despite the strategies used. This led the researcher to accept H₀ and reject H₁.

4.4.1 Views of respondents on their beneficitation from their participation in solid waste management as a community.

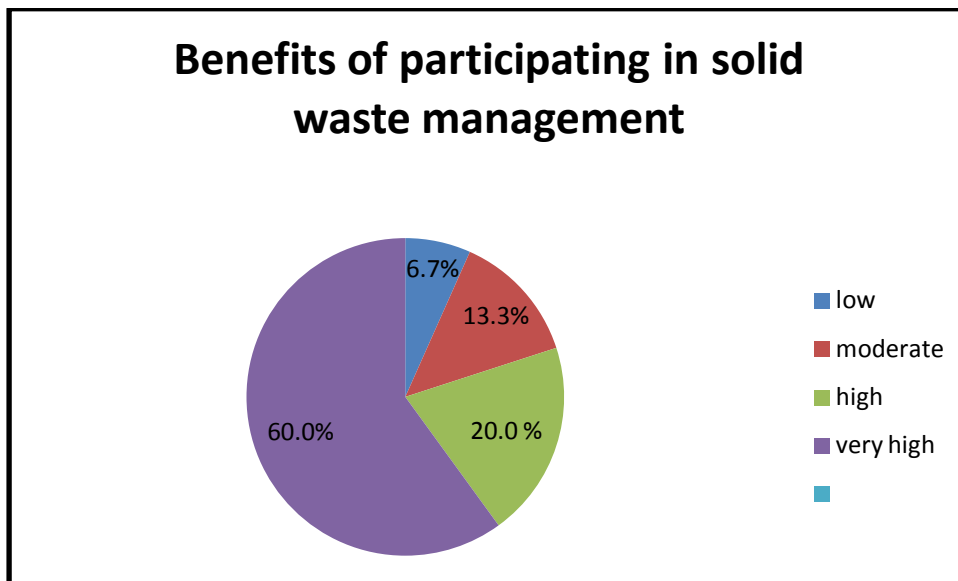


Figure 4.2: Benefits of participating in solid waste management

Source: Field data (2015)

From the diagram above it can be viewed that the respondents had different views on the subject of benefitting from the project of solid waste. 60% of the respondents indicated that they were benefitting from participating in solid waste management activities highlighting that they can sell their products that they would have made to make money. Things like handbags, mats and also they indicated that they make ECD dolls which they sell at Bondolfi Teachers College. 20% of the respondents and 13.3% of the respondents shared the same sentiments because they all highlighted that selling products depended on the target market and sometimes it was hard selling their products and also in terms of clean ups they appraised that they were getting positive feedbacks from other citizens of Masvingo urban. 6, 7% of the respondents highlighted that they were not benefitting because they feel that the work is not being well recognized, people still litter and one respondent gave an example of Chitima Market place, when he highlighted that if they clean up the area, it only takes three days for the area to become dirty again and there will not be any signs that there was once a clean up before.

4.4.2 Perception on Environmentally Sustainable Solid Waste Management Strategies.

Different opinions were aired out from the questionnaires and interviews administered on how they perceive the involvement of communities in solid waste management and also the involvement of companies especially Masvingo City Council. Responses from administered questionnaires clearly highlighted that community participation is a pragmatic tool in alleviating solid waste challenges affecting the Masvingo City Council. Various options suggested include the community, Masvingo City Council and the private sector or combination of the three. The respondents suggested that collaboration of the community with the various stakeholders is one of the best options in tackling solid waste management issues since they are the main reason for generating waste, handling and its disposal. Involving communities in activities such as clean-up campaigns, composting, waste recycling, incentivising and education awareness with the support of Masvingo City Council and the private sector is improving solid waste management in Masvingo Urban.

They also pointed out that concerted efforts by the Masvingo City Council and the private sector make solid waste management fruitful when these community activities are fully supported. Joint venture between the three has been prescribed as the best option or tool to deal with the solid waste since coordinated efforts as well as financial and technical support enhances viability of solid waste management strategies.

The private sector plays a pivotal role in solid waste management through assisting the financially crippled local authorities in the provision of loans to purchase refuse vehicles, fuel and supporting community projects and activities linked to solid waste management. According to Jerie (2014), The Masvingo City Council is experiencing immense challenges in paying monthly wages to its workforce due to limited income from the ratepayers. The result is that very limited funds are set aside for waste management services, let alone the purchasing of modern waste collection vehicles and waste receptacles. The Masvingo City Council Health and Waste Management Director highlighted that, *“We are facing challenges in meeting our timetable for collection of waste because of constraints such as vehicle allocation, fuel management and also some of the vehicles that are supposed to be used are no longer in use because they cannot be maintained and this has resulted in us failing to collect waste on our scheduled days”*.

Proper management of solid waste is quite difficult in most developing countries, particularly in those countries where regular solid waste is not managed adequately. Three issues are usually always relevant:

- 1) the party or organisation responsible for managing special wastes is seldom clearly identified and the necessary entity may not even be in existence;
- 2) available resources to manage solid waste are scant and priorities have to be set; and
- 3) the technology and trained personnel needed to manage special wastes are seldom available. (Diaz and Golueke, 1985).

The option of collaborating local authority and the community was acknowledged by respondents who posited that close cooperation between the local authority and the community enhances shared responsibility in solid waste collection and the management as mandated in the Urban Councils Act and Municipal By-Laws. However, some of the respondents opted that Masvingo City Council should operate as a stand-alone unit since conflicts, lack of cooperation and poor coordination between stakeholders are impediments to proper solid waste management and in line with this the local authority should be responsible for undertaking waste management services in areas under its jurisdiction.

The researcher noted that community involvement in solid waste management in Masvingo Urban was hailed by the interviewees who included EMA, CARE, Masvingo City Council Health and Waste Management Director and Clester Cleaners Manager. They were of the notion that communities can be better partners in solid waste management if decentralization of waste management services is done and full technical and financial support by various stakeholders is granted to the residents. This will therefore facilitate the establishment of waste collection points in the residential areas and also in the CBD, thus reducing costs incurred in door to door collection services. According to Chapter 20:27 Environment Management Act (Effluents and Solid Waste Disposal) Regulations, 2007 ,14 (1),*“Every local authority shall designate suitable sites as waste collection sites within its area of jurisdiction for the management of wastes and ensure a waste collection frequency that minimizes accumulation and avoids decomposition of waste on collection sites”*. In an interview the Masvingo City Council Health and Waste Management Director said, *“Community participation gives residents a sense of stewardship and hence encourage them to play a pivotal role in waste sorting, separation and recycling projects that are environmentally sustainable”*. Integrate the informal sector because co-operatives and

microenterprises are the primary users of smaller collection vehicles and can effectively collect waste from hard-to-reach areas at a low cost, minimizing solid waste in residential areas. Community members are generally more willing to pay for such flexible and inexpensive services in order to reduce solid waste (Medina, 1997).

In line with the views or perceptions alluded above, the researcher noted that community participation is a useful tool in solid waste management if joint initiatives between the local authority, NGOs and the private sector are done based on the premise that an integrated approach promotes shared responsibility in sustainable solid waste management.

4.5 Legislation and Institutional Aspects

The researcher also looked into legislation and institutional aspects which affect solid waste management in urban areas so as to assess the knowledge of the community as far as the legal and institutional aspects are concerned as well as identifying gaps that may exist.

4.5.1 Awareness of legal institutions involved in solid waste management

Table 4.5: Different levels of legislation awareness by community.

No.	Respondent	Know aspects on legislation or policy	Level of awareness
1.	CBOs	Yes	advanced – being aware of the specific legal requirements and policies
2.	Residents	Yes and No	basic – being aware of general information and poor – being unaware of any information
3.	Private Sector companies in waste	Yes	advanced – being aware of the specific legal requirements and policies

The above table shows the different levels of awareness. The researcher grouped the awareness levels into three groups which were poor, basic and advanced. Poor – being unaware of any information, Basic – being aware of general information, Advanced – being aware of the specific legal requirements and policies.

The legal institutions involved in waste management include the Environmental Management Agency, Masvingo City Council. EMA administer the Environmental Management Act (CAP 20:27), whereas the Local Authority administer the Urban Councils Act (CAP 29:15) and the Municipal by. They play a pivotal role in keeping the environment clean.

4.5.2 Legal institutions that deal with solid waste management in Masvingo Urban.

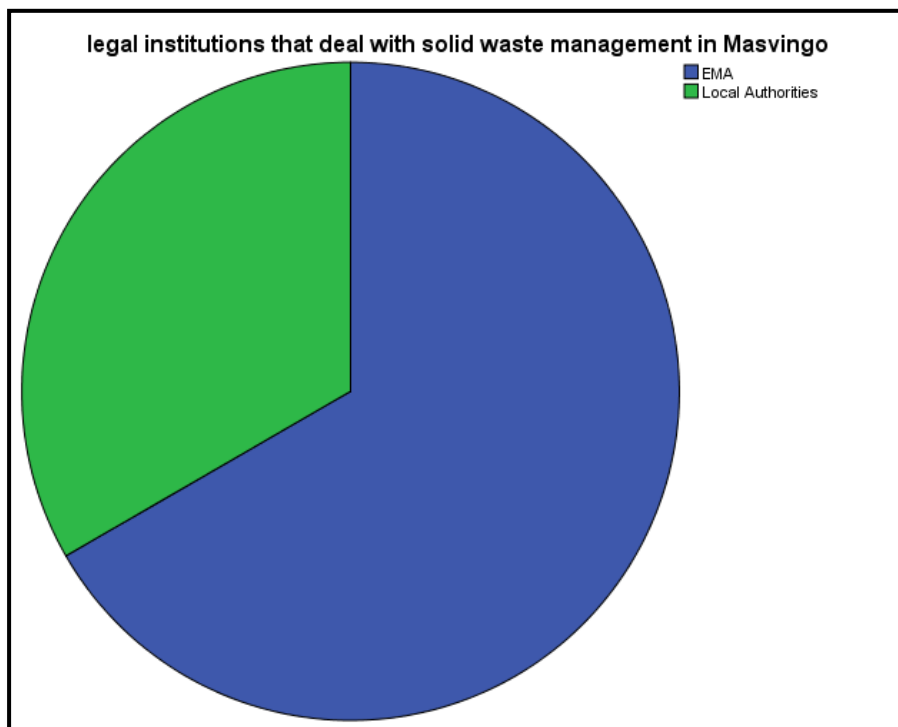


Figure 4.3:Legal institutions that deal with solid waste management

Source: Field data (2015)

From the figure above it can be noted that most people are aware of EMA and the main reason why that is, is because the fining that is done by EMA. People know that EMA fines people for littering and these are known as spot fines. According to Chapter 20:27 Environment Management Act (Effluents and Solid Waste Disposal) Regulations, 2007-23 (1), “Any person found throwing litter on any land or water surface, street, road or site in or any place except in a container provided for that purpose or at a place specifically designed for that purpose shall be guilty of an offence and liable to a fine not exceeding level three or imprisonment for a period not exceeding six months or to such fine and such imprisonment

unless any bye-laws within the area of jurisdiction of the local authority concerned provides for the offence in question”.

These local government units regularly have operational obligation regarding waste collection, exchange, treatment, and final disposal.

4.6 Effectiveness of Legal Legislation governing solid waste management.

The results from the interviews and questionnaires indicated that the respondents have different views pertaining to the effectiveness of these institutions. Statistical results obtained from the responses indicated that 50% of the respondents view these institutions and know about the legislations and as indicated below it shows that the 50% is aware of EM Act, whilst 16, 7% is aware of the Public Health Act, 6, 7% is aware of the Municipal By-Laws and last but not least 26, 7% did not know of any legislations governing solid waste in Masvingo urban.

Different reasons were cited by respondents on the ineffectiveness of these institutions. The low effectiveness is based on the solid evidence of the proliferation of illegal dumps in both the residential areas and the Central Business District which really shows that the Masvingo City Council and EMA are failing to undertake their duties of penalizing culprits. Frequently, in any case, the gathering of recoverable materials or administration of private temporary workers is the obligation of an alternate office, regularly making clashing objectives and activities that conflict with one another (Scharff and Vogel, 1994).

The Apex leader of the committee pointed out that, *“gaps exist in the enforcement of legislation by EMA which lacks the capacity to educate the residents on the provisions of the law, they only target Masvingo City Council for the filthy in the urban areas but fail to highlight the proper initiatives to take”*. Masvingo City Council Health and Waste Management Director attributed their ineffectiveness to lack of financial resources to purchase service and maintain the refuse collection fleet as well as inadequate resources which are incommensurate with the growing population. On the positive note, the respondents who suggested that those found on the wrong side of the law are paying punitive fines and since the dollarization of the economy full implementation and monitoring of the law is at an advanced stage.

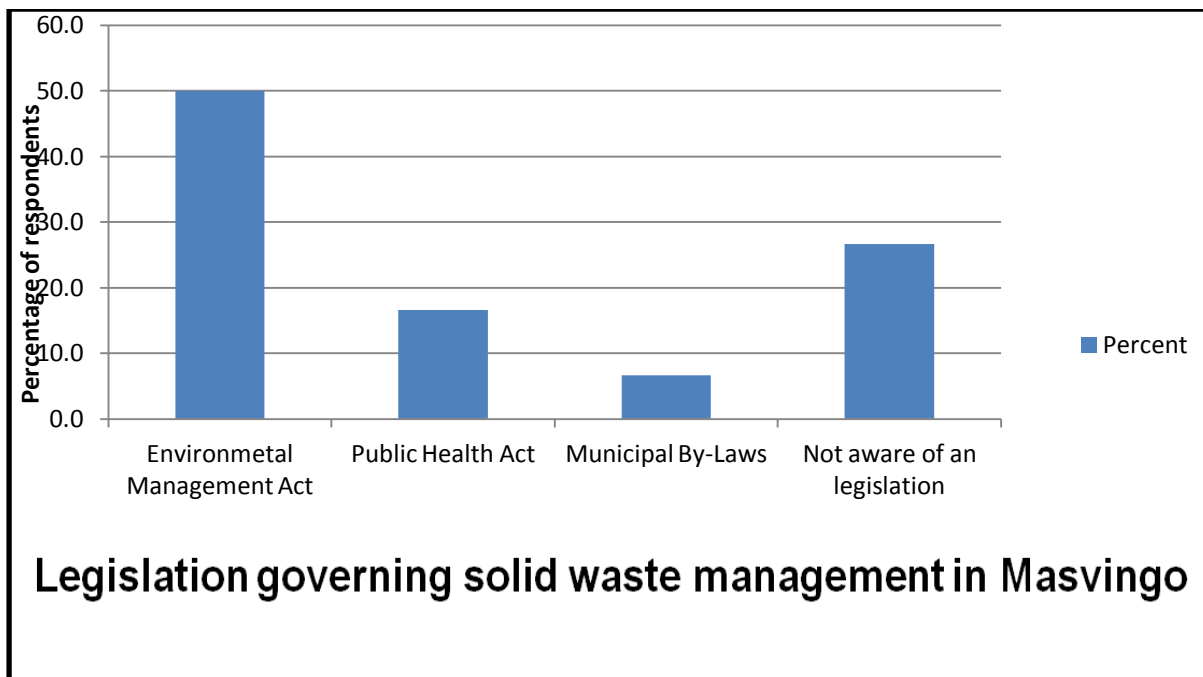


Figure 4.4: Legislation governing solid waste in Masvingo Urban.

Source: Field data (2015)

4.7 Compliance of the community to the existing legislation.

Evidence assembled from the respondents from administered questionnaires uncovered that there is consistence and resistance of residents to the current enactments identified with the solid waste management, for example, the Environmental Management Act (CAP 20:27), Public Health Act (CAP 15:09), Urban Councils Act (CAP 29:15) and Municipal By-Laws. On the focus group discussions which were done, respondents enunciated that there is low or rebelliousness of the current enactment and this is confirmed by the multiplication of unlawful dumpsites in the private rural areas brought about by the community's reckless conduct in legitimately handling of solid waste.

On a lower note, a few respondents pointed out that consistence of the legislation is moderate and this is particularly by concerned residents who are mindful of the law's procurements and dangers of littering. For those with high consistence to the current legislation represented the minority who has the environment at heart, who adhere to waste collection schedules and those who fully understand the provisions of the law as well as the course of action taken by legal institutions for non-compliance. Masvingo City Council Health and Waste Management Director asserted that, “*residents do not comply with the Waste Management By-Laws which*

stipulate that the Local Authority provides receptacle to the residents and residents have to put their bins out for collection but the residents deliberately miss the collection schedules and illegally dump the waste and this results in the formation of illegal dumps”. The Environmental Management Agency’s Environmental Planning and Monitoring Officer also propounded that, “the general population has a culture of non compliance and are highly resistant to adhere to the obligations of the existing laws and also the existence of illegal dump sites in residential areas is a clear reflection of residents’ non-compliance to existing legislation”.

4.8 Views of respondents on legislations as a tool for solid waste management.

The researcher obtained different views from respondents during interviews and from administered questionnaires on their perceptions of legislation as a solid waste management tool. Respondents were asked to choose from either “yes” or “no”.

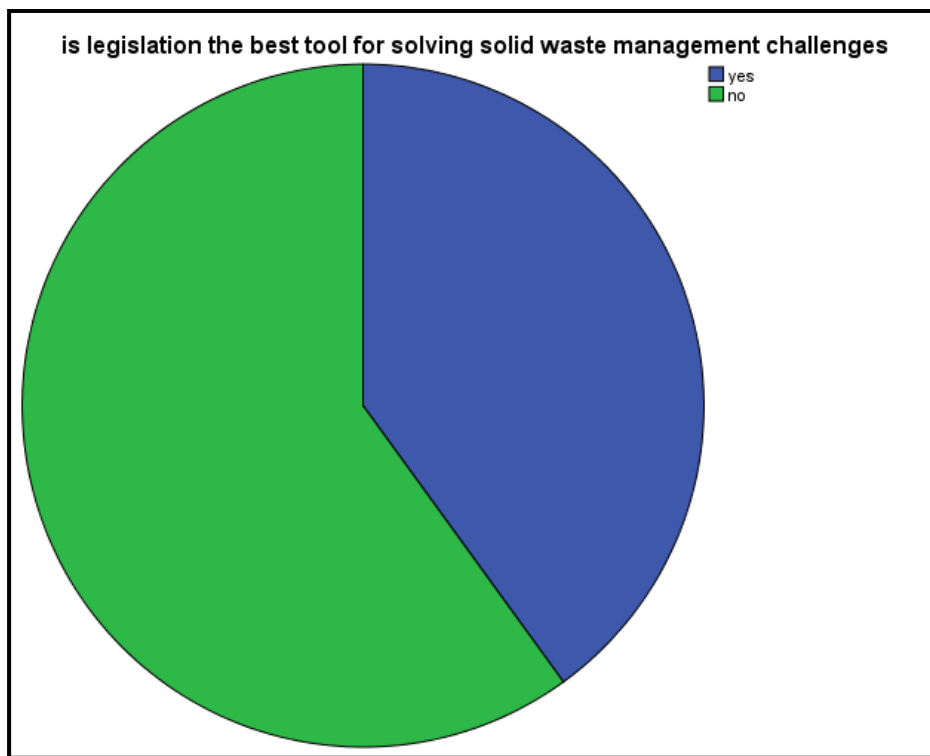


Figure 4.5: Legislation being the best solving solid waste management challenges.

Source: Field data (2015)

Results from the research study showed that 40% of the respondents concurred that legislation is a realistic instrument in improving solid waste management difficulties influencing the local authorities in Zimbabwe's urban regions and 60% of the respondents differ that legislation is not the best apparatus to check solid waste management challenges.

Those who collectively agreed pointed out that legislation is basic since it deflects individuals from wanton putting so as to litter set up reformatory measures that incorporate fine, correctional facility term or both. In this vein, it disallows the transfer of waste at undesignated destinations. For the 60% who deviated, they enunciated that the law's procurements are unforgiving, hard to comprehend and does not suit the general population's perspectives. All the more in this way, these laws take the "criminal law approach" which addresses matters after their event instead of being protection and in such manner, the law therefore received great condemnation.

However, some respondents argued that legislation is not the last resort. The Apex committee member said that, *"it is better to use the education awareness strategy rather than legislation. People should be educated first on the provisions of the law and the dangers posed by poor solid waste disposal. Education must change their attitudes and character towards solid waste."*

The existing legislative frameworks such as the Environmental Management Act and the Urban Councils Act have loopholes that result in policy failure and ineffectiveness in a bid to improve solid waste management. Community participation and the concept of 3Rs that is Reduce, Recycle and Re-use of solid waste should be widely adopted at household, community and national level. In an interview, the EMA officer said that, *"Legislation is one of the many tools that can be used to improve solid wastemanagement in urban areas as long as financial and human resources are adequate enough to make enforcement and monitoring of the law effective"*. Environmental education, stakeholder participation, recycling and reuse must work hand in hand with legislation to improve solid waste management in urban areas. In this regard the researcher noted that respondents have different views on residents' attitude towards existing legislation on waste management as highlighted above.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The research established that solid waste is not being managed properly in Masvingo urban. Varying amounts of solid waste is generated in Masvingo urban and this can be attributed to factors like ignorance on the subject of solid waste management, Masvingo City Council's inability to manage solid waste, also people not having receptacles bins. If households, offices, supermarkets, and even schools in Masvingo urban had bins, it would have meant that they would stock their waste until the time city council comes to collect the waste. However, it has to be appreciated that the irregular waste collection frequency by Masvingo City Council can be directly linked to such mal-practises like open waste dumping and burning, hence the poor state of waste management situation in Masvingo urban.

The City of Masvingo's failure to regularly collect waste is no secret. While the city has a statutory mandate to collect and manage waste, the research has established that the city lacked the capacity and the poor state of affairs on waste management is a testimony to this failure. Thus, mechanism to boost city council's capacity to deal with the waste management challenges should be explored to avert a potential environmental and health catastrophe. This is because the research has established poor planning and misallocation of financial resources as one of the reasons for poor waste management situation in the city.

Environmental cleanliness is improving and this can be noticed in some parts of Masvingo urban. The method of the 3Rs is showing effect because the community based organizations are engaged in solid waste collecting, sorting, recycling and reusing. The recycling method has proved to be a huge success because the products that they are making can be sold. They are making baskets, doormats, hats to mention just a few and the products are sold. Organic waste which is indiscriminately dumped by the residents is now being used for composting.

During the research, other findings were pointed out that Masvingo City Council is mainly active during outbreaks of diseases such as cholera and typhoid and inactive when these diseases are under control and check. The study also revealed that stakeholder frustration

with the inability of council to regularly collect properly dispose waste to an extent that they think it's better for waste collection service to be privatised.

Residents and citizens of Masvingo urban have limited knowledge of the existing legal frameworks on solid waste management such as the Urban Councils Act (CAP 29:15), Public Health Act (CAP 15:09), Environmental Management Act (CAP 20:27) and the Municipal By-Laws leading to random dumping of waste at undesignated sites.

Participation of community based organizations is of paramount importance that if properly managed, Masvingo urban can become a ZERO TOLERANCE CITY OF SOLID WASTE.

5.2 Recommendations

It is clearly clear from the results of the research that a lot needs to be done in order to promote the role of community based organizations in sustainable solid waste management in Masvingo urban hence the following suggestions are recommended:

- ❖ The Masvingo City Council ought to issue and frequently collect reject canister furthermore they ought to present the shading coding framework for well-organized storage of solid waste generated according to types of solid waste generated. This colour coding framework requires simple gathering of solid waste by waste reusing and recycling groups and the municipality itself.
- ❖ Education awareness is of great importance, which should be done by EMA to the citizens of Masvingo urban on the issues to deal with solid waste management.
- ❖ There is also need to support Community Based Organizations in their waste management projects which include waste sorting and recycling.
- ❖ Law enforcement by EMA and Local Authorities needs to be intensified to curb illegal waste management practices like open space dumping and burning.
- ❖ Through the support of EMA, there is need for the adoption of the 3Rs which are Reduce, Recycle, Re-use approaches which are aimed at reducing the amount of solid waste being generated.
- ❖ EMA should work hand in hand with the ZRP to effectively and efficiently enforce its environmental laws.
- ❖ Mechanisms from the Ministry of Science and Technology to support and capacitate CBOs in waste management should be explored further.
- ❖ Establishment of central waste collection points in the CBD and also residential areas should be done.

- ❖ There should be a full embracement of the concept of community participation in solid waste management.
- ❖ Incentivising should be taken into consideration since its one factor that drives people in doing activities or better the term used “FOOD FOR WORK”.
- ❖ Further studies should be done by universities and college academics are needed to undertake researches on ways through which communities can participate in solid waste management reduction and recycling activities.
- ❖ Research and development of appropriate waste recycling technology should be intensified by industry and academic institutions.

5.3 Evaluate summary and conclusion

Research was aimed at exploring the role of community based associations in solid waste management in Masvingo urban and from the research findings, an all encompassing methodology in handling solid waste issues must be utilized which ought to incorporate the government, city council, parastals, private organizations and the citizens of Masvingo urban. Community based organizations and solid waste must not be taken as static but rather as a developing subject from the past to give meaning to the future. There is need for modern technologies and continuous research must also be included to sustainable manage solid waste.

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Appendix 1



Department of Geography and Environmental Studies

My name is Tanya T Bgwoni a final year student at Midlands State University undertaking a BSc Honours Degree in Geography and Environmental Studies. The purpose of this study is to conduct a research on **The role of Community Based Organizations in sustainable solid waste management. A case study of Masvingo Urban, Zimbabwe.** The findings are essentially for academic purposes only and confidentiality is therefore guaranteed.

Instructions

Complete the questions by ticking your preferred response

Part A: Socio-Economic Data

1. Gender: Male Female
2. Age: 18-20 21-30 31-40 41-50 51-60 60+
3. Marital Status: Married Single Widowed
4. Level of education: Primary Secondary Tertiary
5. Employment Status: None Employed Self employed
6. How big is your household?

Part B: Community Participation

7. Which solid waste management activities are you engaged in, collectively as a community?
 - a) Waste sorting
 - b) Waste recycling
 - c) Compositing

- a) Clean up campaigns e) Education awareness

Others (Specify).....

8. Do you receive support from any organization when carrying out your activities?

- a) Yes b) No

9. Which activities are supported most?

- a) Clean up campaigns b) education awareness c) waste recycling

Others (Specify).....

10. Which organizations support you in carrying out these activities?

- a) EMA b) Local Authority c) CARE d) Oxfam

Others (Specify).....

11. The types of waste that you collect or manage?

- a) Plastic b) Paper c) Glass d) Metal tins

Others (Specify).....

12. To what extent is your participation improving solid waste management when you get support from these organizations and give reason.

.....

13. Are you benefitting from your full participation in solid waste management as a community?

- a) Yes b) No

If Yes, Specify.....

.....

Part C: Perceptions on Environmentally Sustainable Solid Waste Management Strategies

14. What is your view pertaining to solid waste management in Masvingo City

.....

15. Do you think that community participation is the best way of improving solid waste management in urban areas?

a) If Yes, specify.....

b) If No, specify.....

16. Which strategies can be used to improve solid waste management in Masvingo City apart from the use of community based organizations?

- a) Incentives
- b) Recycling
- c) Environmental Education
- d) Reuse

Others (Specify).....

Part D: Policy, Legislation and Institutional Aspects

17. Which legal institutions do you know that deal with solid waste management issues in Masvingo City?

- a) Environmental Management Agency
- b) Local Authority

Others (Specify).....

18. Are these institutions effective and why?

- a) Yes
- b) No

If Yes, specify.....

If No, specify.....

19. Which legislations governing solid waste management are you aware of?

- a) Environmental Management Act
- b) Public Health Act
- c) Municipal By-Laws
- d) Others (specify).....

20. Do you think legislation is the best tool for solving solid waste management challenges?

If Yes, specify.....

If No, specify.....

End of Questionnaire

Thank you for your co-operation

Appendix 2

Semi-Structured Interview guide for the Environmental Management Agency's Environmental Planning and Monitoring Officer

1. What solid waste management activities do you undertake with the community based and what support do you give?
2. How often do you participate with the community based organizations?
3. Are community based organizations a panacea to tackle solid waste management challenges affecting Masvingo City? Give reasons.
4. How have you worked together with the Masvingo City Council to combat solid waste challenges?
5. Is legislation the best tool to curb solid waste management challenges in Masvingo City?
6. From your point of view what measures/strategies must be employed to enhance the effectiveness of legislation on solid waste management to the general public?

Appendix 3

Semi-Structured Interview guide for the Masvingo City Council Health and Waste Management Director

1. What are the efforts being made by the City council to manage solid waste in the city of Masvingo?
2. What solid waste management activities do you undertake with the community based and what support do you give?
3. Are community based organizations a panacea to tackle solid waste management challenges affecting Masvingo City? Give reasons.
4. Have you partnered with EMA in waste management issues in Masvingo City?
5. How are the people of Masvingo City complying with the existing legislations on solid waste management?

Appendix 4

Semi-Structured Interview guide for the Apex committee of the community based organizations

1. What inspired you to establish the community based organizations in Masvingo city
2. What solid waste management activities do you undertake as a club?
3. Which organizations support you in undertaking these activities and in what forms?
4. Since the establishment of the community based organizations is there improvement in solid waste challenges in Masvingo city?
5. Are community based organizations a panacea to tackle solid waste management challenges affecting Masvingo City? Give reasons.
6. Are the legislative frameworks and legal institutions that deal with waste management effective?
7. Is legislation the best tool to curb solid waste management challenges in Masvingo City?

Appendix 5

Semi-Structured Interview guide for the Clester Cleaners

1. What is your view pertaining the handling and management of the various types of waste generated in Masvingo city?
2. How effective are the community based organizations and what is the city's attitude towards solid waste management when you work together?
3. Are community based organizations a panacea to tackle solid waste management challenges affecting Masvingo City? Give reasons.
4. Is legislation the best tool to curb solid waste management challenges in Masvingo City?
5. From your point of view what measures/strategies must be employed to enhance the effectiveness of legislation on solid waste management to the general public?