

The enforcement of the environmental legal and policy framework on solid waste management in Harare, Zimbabwe

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DEDICATION

With love

To my mother, Winnie Kanyasa

and

my late father, Makiyi Kanyasa, may his soul rest in eternal peace

The information used and presented in this mini-dissertation was correct and up to date on 30 October 2023 when research for this study was concluded. Any later political, social and/or legal developments have not been considered.

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ABSTRACT

The study aims to assess the extent to which the existing legal and policy instruments in Zimbabwe are effectively implemented and enforced to address the pressing issue of SWM. Waste management is one of the emerging and most challenging issues in the world over. The worldwide trend resonates with Harare as the city is currently grappling with serious challenges in SWM, due to rapid urbanisation and population growth, resulting in an increase in amounts of municipal solid waste generated. As a result, there is a growing disparity between the supply and demand for waste management services, which is exacerbated by the rate of urbanisation. An analysis of the environmental legislative and policy framework on SWM showed that there are sufficient laws and policies to deal with MSWM. However, the city has struggled to effectively manage its waste due to weak and inadequate enforcement of the legal and policy framework in place. The improper management of solid waste may result in the pollution and degradation of the environment as well as risks to public health through outbreaks of water-borne diseases such as cholera, typhoid and dysentery, which are common in Harare. The researcher used a qualitative research methodology in which a desk-top research project was carried out using relevant primary and secondary literature and legal documents to obtain data and information about the existing legal and policy framework on SWM in Harare. Some significant challenges impeding adequate SWM are the lack of comprehensive monitoring and enforcement mechanisms, limited capacity and resources, and lack of public awareness and engagement on proper waste management practices, leading to lack of compliance with regulations. To address these challenges, effective enforcement strategies must be implemented. This includes strengthening, monitoring and inspection systems to ensure compliance with waste management laws and regulations. Additionally, increased investment in waste management infrastructure is recommended.

Keywords: Integrated waste management; municipal solid waste management; environmental enforcement; Zimbabwean solid waste management.

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LIST OF ABBREVIATIONS

CaC	Command and Control
CBIs	Civil Based Instruments
CE	Circular Economy
COP	Conference of the Parties
EMA	Environmental Management Act
GDP	Gross Domestic Product
GHGs	Greenhouse Gases
HAL	Harare Anti-Litter
HCC	Harare City Council
IJEHSS	International Journal of Education Humanities and Social Science
INECE	International Network for Environment Compliance and Enforcement
ISWA	International Solid Waste Association
ISWMP	Integrated Solid Waste Management Plan
IWMP	Integrated Waste Management Plan
MBIs	Market Based Instruments
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
NCCRS	National Climate Change Response Strategy
NDS	National Development Strategy
NEPS	National Environmental Policy and Strategies

NGO	Non - Governmental Organisation
PELJ	Potchefstroom Environmental Law Journal
POP	Persistent Organic Pollutants
SDG	Sustainable Development Goals
SI	Statutory Instrument
SPRJ	Southern Peace Review Journal
SWM	Solid Waste Management
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
WCECS	World Congress on Engineering and Computer Science
WHO	World Health Organisation
WMP	Waste Management Plan
ZIWMP	Zimbabwe Integrated Waste Management Plan

1 CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Solid waste management (SWM) is a critical issue worldwide, especially in urban areas, where rapid urbanisation and population growth contribute to an increase in waste generation.¹ One of the most important health and environmental issues that African cities are dealing with is municipal solid waste management (MSWM).² Harare, the capital city of Zimbabwe, is no different. Thus, the uncollected and unlawfully dumped solid waste constitutes a disaster for the environment and human health.³ Growing urbanisation, shifting disposable income, and shifting consumption habits fueled by globalisation are all contributing factors to the growth of solid waste in both quantity and diversity.⁴

1.2 A brief overview of SWM and its challenges

Solid waste may be defined as any type of garbage, trash, refuse or discarded material.⁵ Waste can be categorised based on its source, such as municipal solid waste (MSW), health care waste and electronic waste.⁶ Focus of this research shall be on MSW, which is commonly defined as waste generated from domestic households, industries, commercial businesses, institutions, street sweeping and other sources in which local authorities are typically in charge of collection, transportation, treatment and final disposal.⁷ For the purpose of this study, it excludes hazardous chemicals requiring specialised collections. The processing of such waste, SWM, is defined as the collection, transfer, resource recovery, recycling, disposal and treatment of waste.⁸

¹ Singh and Sharma 2016 *Procedia Environmental Sciences* 693.

² Muzenda *et al* "Reflecting on Waste" 2.

³ Makamba 2022 *IJEHSS* 236.

⁴ Muzenda *et al* "Reflecting on Waste"3.

⁵ WHO 2021 <https://www.who.int/tools/compendium-on-health-and-environment/solid-waste>.

⁶ WHO 2021 <https://www.who.int/tools/compendium-on-health-and-environment/solid-waste>.

⁷ Mafume *et al* 2016 *JEWM* 142; see also Langa *Plastic waste management in South Africa* 2; see also United States Environmental Protection Agency date unknown <https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/>.

⁸ Chatsiwa, Mujere, Maiyana *Waste Management Techniques for Sustainability* 25.

Over 2 billion tonnes of MSW are produced annually in the world.⁹ Thus, forms of MSW may include paper, plastics, PET bottles, cardboard boxes, vegetable matter, kaylites, old clothing materials, glass bottles, metals, newspapers, product packaging, appliances, paint, batteries, and so on. Solid waste may be classified as degradable/organic or non-degradable/inorganic and hazardous or non-hazardous.¹⁰ Degradables includes paper, cardboard boxes, newspaper and vegetable waste, whilst non-degradables include plastic waste such as plastic bags and kaylites.

1.3 Background to solid waste challenges in Harare

In the case of Harare, with a population of over two million people, solid waste has become a pressing concern as SWM has virtually collapsed.¹¹ The virtual collapse of SWM has triggered rampant and chaotic, indiscriminate illegal dumping, open burning of garbage, and severe littering by citizens who seem to have little sensitivity to proper waste management controls,¹² thus putting the health of residents and the environment at risk.¹³ The magnitude of the challenge has resulted in the declaration of a State of Disaster on SWM by the president of Zimbabwe in July 2023.¹⁴

The provision of services for SWM in Harare is under the purview control of the Harare City Council (HCC) which is mandated with solid waste collection, transportation, treatment and disposal.¹⁵ However, mountains of uncollected garbage have become a common site at bus termini, along roadsides, in building alleys, and literally everywhere.¹⁶ A closer look at the various forms of litter on the

⁹ WHO 2021 <https://www.who.int/tools/compendium-on-health-and-environment/solid-waste>.

¹⁰ Ndebele 2021 <http://gbg.co.zw/2021/06/16/harare-waste-management-situational-analysis>; see also Tsiko 2012 *American Journal of Science* 697.

¹¹ See the preamble of Statutory Instrument 140 of 2023 the Civil Protection (Declaration of State of Disaster: Emergency Solid Waste Management Harare Metropolitan Province) Notice 2023 (hereinafter the Declaration)

¹² Rukani *Plastic and Circular Economy* 47; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 24.

¹³ See further discussion below of the risks associated with poor SWM.

¹⁴ See section 2 the *Declaration*.

¹⁵ See *Urban Councils Act* (Chapter 29:15) which assigns the duty providing solid waste collection, transportation and disposal services in areas under their jurisdiction. See also Makamba 2022 *IJEHSS* 234.

¹⁶ Matabvu 2023 <http://www.sundaymail.co.zw/ema-takes-over-harares-waste-management>.

open dumpsites shows some of it can be composted, reused, recycled, and even reduced at source, yet one is finding it on the illegal open dumpsites.¹⁷

Since Zimbabwe gained independence in 1980, the country has seen rapid urbanisation brought on by population growth and increased industrialisation. This has inevitably put enormous strain on the resources of urban local authorities, ultimately leading to the provision of inadequate social services to local communities and areas under their jurisdiction.¹⁸ Harare's population increased astronomically to 2, 427, 231 people as of 2022 from 658,400 in 1982.¹⁹ This has led to greater volumes of waste being generated, further exerting pressure on already stressed waste management infrastructure. An estimated 1.5kg of garbage was produced daily per person in Zimbabwe in 2012 alone,²⁰ and such enormous volumes of municipal solid wastes, if improperly disposed of, pose a major threat to Harare's environmental quality and public health.²¹ Thus, urban services provision, particularly uncollected refuse, has become one of the major challenges facing Harare City Council (HCC).²² For example, statistics show that Harare generates 762 tonnes of MSW daily; however, HCC collects an estimated 30% of solid waste, which leads to waste accumulation in open spaces, at bus termini and along streets in and around the city.²³ Thus, waste collection was reported to have dropped from 80% in the mid-1990's to 30% in 2012.²⁴ As of 2021, only 10% of the collected solid waste is recycled due to lack of recycling facilities, and the rest is dumped at dumpsites.²⁵ Thus, the situation in SWM has reached crisis levels in Harare, leading to the declaration of a State of Disaster by the president in July 2023.²⁶

¹⁷ Rukani *Plastic and Circular Economy* 47.

¹⁸ Mafume *et al* 2016 *JEWM* 142.

¹⁹ Zimbabwe National Statistics Agency 2022 <http://www.zimstat.co.zw>.

²⁰ Mafume *et al* 2016 *JEWM* 143.

²¹ Snigdha and Prasenjit 2003 *Economics of solid waste* 2.

²² Matabvu 2023 <http://www.sundaymail.co.zw/ema-takes-over-harares-waste-management>; see also Mafume *et al* 2016 *JEWM* 143.

²³ See UN Habitat 2021 "Waste Wise Cities Tools"; Tsiko 2012 *American Journal of Science* 692. see also UN-Habitat (2007) for Harare.

²⁴ Tsiko 2012 *American Journal of Science* 692.

²⁵ Ndebele 2021 <http://www.gbg.co.zw/2021/06/16/harare-waste-management-situational-analysis>.

²⁶ *Statutory Instrument* 140 of 2023 (*Declaration*); see also Mafume *et al* 2016 *JEWM* 143.

1.4 Motivation of the study

Given the above impacts, it can be argued that environmental justice is at risk in situations where the provision of municipal services is inadequate and endangers people's health and well-being. There is a mutual relationship between environmental injustice and inadequate provision of basic municipal services.²⁷ Consequently, although Harare has a legal and policy framework on SWM to combat solid waste, it is unclear whether such legal and policy framework is adequate, whether it is being implemented at all or whether it is enforced to ensure the problem of MSW is effectively managed. Furthermore, it is unclear whether the problem is also caused by citizens who seem to be ignorant, have attitudinal problems and a general lack of values and ethics towards waste management and littering.²⁸

That ensuing discussion proceeds from these overarching lines of inquiry.

1.5 Research Question

How and to what extent is the legal and policy framework on solid waste management enforceable and is it effective for combating municipal solid waste challenges faced by the City of Harare?

1.6 Research aim and objectives

The aim of the study is to evaluate the extent to which the legal and policy framework on solid waste management is enforceable and whether it is effective for combating municipal solid waste challenges faced by the City of Harare.

The discussion is divided into chapters to answer the following specific objectives of the study:

- To identify and elaborate on the international policy and frameworks for solid waste management and to outline the consequences of ineffective municipal solid waste management (Chapter 2);

²⁷ Molaiwa 2021 *PELJ* 5.

²⁸ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 24.

- To outline the legal and policy framework on municipal solid waste management in Harare (Chapter 3);
- To assess the extent of governance and enforceability of the existing legal and policy framework in reducing solid waste challenges, and to evaluate the existing solid waste management infrastructures and practices, while identifying gaps that need to be addressed (Chapter 4);
- To develop a set of recommendations for strengthening the enforcement of the environmental legal and policy framework on solid waste management in Harare (Chapter 5).

It can be noted that very few studies have researched compliance and enforcement of the legal and policy framework on SWM in Harare, Zimbabwe. Much of the previous research concentrated on the general aspects of solid waste such as the types of solid waste generated by households, causes of poor SWM in urban areas and strategies that might be employed to reduce solid waste in cities.²⁹ Furthermore, other researches concentrated on the management of solid waste in high density suburbs.³⁰ In addition, other studies investigated SWM practices in secondary schools.³¹ Some researchers conducted a profile study on solid waste composition generated in informal sectors in Zimbabwean cities.³² The legal and enforceability aspect of solid waste is usually left out. This research considers this legal and enforceability aspect of SWM, insofar as it relates to HCC.

1.7 Research methods

The work employed a qualitative approach to the discussion. This approach relies on a holistic literature review. Hence, the research takes the form of a desktop-based approach. Desktop research employs documentary analysis by exploring data from existing and previous research, thus helping to bring in solid arguments

²⁹ See studies by researchers such as Tsiko 2012 *American Journal of Science*, Mandevera and Jerie 2018 *J of Environ Waste Management and Recycling* 30-36.

³⁰ See research by Nyanzou *Solid Waste Management*; see also studies by Mafume *et al* 2016 *Journal of Environment and Waste Management* 142-155.

³¹ See Chatira-Muchopa, Chidarikire and Tarisayi 2019 *The Journal for Transdisciplinary Research in Southern Africa* 1-10.

³² See Jerie and Tevera 2014 *Journal of Waste Management* 1-7.

and for elaborating on lines of thought and arguments.³³ It follows that both primary and secondary sources were consulted. Primary data was in the form of legislation, city by-laws, regulations, policies, plans, strategies, international treaties and case law where necessary. Secondary sources of data were in the form of textbooks, chapters in books, journal articles, newspaper articles, dissertations, credible online internet sources and any other relevant materials.³⁴ Desktop research ensures that the researcher is able to understand the historical development of the problem such as ineffective SWM and thus, is able to suggest positive future reforms.³⁵ Although there are plenty of other forms of waste affecting the city, the research was limited to the study of the legal and policy framework on municipal solid waste management by HCC, including their implementation and enforceability. In-depth issues relating to technicalities of landfills, waste management hierarchy and the 3Rs - reduce, reuse, recycle - were not covered in this study. The researcher followed the PER/PELJ referencing style throughout this research study.

1.8 Chapter Outline

The chapters shall take the following format:

Chapter 1 introduces the background of the study, thus highlighting a brief overview of SWM and its challenges, background to solid waste challenges in Harare, thus pointing out the problem statement, providing motivation of the study, research question, research aim and objectives and research methods.

The international law governing SWM is examined in Chapter 2, along with the ways in which various treaties or agreements may facilitate the implementation of SWM on a local level. Chapter 2 also identifies and outlines the consequences of

³³ Aela 2022 <https://aelaschool.com/en/research/desk-research-conduct-secondary-research-efficiently/>.

³⁴ Aela 2022 <https://aelaschool.com/en/research/desk-research-conduct-secondary-research-efficiently/>.

³⁵ Aela 2022 <https://aelaschool.com/en/research/desk-research-conduct-secondary-research-efficiently/>.

ineffective municipal solid waste management on the environment and human health.

Chapter 3 outlines the legal and policy framework on municipal solid waste management in Harare. Various legislation, regulations, by-laws, policies, national plans and strategies are discussed.

Chapter 4 assessed the extent of governance and enforceability of the existing legal and policy framework in reducing solid waste challenges, and to evaluate the existing SWM infrastructures and practices while identifying gaps that need to be addressed. The Chapter further notes the roles of the different organisations involved in the implementation and enforcement of the legal and policy framework on SWM in Harare and emphasis is put on collaboration of these role-players. The chapter discusses the four governance and enforcement strategies which are CnC, CBIs, MBIs and the voluntary enforcements and the extent of enforcement.

Last but not least, Chapter 5 gives the summary of the research, suggests and develops a set of recommendations for strengthening the governance and enforcement of the environmental legal and policy framework on solid waste management in Harare. In Chapter 5, conclusions are drawn that assist in developing recommendations.

2 CHAPTER 2: THE INTERNATIONAL LEGAL AND POLICY FRAMEWORK ON SOLID WASTE MANAGEMENT

2.1 Introduction

The objective of this chapter is to review the international legal and policy framework on solid waste management and determine how it aids in governance and enforcement to ensure proper management of MSW. It also discusses the consequences of improper SWM on the human and natural environment on a global level, such as climate change. The chapter takes a hard look at international environmental law and considers how it helps to shape the management of MSW. The chapter further draws down to waste management policies and legal framework on the African continent, particularly in the Sub-Saharan region, to which Zimbabwe belongs.

2.2 The global challenge of municipal solid waste

On a global scale, there has been a massive increase in solid waste generation in recent decades.³⁶ The massive rise in waste output that has taken place in recent decades shows no indications of slowing down.³⁷ By 2050, it is projected that the amount of MSW produced worldwide would reach 3.4 billion metric tonnes, an increase of about 70% from 2.59 billion tonnes anticipated in 2030.³⁸ The continued increase is brought about by a variety of elements such as rapid population growth, urbanisation, economic expansion, and other socio-economic factors such as individual disposable income and consumer consumption patterns.³⁹

In both developed and developing countries, the amounts of solid waste generated have increased rapidly. Even though richer nations only account for

³⁶ Wilson *et al* 2015 *Global Waste Management Outlook* 2.

³⁷ Bruna 2023 <http://www.statista.com/topics/4983/waste-generation-worldwide/> # topic overview.

³⁸ Bruna 2023 <http://www.statista.com/topics/4983/waste-generation-worldwide/> # topic overview; See also Kaza *et al* 2018 *What a Waste 2.0*: 3; available at https://datatopic.worldbank.org/what-a-waste/trends_in_solid_waste_management.html.

³⁹ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20; Wilson *et al* 2015 *Global Waste Management Outlook* 2; see also World Bank 2012.

16% of the world's population,⁴⁰ they produce more waste than impoverished countries do.⁴¹ However, they often have better waste management to aid with problems such as controlled landfills.⁴² Statistics reveal that 683 million tonnes or around 34% of the world's waste are produced in high-income countries.⁴³

Increased industrialisation and product manufacturing innovation have resulted in an increase in per capita generation of solid waste in developed countries over the past three decades.⁴⁴ Furthermore, factors contributing to the rapid increase in waste generation in developing and emerging economies include population growth, rural-urban migration resulting in cities' expansion in size, economic development, and changes in living standards that result in high resource consumption.⁴⁵

Waste generation is expected to increase threefold by 2050 in low-income countries.⁴⁶ In general, waste generation is positively correlated with economic development.⁴⁷ Faced with such enormous volumes of waste that are generated, it is crucial for authorities to provide suitable waste treatment and disposal services⁴⁸ as well as proper and effective policies, strategies, laws, regulations, and enforcement mechanisms to deal with solid waste management. However, an alarming quantity of waste is still being dumped in landfills each year with less than 20% of waste being recycled. Additionally, solid waste is regularly disposed of at dangerous open dumpsites, especially in developing countries.⁴⁹

Globally, an estimated 33 percent of the 2.01 billion tonnes of MSW generated yearly is not managed in an environmentally sound manner - it uses open dumping.⁵⁰ The amount of waste generated annually was predicted to reach 2.2

⁴⁰ Kaza *et al* 2018 *What a Waste* 2.0: 20.

⁴¹ Godfrey *et al* *IntechOpen* 1.

⁴² Kaza *et al* 2018 *What a Waste* 2.0: 5.

⁴³ Kaza *et al* 2018 *What a Waste* 2.0 : 20.

⁴⁴ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20.

⁴⁵ Wilson *et al* 2015 *Global Waste Management Outlook* 2.

⁴⁶ Kaza *et al* 2018 *What a Waste* 2.0: 3.

⁴⁷ Kaza *et al* 2018 *What a Waste* 2.0:20.

⁴⁸ Bruna 2023 <http://www.statista.com/topics/4983/waste-generation-worldwide/> # topic overview.

⁴⁹ Bruna 2023 <http://www.statista.com/topics/4983/waste-generation-worldwide/> # topic overview; see also Kaza *et al* 2018 *What a Waste* 2.0: 18.

⁵⁰ Kaza *et al* 2018 *What a Waste* 2.0: 5; 18.

billion tonnes by 2025.⁵¹ By 2050, global waste generation is expected to reach 3.40 billion tonnes, more than double the rate of population increase over the same period.⁵²

In the high-income countries, the daily per capita waste generation is estimated to increase by 19% by 2050, and this rate is different from those in low-and middle-income countries where an increase of at least 40% is predicted.⁵³ Sub-Saharan Africa is one of the fastest growing regions in which waste generation is expected to triple by 2050. In these low-income regions, more than half of waste produced is currently dumped in the open, and the rate at which waste is generated will have substantial impact on the environment, public health, and economic growth, thus calling for immediate action.⁵⁴

One of the crucial first steps in waste management is waste collection, yet collection rates differ significantly by income levels, with upper middle and high income nations offering almost universal waste collection.⁵⁵ In the entire region, Sub-Saharan Africa collects roughly 44 % of the waste compared to at least 90% collected in Europe, Central Asia and North America.⁵⁶

Waste management poses environmental issues, necessitating the development of international, regional, national, and local regulatory frameworks and policies.⁵⁷ The importance of legal and policy frameworks on SWM is that they tackle waste issues head-on and pave the path for sustainable SWM services.⁵⁸ SWM refers to the management of the whole cycle of waste generation, collection, storage, transport, source separation, processing, treatment recovery, and disposal. SWM aims to minimise harmful environmental impacts, promote sustainability, and safeguard human health.⁵⁹

⁵¹ World Bank 2012; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20; Achankeng *University of Adelaide* 7.

⁵² Kaza *et al* 2018 *What a Waste* 2.0, 24.

⁵³ Kaza *et al* 2018 *What a Waste* 2.0, 20.

⁵⁴ Achankeng *University of Adelaide* 7; Kaza *et al* 2018 *What a Waste* 2.0, 20.

⁵⁵ Kaza *et al* 2018 *What a Waste* 2.0, 20.

⁵⁶ Godfrey *et al* *Solid Waste Management in Africa* 2; Kaza *et al* 2018 *What a Waste* 2.0, 20.

⁵⁷ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20.

⁵⁸ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20.

⁵⁹ See also Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20.

2.3 Legal and policy frameworks for solid waste management at the global level

There are a number of developments that have emerged at the global level dealing with SWM and these international developments have continuously increased since the 1972 *United Nations Stockholm Conference*.⁶⁰ More than 300 Multilateral Environmental Agreements (MEA's) were agreed upon and ratified during the *Stockholm Conference*. UNEP was founded to serve as the international environmental issues management watchdog.⁶¹ Two decades later, as a result of the 1992 *Rio de Janeiro Brazil Conference (Earth Summit) Rio +20, Agenda 21* the global action plan on sustainable development, was approved and is a component of the SWM strategy.⁶² *Agenda 21* urged nations to create and implement through national and local SWM policies, plans, strategies, legal frameworks and rules. This was a reaction to the problem of unsustainable production and consumption, which was demonstrated by the amount of solid waste generation on a global scale.⁶³ The *Bali Declarations on Waste Management for Human Health and Livelihood*,⁶⁴ which were adopted at the *Basel Convention's 9th Conference of the Parties (COP9)* meeting in Bali, Indonesia are among the other accords and agreements reached which emphasised sustainable development.⁶⁵ The *Bali Declaration* placed a strong focus on ecologically responsible waste management through waste avoidance and minimisation of waste.⁶⁶

This was further supported by the *Paris Agreement* (2016), which was recently ratified by 171 nations and highlights the idea of "Zero Waste" as a major objective in waste management.⁶⁷ An in-depth discussion of the developments follows.

⁶⁰ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 20.

⁶¹ UNEP 2005; see also Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 21.

⁶² *UNCED* 1992.

⁶³ *UNCED* 1992; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 21.

⁶⁴ See Bali Declarations 1.

⁶⁵ See *UNFCCC* 2008, *Bali Declarations*.

⁶⁶ See Declarations 2, 5 of Bali Declarations.

⁶⁷ UN-HABITAT, 2010; see also *UNFCCC*, 2016; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 21.

2.3.1 *United Nations Framework Convention on Climate Change (1992)*

The *United Nations Framework Convention on Climate Change (UNFCCC)* was adopted in 1992 at the *Rio Conference* with the objective of 'stabilising greenhouse gas concentrations in the atmosphere and preventing dangerous anthropogenic interference with the climate system'.⁶⁸ The *UNFCCC* recognises that climate change and its unfavourable repercussions are a common concern for humanity.⁶⁹ Thus, it called for cooperation among nations. It also puts emphasis on the principle of 'common but differentiated responsibilities', which ensures that rich countries take a leading role in combating climate change and the associated negative effects.⁷⁰ Although the *Convention* primarily focuses on tackling climate change, it recognises the significant role of waste management in mitigating greenhouse gas emissions through its precautionary principle.⁷¹ The *UNFCCC* emphasises the precautionary principle by ensuring that 'parties to the conference anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects'.⁷²

The *UNFCCC* acknowledges that waste management practices, particularly in the areas of waste reduction, recycling, and energy recovery, can contribute to the reduction of greenhouse gas emissions, thus taking a precautionary stance.⁷³ By adopting sustainable waste management practices, countries can minimise the release of methane, a potent greenhouse gas, from landfills and promote the recovery of energy from waste.⁷⁴ Reducing waste can be done through implementing waste prevention initiatives, promoting sustainable consumption patterns, and encouraging the use of recyclable and reusable products. Recycling is another key strategy highlighted by the *UNFCCC*⁷⁵ that contributes to protecting natural resources and reduces the environmental impacts associated with their

⁶⁸ See *UNFCCC Article 2*; see also Birnie *et al* International Law 358; see also Leggett 2020 *UNFCCC*, New York, 2.

⁶⁹ *UNFCCC* 1.

⁷⁰ See *UNFCCC Article 3 (1)*.

⁷¹ See *UNFCCC Article 3 (3)*.

⁷² See *UNFCCC Article 3 (3)*.

⁷³ *UNFCCC Article 3 (3)*; Gutberlet *Waste in the City* 201.

⁷⁴ Gutberlet *Waste in the City* 203.

⁷⁵ *UNFCCC Article 3 (3)*; Muchuru and Nhamo 2019 *African Journal of Science, Technology, Innovation and Development*.

extraction and processing. In *Article 3 (4)*, the *UNFCCC* promotes sustainable development by protecting the climate system against changes brought about by human activity for the benefit of present and future generations of humankind.⁷⁶

2.3.1.1 *The Kyoto Protocol* (1997)

The *Kyoto Protocol*⁷⁷ is an international accord under the *UNFCCC* that came about after the 1996 *Intergovernmental Panel on Climate Change* (IPCC) in its second assessment report about the anthropogenic influence on global climate which has put the environment and people's health at danger.⁷⁸ The main objectives of the *Kyoto Protocol* are to identify GHG targets for emission reduction for developed countries and to set up a GHG emission trading mechanism.⁷⁹ The targets to reduce emissions are legally binding for each industrialised country.⁸⁰ Some of the GHGs listed in the *Kyoto Protocol* include carbon dioxide (CO²), methane (CH⁴), and hydro-fluorocarbon (HFCs) for instance.⁸¹ Solid waste contributes to climate change through the release of methane from the landfills and open dumps, which is produced by anaerobic respiration of microorganisms when they decompose biodegradable waste; therefore, the need to reduce the release of methane gas from landfills to the atmosphere through turning it into energy.⁸²

2.3.1.2 *The Paris Agreement* (2015)

This treaty is meant to replace the *Kyoto Protocol* and was adopted in December 2015 as a decision of the COP21 to the *UNFCCC*. Within the context of sustainable development, this agreement aims to reinforce the global response to the threat posed by climate change.⁸³

⁷⁶ See also *UNFCCC Article 3(1)*.

⁷⁷ *Kyoto Protocol* 1997.

⁷⁸ Intergovernmental Panel on Climate Change (IPCC) 2nd Assessment Report, Climate Change 22.

⁷⁹ Secretary *UNFCCC* : Handbook 19.

⁸⁰ *Kyoto Protocol* 1997.

⁸¹ See *Annex A* to the *Kyoto Protocol* 1997.

⁸² See Gutberlet *Waste in the City* 203.

⁸³ See Article 2 of Paris Agreement 2015.

The agreement was put into effect to reflect equality as well as the principle of CBDR and Respective Capabilities in light of different national circumstances with regards to environmental issues. Although, the word 'waste' is not mentioned anywhere in the *Paris Agreement*, to fully meet the goals of the *Agreement*, the concept of Zero Waste emerged as a priority solution for a carbon-free future, thus processes such as recycling, composting and minimising take centre stage.⁸⁴ Thus, the *Paris Agreement* called for a shift to a circular economy and emphasised transformation of production and consumption behaviours.⁸⁵ The *Paris Agreement* and the attainment of the long-term climate goals are thus centred on the NDCs, through which member states will communicate their mitigation measures and targets in an effort to achieve the treaty goals.⁸⁶

2.3.2 *Stockholm Convention on Persistent Organic Pollutants (2001)*

The *Stockholm Convention on Persistent Organic Pollutants* (POPs) is an international treaty that was adopted in 2001 and came into force in 2004, with the intention of eradicating or drastically lowering the production, use, and release of hazardous POPs into the environment.⁸⁷ POPs are a group of toxic chemicals that are persistent in the environment, bio-accumulate in living organisms, resist degradation, are transported through air, water, migratory species across international borders and present serious threats to the environment and human health.⁸⁸ This situation requires parties to take measures to eliminate or minimise the release of POPs into the environment.⁸⁹ Thus, the overarching objective of the *Stockholm Convention* is to safeguard the public health and the environment against POPs.⁹⁰ The exposure to POPs results in certain health risks that include certain cancers, reduced IQ, birth defects, dysfunctional immune and reproductive

⁸⁴ Lombardi 2016 <http://www.waste360.com/waste-reduction>

⁸⁵ UN Climate Change News 2021 <https://unfccc.int/news/shifting-to-a-circular-economy-essential-to-achieving-paris-agreement-goals>.

⁸⁶ See Articles 3 of Paris Agreement 2015.

⁸⁷ See *Stockholm Convention on POPS* Article 3(1)(a)(i) and (ii) and Article 3(1)(b); Lallas 2001 *American Journal of International Law* 698.

⁸⁸ See *Stockholm Convention on POPS* 4; Rodan *et al* 1999 *Environ Sci Technol* 3482.

⁸⁹ See *Stockholm Convention on POPS*.

⁹⁰ See *Stockholm Convention on POPS* Article 1.

systems, and susceptibility to diseases,⁹¹ as well as impacting on vulnerable groups such as children and women.⁹² One of the key objectives of the *Stockholm Convention* is the management of POPs-containing stockpiles and waste.⁹³ Parties to the *Convention* are encouraged to develop and implement environmentally sound waste management practices for the disposal and treatment of waste containing POPs.⁹⁴ This includes the promotion of best methods available and best environmental practices to minimise the release of POPs during waste management processes.⁹⁵

Furthermore, the *Stockholm Convention* emphasises the importance of promoting the use of environmentally friendly alternatives to POPs. Parties are encouraged to identify and promote the use of safer alternatives in various sectors, such as agriculture, industry, and healthcare.⁹⁶ This includes the promotion of non-chemical alternatives or less hazardous chemicals that have a lower impact on public health and the environment.⁹⁷ The *Stockholm Convention* has been successful in raising awareness about the hazards associated with POPs and promoting international cooperation to address these issues. It has led to the development of national action plans and the implementation of measures to reduce POPs emissions and exposure. For example, Sweden and Canada have implemented comprehensive programs to phase out the use of POPs and promote the use of safer alternatives.⁹⁸

⁹¹ Stockholm Convention | UNEP Law and Environment Assistance Platform. <https://leap.unep.org/content/treaty/stockholm-convention> accessed 27 September 2023.

⁹² See Stockholm Convention on POPs 4.

⁹³ See Stockholm Convention on POPs Article 6 (a-d).

⁹⁴ *Stockholm Convention on POPs Article 6 (a-d)*; Jennings and Li 2015 *Journal of Environmental Management* 24.

⁹⁵ *Stockholm Convention on POPs Article 6 (e-f)*; Misra and Pandey 2005 *Environmental International* 425.

⁹⁶ See *Stockholm Convention on POPs* 6. Lallas 2001 *American Journal of International Law* 670.

⁹⁷ Praneetvatakul *et al* *Environmental science & policy* 103-113.

⁹⁸ Tickner, Jacobs and Mack 2019 *Sustainable Chemistry and Pharmacy* 13.

2.3.3 *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989)*

The *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*, adopted in 1989 in Switzerland, is an international treaty that addresses the global issue of hazardous waste management.⁹⁹ The overarching objective of the *Basel Convention* is to protect the environment and human health against the negative effects of hazardous waste.¹⁰⁰ The scope of definition of hazardous waste also includes two (2) types of waste defined as “other waste” (household waste and incinerator ash).¹⁰¹ The *Convention* aims to minimise the generation of hazardous waste and ensure its environmentally sound management including its disposal, transportation, import and export.¹⁰² The *Convention* requires countries to obtain prior informed consent from the receiving country before exporting hazardous waste.¹⁰³ This ensures that the waste is managed in an environmentally sound manner and prevents the dumping of hazardous waste on developing countries that may lack the capacity to handle it safely.¹⁰⁴

The *Basel Convention* also promotes cooperation among parties to prevent illegal dumping and improper disposal of hazardous waste.¹⁰⁵ It encourages countries to develop national strategies and plans for the environmentally sound management of hazardous waste. The *Convention* provides a platform for countries to exchange information, share best practices, and collaborate on capacity-building initiatives.¹⁰⁶ Several studies have highlighted the importance of the *Basel Convention* in improving hazardous waste management practices globally. For example, a study by Smith and Sonnenberg¹⁰⁷ found that the implementation of the *Basel Convention* has led to a reduction in illegal dumping and improved waste

⁹⁹ *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* 1989, hereinafter *Basel Convention* 5; Hackett 1989 *UJ Int'l L & Pol'y* 291.

¹⁰⁰ See *Basel Convention*: Introduction 5.

¹⁰¹ See *Basel Convention Article* 1 and *Annex* 111, see also *Basel Convention* 5.

¹⁰² See *Basel Convention Article* 4(2) (a to h).

¹⁰³ *Article* 6(4) and *Article* 7 of *Basel Convention*; Peiry 2010 *Basel Convention* 4.

¹⁰⁴ Peiry 2010 *Basel Convention* 4.

¹⁰⁵ See *Basel Convention Article* 10 (1-4); Choksi 2001 *Ecology LQ* 509.

¹⁰⁶ See *Basel Convention Article* 10 and *Article* 13.

¹⁰⁷ Smith and Sonnenberg 2015 *Environmental Science and Policy* 3.

management practices in many countries. Another study by Jones *et al*¹⁰⁸ emphasised the role of the *Convention* in promoting the adoption of environmentally sound technologies for hazardous waste treatment and disposal.

2.3.4 *Sustainable Development Goals (SDGs) (2015)*

The *SDGs* are a collection of global goals adopted by the United Nations in 2015, with the intention of addressing a range of socio-economic and environmental issues.¹⁰⁹ Two specific goals, Goal 11 (*Sustainable Cities and Communities*) and Goal 12 (*Responsible Consumption and Production*), highlight the significance of sustainable waste management in achieving sustainable development.¹¹⁰

Goal 11 focuses on creating sustainable cities and communities, including the implementation of integrated waste management systems.¹¹¹ Integrated waste management systems encompass a range of practices, such as waste reduction, recycling, composting, and safe disposal, to ensure the efficient and ecologically responsible waste management.¹¹² By adopting integrated waste management systems, cities and communities can minimise the environmental impacts of waste and promote resource efficiency.

Integrated waste management systems can also help to minimise the emissions of GHGs, improve human health, and create economic opportunities through the recovery of valuable materials from waste streams. One key strategy for promoting integrated waste management is through the development of effective waste management policies and regulations. Governments can play a critical role in establishing targets for waste reduction and recycling, and in providing incentives and support for businesses and households to participate in waste reduction and recycling initiatives.¹¹³ For example, many cities have implemented mandatory recycling programs or implemented *pay-as-you-throw* systems, which

¹⁰⁸ Jones *et al* 2018 *Journal of Cleaner Production* 4238.

¹⁰⁹ See United Nations (2015) <http://sdgs.un.org/goals>.

¹¹⁰ Mortnon, Pencheon and Squires 2017 *British medical bulletin* 85.

¹¹¹ United Nations. (2015) Sustainable Development Goal 11.

¹¹² United Nations. (2015) Sustainable Development Goal 11.

¹¹³ Shooshtarian *et al* 2022 *Sustainable Production and Consumption* 30;91.

charge households according to the quantity of waste they generate, in order to encourage waste reduction and promote recycling.¹¹⁴

Goal 12 emphasises responsible consumption and production patterns, which includes reducing waste generation and promoting recycling and reuse.¹¹⁵ In addition to waste reduction strategies, governments and businesses can also implement circular economy concepts to promote responsible consumption and production patterns. A circular economy emphasises the use of renewable resources and encourages the repair, refurbishment, and recycling of products to minimise waste generation and extend the lifecycle of products.¹¹⁶ By implementing waste reduction strategies and circular economy concepts, countries can help accomplish Goal 12 and promote a more sustainable future.

2.3.5 Integrated Solid Waste Management (ISWM) Framework

The Integrated Solid Waste Management (ISWM) framework, established by the *International Solid Waste Association* (ISWA),¹¹⁷ offers a comprehensive and holistic approach to SWM. It acknowledges the necessity of addressing waste management challenges by considering social, economic, and environmental aspects, and promotes waste reduction, resource recovery, and ecologically friendly disposal techniques.¹¹⁸

The ISWM framework places a strong emphasis on waste reduction as the first priority.¹¹⁹ The framework promotes various measures to achieve waste reduction, including product design, packaging optimisation, and public awareness campaigns. This approach aligns with the waste hierarchy, which is a widely accepted principle in waste management that prioritises waste prevention over other waste management options. By designing products with a focus on durability, repairability, and recyclability, manufacturers can reduce the amount of

¹¹⁴ Folz and Gilesn 2002 *State and Government Review* 108.

¹¹⁵ Gasper, Shah and Tankha 2019 *Global Policy* 10,89.

¹¹⁶ See *Paris Agreement* 2015; UN Climate Change News 2021 <http://unfccc.int/news/shifting-to-a-circular-economy-essential-to-achieving-paris-agreement-goals>; Ellen MacArthur Foundation <https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>.

¹¹⁷ Wilson and Scheinberg 2010 *Waste management & research* 1055.

¹¹⁸ Iyamu, Anda and Ho 2020 *Habitat International* 95.

¹¹⁹ Wilson, Velis and Rodic 2013 *Integrated Waste Management* 59.

waste generated throughout the product's lifecycle.¹²⁰ This approach is commonly referred to as "eco-design" or "design for the environment" and aims to minimise the environmental impact of products from their production to their disposal.¹²¹

Packaging optimisation is another important aspect of waste reduction.¹²² The ISWM framework encourages the use of sustainable packaging materials, reduction of packaging volumes, and the promotion of reusable and recyclable packaging options. Public awareness campaigns play a critical role in waste reduction by promoting responsible consumption and waste management behaviors.¹²³ Therefore, by prioritising waste reduction, the ISWM framework aims to shift the focus from end-of-pipe waste management solutions, such as landfilling and incineration, towards more sustainable and environment-friendly approaches. Resource recovery is another key aspect of the ISWM framework.¹²⁴ This strategy adheres to the fundamentals of a circular economy, which aims to reduce waste generation and increase resource efficiency. In addition, the ISWM framework also emphasizes environmentally sound disposal methods for waste that cannot be prevented or recovered.¹²⁵

Zimbabwe has ratified a number of these international agreements and protocols, such as the *Basel, Rotterdam, Stockholm and Minamata Conventions*,¹²⁶ the *Kyoto Protocol*, and subsequently the *Paris Agreement* that followed. Zimbabwe pledged to work with the rest of the world to combat climate change when it ratified the *Paris Climate Agreement*. According to the Agreement, starting in 2020, each party must contribute their efforts to reducing emissions through "Nationally Determined Contributions (NDCs)". At regional level Zimbabwe adopted the *SADC Climate Change Strategy*.¹²⁷

Even with the existence of elaborate and complex frameworks in place, there seem to be issues with inadequate cross-sectoral cooperation and coordination as

¹²⁰ Tecchio *et al* 2017 *Journal of cleaner production* 1533; 1546

¹²¹ Cerden *et al* 2009 *Journal of cleaner production* 1640.

¹²² Shen *et al* 2020 *Journal of Cleaner Production* 254.

¹²³ Parajuly *et al* 2020 *Resources, Conservation & Recycling*: 6.

¹²⁴ Wilson *et al* 2010 *Comparative analysis of solid waste management in cities* 6.

¹²⁵ Marshall and Farahbakhsh 2013 *waste management* 998.

¹²⁶ *Minamata Convention* for the elimination of Mercury pollution.

¹²⁷ United Nations Zimbabwe 2021 <https://zimbabwe.un.org/sites/default/files/2021> 27.

well as poor execution and enforcement of current international agreements, laws, policies, and initiatives. The nation also lacks a thorough social protection strategy and an integrated information management system.¹²⁸

2.4 Municipal solid waste management in developing countries

In most developing countries, particularly in their capital cities and other metropolitan centres, waste management is a contentious area of environmental policy and a major environmental and public health concern.¹²⁹ The problem is made worse due to the inadequacy of the public sector to effectively deliver services as well as the private sector's lax regulation, which allows for the widespread illegal dumping of household and commercial waste.¹³⁰ Mostly, waste management is the responsibility of municipal government in developing nations. Waste management has traditionally received little attention and have always been allocated insufficient budgets from the municipal governments, thereby negatively impacting on service delivery. This is in sharp contrast to the rich and industrialised countries, where the waste sector is given adequate funding and is accorded high priority.¹³¹

Generally, developed countries have implemented proactive policies and built sound institutions and effective governance and enforcement, and thus have made good progress in solid waste management.¹³² Even though developed nations are responsible for the greatest amounts of global waste, they have the strongest and most effective policy and legal frameworks to combat waste through implementing reduction programmes, recycling and composting, diverting organic waste, building waste-to-energy facilities, and educating the public on

¹²⁸ United Nations Zimbabwe 2021 [https://zimbabwe.un.org/sites/default/files/2021 27; 28](https://zimbabwe.un.org/sites/default/files/2021%2027%2028).

¹²⁹ Yukalang, Clarke and Ross 2018 *Int. J. Environ. Res. Public Health* 1,2.

¹³⁰ Scheinberg *et al* 2010 *ISAWA Journal* 80-120; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 21.

¹³¹ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 22.

¹³² Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 22.

recycling techniques.¹³³ There is also genuine behavioural change by the public in developed nations in terms of littering, than in developing nations.¹³⁴

2.4.1 Solid waste management in Sub-Saharan Africa

It is expected that the Sub-Saharan region in Africa, as one of the fastest growing regions of the world, will account for more than half of the world's population growth by 2050.¹³⁵ The Sub-Saharan region is undergoing significant growth and modernisation resulting in the situation that the amount of waste generated is expected to triple by 2050.¹³⁶ In 2016, the region produced 174 million tonnes of waste, or 0.46 kilograms per capita per day. Predominantly, the region still primarily uses open dumping of waste; this is about 69%, despite the usage of landfills and recycling becoming common. About 40% of waste is organic, including food and yard rubbish.¹³⁷ Overall, the rates of waste collection are about 44 percent, although the rate is significantly greater in urban areas than in rural areas, where there are minimal or non-existent collection services.¹³⁸

Institutional setup for operations and maintenance as well as the regulatory framework are typically not well-defined in the majority of Sub-Saharan countries.¹³⁹ In Africa, the legal policy and institutional framework for solid waste are either lacking or inadequate. Prior to the early to mid-1980s, SWM in Sub-Saharan Africa lacked national institutional management and policy frameworks.¹⁴⁰

According to AFDB 2014, there are varied and complex obstacles facing solid waste management in Sub-Saharan Africa, ranging from infrastructure issues, lack of political commitment, inadequate financial resources, regulatory issues, organisational and institutional management issues, to limited technology and

¹³³ World Bank 2014 The World Bank Annual Report 2014, Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 22.

¹³⁴ Burnley 2007 *Waste Management* 1274-1285; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 23.

¹³⁵ Kaza *et al* 2018 *What a Waste* 2.0: 76-77.

¹³⁶ Kaza *et al* 2018 *What a Waste* 2.0: 76-77.

¹³⁷ Kaza *et al* 2018 *What a Waste* 2.0: 76-77.

¹³⁸ Kaza *et al* 2018 *What a Waste* 2.0: 76-77.

¹³⁹ Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 24.

¹⁴⁰ Palczynski (2002) Study on Solid Waste Management Options for Africa, AFDB 2015, Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 24.

legal issues, lack of environmental values and ethics from residents.¹⁴¹ Environmental degradation in most developing nations is a result of the insufficient implementation and inadequate enforcement of waste management and environmental protection laws and regulatory frameworks.¹⁴² According to a 2002 research by Palczynski, as highlighted by Ogutu, the following factors contributed to the unsustainable SWM systems in several East African cities such as Nairobi, Kenya: weak legislative enforcement, a dearth of community education initiatives on SWM, insufficient financial resources, a lack of political will, and lack of government support for intermediate waste reduction strategies including recycling, re-use, composting and incineration re-use, recycling, composting and incineration.¹⁴³

2.5 Consequences of ineffective Municipal Solid Waste Management

There are a number of consequences of ineffective municipal solid waste management in general, and particularly in Harare.

2.5.1 Environmental pollution

Improperly managed solid waste within cities can have a detrimental impact on the environment and human health.¹⁴⁴ One of the environmental threats include the pollution and contamination of groundwater and surface water by leachate, as well as air pollution from the open burning of MSW that is not properly collected and disposed of.¹⁴⁵ Other risks include damaging ecosystems, biodiversity and the acceleration of the destruction of the environment.¹⁴⁶

Open dumping, which involves the indiscriminate disposal of waste in open areas, is a common practice in many developing countries.¹⁴⁷ This method poses

¹⁴¹ AFDB 2014, 2015.

¹⁴² Ogutu Effectiveness of the Policy Framework on Solid Waste Management 24.

¹⁴³ Okot-Okumu 2012 *InTech*; Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 24.

¹⁴⁴ Ogutu Effectiveness of the Policy Framework on Solid Waste Management 3.

¹⁴⁵ UN Habitat 2009, see also Hoornweg D and Bhada Tata (2012) No. 15 *What a waste*: 27. See also Muzenda, Mbohwa, & Mohee 2013 *International Journal of Sustainable Development & World Ecology* 493-500.

¹⁴⁶ Muzenda, Mbohwa & Mohee 2013 *International Journal of Sustainable Development & World Ecology* 493-500.

¹⁴⁷ Nnaji 2015 *An International Journal* 60.

significant risks to the environment and public health. Moreover, the decomposition of organic waste in open dumps produces methane, a potent greenhouse gas that contributes to climate change. According to the World Bank 2018, improper waste management practices, including open dumping and uncontrolled landfilling, are responsible for a significant proportion of global greenhouse gas emissions. In fact, it is estimated that the waste sector accounts for around 5% of global greenhouse gas emissions, with methane being one of the primary contributors.¹⁴⁸

Burning of waste is another prevalent practice in urban areas, particularly in informal settlements where waste management infrastructure is lacking.¹⁴⁹ The burning of waste releases into the air toxic gases such as methane and carbon monoxide and particulate matter, contributing to air pollution and compromising the quality of air, thus contributing to climate change. These pollutants can have detrimental effects on human health, causing respiratory problems, cardiovascular diseases, and even cancer.¹⁵⁰ Furthermore, the release of heavy metals, organic pollutants, and pathogens from waste can have long-term consequences for ecosystems, including the disruption of natural processes and the loss of biodiversity.¹⁵¹

2.5.2 Public health risks

In most jurisdictions, public health concerns have served as the foundation for MSWM, as solid waste management is essential to maintaining quality public health. Improper management of solid waste can serve as a haven for insects, rodents, vermin and scavenging animals, which can spread illnesses through air and water. The presence of these disease-carrying vectors increases the risk of

¹⁴⁸ World Bank 2018, 3, see also Ogutu *Effectiveness of the Policy Framework on Solid Waste Management* 3.

¹⁴⁹ Kasimba, Choguya and Muqayi, 2023 *African Journal of Gender, Society & Development* 209.

¹⁵⁰ Muzenda, Mbohwa & Mohee 2013 *International Journal of Sustainable Development & World Ecology* 493-500.

¹⁵¹ Muzenda, Mbohwa & Mohee 2013 *International Journal of Sustainable Development & World Ecology* 493-500.

disease transmission to the population residing in and around waste disposal sites.¹⁵²

According to UN Habitat surveys, the frequency of acute respiratory infections is six times greater and incidence of diarrhea twice as common in places where waste collection occurs infrequently than in areas where collection is frequent.¹⁵³ As such, most of sub-Saharan African countries particularly Zimbabwe, Zambia and Malawi are prone to diseases such as cholera, malaria, dengue, fever, zika, typhoid and dysentery, caused mainly by unhygienic waste disposal.¹⁵⁴

According to the World Health Organization (WHO) 2001 report, inadequate waste management led to around 1.7 million deaths annually, with vulnerable populations, particularly children, being the most affected.¹⁵⁵ These health impacts include respiratory and skin infections, gastrointestinal diseases, and vector-borne illnesses. For instance, open dumping and burning of waste lead to the emission of harmful gases such as carbon monoxide, sulphur dioxide, and nitrous oxides, causing respiratory problems like asthma, bronchitis, and lung cancer.¹⁵⁶ Moreover, untreated wastewater and leachate from landfills can pollute water sources, leading to waterborne diseases such as cholera, typhoid fever, and hepatitis A.

This situation presents a significant challenge to achieving the SDGs, which include target 6.2 to ensure access to adequate and equitable sanitation and hygiene for all, and target 3.9 to lower the amount of fatalities and diseases brought on by dangerous substances as well as contamination and pollution of the air, water and soil.¹⁵⁷

¹⁵² Ogundele, Rapheal and Abiodun 2018 *Polytechnica* 61-72.

¹⁵³ UN Habitat 2009, see also Hoornweg D and Bhada Tata 2012 *What a waste*: 26.

¹⁵⁴ World Health Organisation, 2014 *A global brief on vector-borne diseases* (No. WHO/DCO/WHO/2014.1); see also Africa CDC 2023 <https://africacdc.org/news-item/africa-cdc-support-on-cholera-outbreak-in-zambia/#>.

¹⁵⁵ WHO 2001 The World Health Report 2001: *Mental health: new understanding, new hope*.

¹⁵⁶ Munawer 2018 *Journal of Sustainable Mining* 88.

¹⁵⁷ Hutton *Journal of Water, Sanitation and Hygiene for Development* 191; see Ogotu *Effectiveness of the Policy Framework on Solid Waste Management* 3.

2.5.3 Aesthetic and Liveability Issues

The accumulation of waste in public spaces, such as streets, parks, and open areas, creates an unsightly environment¹⁵⁸ and accumulated waste can emit foul odours which can deter tourists and potential investors.¹⁵⁹ This also can lead to a decrease in the quality of life for residents and a decline in community well-being.¹⁶⁰

Consequently, inefficient waste management can impede the growth of local economies. A study by Potoski and Prakash highlights the detrimental impact of inefficient waste management on investment decisions.¹⁶¹ They argue that the presence of poorly managed landfills or poorly managed waste facilities can create a negative image for a community, making it less attractive to potential investors.

Moreover, the costs associated with cleaning up and mitigating the impacts of poor waste management can place a burden on local governments and taxpayers.¹⁶² According to the World Bank, the economic costs of inadequate waste management can range from 0.5% to 2% of a country's GDP.¹⁶³

Inefficient waste management practices can also contribute to social inequalities.¹⁶⁴ Disadvantaged communities, such as low-income neighbourhoods or marginalized populations, often bear the brunt of poor waste management. These communities may be more likely to be located near landfills or incinerators, leading to environmental injustice and unequal distribution of the negative impacts associated with waste disposal.¹⁶⁵ This can further perpetuate social disparities and inequities.

¹⁵⁸ Mandeli 2019 *Cities* 10.

¹⁵⁹ Edensor 2016 *Walking through ruins* 135-154.

¹⁶⁰ Tchobanoglous, Theisen & Vigil 2014 *Integrated solid waste management* 724.

¹⁶¹ Prakash and Potoski 2006 *American Journal of political science* 354.

¹⁶² Cahill, Grimes and Wilson 2011 *Waste Management and Research* 461.

¹⁶³ Shekdar 2009 *Waste management* 1440.

¹⁶⁴ Marshall and Farahbakhsh 2013 *Waste management* 997.

¹⁶⁵ Bullard 2001 *Phylon* 152.

2.5.4 Resource Depletion

Ineffective municipal solid waste management practices not only have immediate consequences for public health, environmental degradation and aesthetics but also contribute to resource depletion,¹⁶⁶ as valuable materials that could be recycled or reused are lost in the process. This unnecessary loss of resources not only leads to increased energy consumption but also results in higher greenhouse gas emissions associated with the extraction and production of new materials, exacerbating the strain on natural resources and contributing to unsustainable consumption patterns. When waste is not properly managed, recyclable materials such as paper, plastics, glass, and metals end up in landfills or incinerators, where they are either buried or burned.¹⁶⁷ These materials could have been recovered and recycled, reducing the need for extracting virgin resources.¹⁶⁸ According to the United Nations Environment Programme (UNEP), recycling one ton of paper can save up to 17 trees, 7,000 gallons of water, and 380 gallons of oil.¹⁶⁹ Similarly, recycling of aluminium cans can save up to 95% of the energy required to produce new aluminium from bauxite ore.¹⁷⁰

Thus, ineffective municipal waste management perpetuates a linear “take-make-dispose” model of consumption, where resources are extracted, used once, and then discarded as waste.

2.6 The linkage between international environmental law and national environmental law enforcement

It is becoming more and more important to take into account and increasingly acknowledge, the relationship between national environmental legal systems and international environmental laws and policies, and that efficient and effective national environmental law enforcement is essential for the success of

¹⁶⁶ Mandevere and Jerie 2018 *J Environ Waste Management and Recycling* 34.

¹⁶⁷ Singh and Sharma 2016 *Procedia Environmental Sciences* 696; See also Lehmann 2011 *Sustainable Dev. L. & Pol’y* 28.

¹⁶⁸ Hoornweg, Bhada-Tata, & Kennedy 2013 *Nature* 615-617.

¹⁶⁹ UNEP 2013 <https://www.unep.org/resources/report/integrated-sustainable-waste-management-set-tools-decision-makers>.

¹⁷⁰ UNEP 2013.

international environmental law.¹⁷¹ It must be noted that certain national laws are enacted to implement international environmental agreements, thus at the outset it is crucial to understand the relationship between the legal frameworks.

States voluntarily agree to implement specific duties and obligations within their respective national legal systems when they voluntarily enter into international accords (also known as conventions or treaties). States are the primary forces behind the implementation of international laws because, in order for them to be effective, international agreements must be incorporated into national legal frameworks.¹⁷²

Many variables affect how effective country legal systems are, including the degree to which society accepts the justification for environmental laws, a State's willingness and capacity to enact the necessary national environmental legislation as well as enforcing them, and the degree to which actors in the national and international spheres believe that costs of adhering to such laws outweigh the benefits.¹⁷³

In terms of *Agenda 21*, a global framework for sustainable development was adopted at the 1992 UNCED, which stresses the importance of enforcement so that legislation and policy frameworks become effective in managing the environmental issues, including waste management and promotion of sustainable development.¹⁷⁴ Thus, governments are required to build and strengthen national institutional competency and capacity in order to effectively incorporate social, economic, developmental, and environmental challenges at all levels of development decision-making and execution, among other things.¹⁷⁵

With respect to the enforcement of environmental laws and policies, *Agenda 21* further notes that:

¹⁷¹ UNEP 2014 *Enforcement of Environmental Law* 2.

¹⁷² UNEP 2014 *Enforcement of Environmental Law* 2.

¹⁷³ UNEP 2014 *Enforcement of Environmental Law* 2.

¹⁷⁴ See *Chapter 8*, para 8.16. of *Agenda 21*.

¹⁷⁵ See *Chapter 8* of *Agenda 21*.

Amongst the important instruments for transforming environment and development policies into actions are laws and regulations suited to country specific conditions – but much of the law-making in many countries seem to be ad hoc and piecemeal, or has not been endowed with the necessary institutional machinery and authority for enforcement and timely adjustment; and many developing countries have been afflicted by shortcomings of laws and regulations.¹⁷⁶

Furthermore, governments, according to *Agenda 21*, should do the following: improve the effectiveness of their laws and regulations, ensuring they have legal recourse and remediation for actions impacting environmental protection and development and which infringe on legal rights; seek help and support from legal reference from reputable NGO's and intergovernmental organisations; make use of cooperative training networks; and put more emphasis on enforcement and compliance with laws and regulations relating sustainable development¹⁷⁷. They should create comprehensive plans to ensure that laws and rules pertaining to sustainable development are followed to the fullest extent possible.

Therefore, increasing the "legal-institutional capacities" of countries, is essential to addressing national problems of governance and ensuring that laws pertaining to the environment and sustainable development are made and implemented effectively.¹⁷⁸

2.7 Conclusion

In conclusion, international policies and legal frameworks for solid waste management are essential in addressing the challenges posed by ineffective municipal solid waste management. These policies provide guidelines, goals, and targets to promote sustainable waste management practices worldwide. The 2030 Sustainable Development Goals, the *UNFCCC* and the *Basel Convention* are notable examples of international frameworks that emphasise the need for proper waste reduction, recycling, and disposal, as well as the prevention of transboundary movement of hazardous waste. The consequences of ineffective MSWM can be severe and pervasive. It leads to public health risks and environmental degradation. Economically, inadequate waste management leads to

¹⁷⁶ See *Chapter 8 of Agenda 21*; see also UNEP 2014 *Enforcement of Environmental Law 2*.

¹⁷⁷ See *Agenda 21 para 8.17- 8.21*.

¹⁷⁸ UNEP 2014 *Enforcement of Environmental Law 2*.

substantial costs for waste collection, transportation, and treatment, which strain municipal budgets and divert resources from other essential services. Ultimately, it is the responsibility of states to adopt and adapt these international measures to suit their individual countries. This is essential to ensure that MSWM effectively serves its primary purpose, which is waste prevention and, when that is not feasible, recycling with minimal costs.¹⁷⁹ The next chapter will delve deeper into this discussion, focusing on the environmental legal and policy framework on MSWM in Harare.

¹⁷⁹ Sukholthaman, Shirahada and Sharp 2017 *Kasetsart Journal of Social Sciences* 324-325.

3 CHAPTER 3: SITUATING THE LEGAL AND POLICY FRAMEWORK FOR SOLID WASTE MANAGEMENT IN HARARE

3.1 Introduction

For the year 2022, Harare's population accounted for 16% of the total population in Zimbabwe with a population growth rate of +1.3% every year.¹⁸⁰ This indicates that Harare has the highest population of any province in the country due to urban migration.¹⁸¹ In addition to placing a great deal of strain on social services provision and infrastructure, the rapid urban population growth rate has also exacerbated problems of waste management, sanitation, and pollution.¹⁸²

SWM is a critical issue in Harare, Zimbabwe's capital city, and the surrounding areas. The management of solid waste in Harare is a complex process that involves a range of stakeholders, including households, businesses, local government authorities, government agencies, NGOs and waste collection companies.¹⁸³ Waste management systems are currently in extremely bad condition and are largely dysfunctional, as local authorities who are required to collect waste from industrial and residential areas are incapacitated due to limited resources and other reasons.¹⁸⁴ A State of Disaster on SWM was declared by the president of Zimbabwe in July 2023, due to the severity of the menace in the Capital.¹⁸⁵

To tackle the issues and challenges of MSWM, a comprehensive legal and policy framework has been established by the government of Zimbabwe. The legal and policy framework governing SWM in Harare has evolved over time, with numerous policies and laws being introduced to address this issue and to enable good waste management practices.¹⁸⁶ However, the implementation of these policies and laws has been hindered by various factors, including inadequate funding, poor

¹⁸⁰ See Zimbabwe 2022 Population and Housing Census Report Volume 1, 7-8 <https://www.zimstat.co.zw/wp->

¹⁸¹ See Zimbabwe 2022 Population and Housing Census Report Volume 1, 7-8 <https://www.zimstat.co.zw/wp->

¹⁸² Mohamed-Katerere and Chenje *Environmental Law and Policy in Zimbabwe* 8.

¹⁸³ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity* 2120.

¹⁸⁴ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity* 2116.

¹⁸⁵ See section 2 the *Declaration*.

¹⁸⁶ Maseva 2005 *Waste Management in Zimbabwe* Practical Action Southern Africa 18.

governance, and limited technical capacity.¹⁸⁷ This chapter provides an overview of the waste management legislative and policy framework in Harare, briefly examining its historical context, policies, and laws, and the impacts of poor waste management in Harare.

The purpose of the legal and policy framework is to create an enabling environment, encouraging environmentally friendly practices that protect public health and the environment.¹⁸⁸ In other words, the law could enable change through its execution and its policies that support and incentivise sustainable resource utilisation.¹⁸⁹

As highlighted in Chapter 2, due to their complexity, the environmental problems posed by improperly managed MSW must be controlled comprehensively and holistically. As a result, policies that embrace industrial ecology, economic tools, regulations, plans, and strategies which generate value through closed-loop systems are necessary, as is internalising the costs associated with the environment.¹⁹⁰ The extent to which these strategies have met the objective of effective enforcement, shall be evaluated in Chapter 4.

3.2 A brief history of solid waste management legal and policy framework in Harare

During the colonial era before 1980, waste management in Harare was primarily focused on segregation and disposal, with minimal consideration for environmental sustainability.¹⁹¹ One such by-law on waste management was the *Salisbury (Waste Management) By-laws Statutory Instrument 477 of 1979* which emphasised collection and disposal only.¹⁹² The Harare Municipality applied rudimentary waste disposal methods such as open dumping and burning, which led to severe environmental pollution. These practices were inefficient and

¹⁸⁷ Harare City Council 2019 *Harare City State of the Environment Report*, Harare City Council Press 8.

¹⁸⁸ See the preamble of *the Environmental Management Act (Chapter 20:27)* of 2002.

¹⁸⁹ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity* 2116.

¹⁹⁰ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity* 2116.

¹⁹¹ Mapako 2000 State of the environment report for Zimbabwe UNEP 120.

¹⁹² See Part 1 of the Schedule to *Salisbury (Waste Management) By-laws Statutory Instrument 477 of 1979*; see also Tsiko and Togarepi 2012 *Journal of American Sciences* 694.

unsustainable, as they contributed to the degradation of land, groundwater, and air quality.¹⁹³ These primitive waste management practices also had detrimental effects on public health.¹⁹⁴ In the post-colonial period after Zimbabwe attained independence in 1980, the Harare City Council (HCC) implemented various laws and policies to improve solid waste management practices. The first notable By-law was the Harare (Anti-litter) By-laws of 1981,¹⁹⁵ which prohibited any form of littering, and also the *Waste Management By-Laws* enacted in 1981, which aimed to regulate waste collection, transportation, and disposal.¹⁹⁶ However, the implementation of these by-laws faced significant challenges due to limited municipal resources and inadequate infrastructure such as properly lined landfills, incinerators and appropriate equipment.¹⁹⁷

Despite these challenges, the HCC continued to implement policies aimed at promoting sustainable waste management practices. The HCC introduced the *Harare Environmental Management Strategy* in 1993 and it marked an important step in promoting sustainable waste management practices in the city. This strategy emphasised the principles of waste minimisation, reuse, and recycling, and called for integrated waste management approaches.¹⁹⁸ The strategy recognised the importance of public awareness campaigns in educating the community about waste management practices and encouraging their active participation.¹⁹⁹ However, the effective implementation of this strategy faced challenges due to financial constraints and limited technical capacity in waste management. This made it difficult to effectively execute the proposed integrated waste management approaches.²⁰⁰

¹⁹³ Mapako 2000 State of the environment report for Zimbabwe UNEP 120.

¹⁹⁴ Mapako 2000 State of the environment report for Zimbabwe UNEP 123.

¹⁹⁵ Published in *Statutory Instrument* 85 of 1981.

¹⁹⁶ See Part 1 of the *Schedule to the Harare (Incorporated and Local Government Areas)(Waste Management) By-Laws, 1981*, published in *Statutory Instrument* 559 of 1981. The SI was repealed by *Harare (Incorporated and Local Government Areas)(Waste Management)(Amendment) By-Laws, 2022* (No.29) published in *Statutory Instrument* 153 of 2022.

¹⁹⁷ Dzingirai, Dube and Chikandiwa "Environmental management in Harare" 76.

¹⁹⁸ See Harare Environmental Management Strategy (1993); see also Mapako 2000 State of the environment report for Zimbabwe UNEP 122.

¹⁹⁹ Mapako 2000 State of the environment report for Zimbabwe UNEP 123.

²⁰⁰ Dzingirai, Dube and Chikandiwa (2010) "Environmental management in Harare" 77.

Since independence, HCC's development of environmental laws has been abundant compared to the somewhat irregular and sluggish development of environmental policies. However, the extent and influence of the policies as have been developed, make them significant to environmental protection.²⁰¹

3.3 The Environmental Legal and Policy Framework on Municipal Solid Waste Management in Harare

The following discussion will outline the legislative and policy framework on MSWM.

3.3.1 The Constitution of Zimbabwe

The new *Constitution of Zimbabwe*²⁰² which came into force on 22 May 2013, provides for environmental rights in section 73 and it reads that:

- (1) Every person has a right -
 - (a) to an environment that is not harmful to their health or well-being; and
 - (b) to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that-
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation; and
 - (iii) secure ecologically sustainable development and use of natural resources while promoting economic and social development.²⁰³
- (2) The State must take reasonable legislative and other measures, within the limits of the resources available to it, to achieve the progressive realisation of the rights set out in this section.²⁰⁴

The new *Constitution* establishes the current foundational principles for solid waste management, and is supported by a multitude of relevant laws, which are interpreted within the framework of section 73. The previous *Constitution*, enacted in 1980, did not include the environmental right; however, these were outlined in the *Environmental Management Act 13 (Chapter 20:27)*²⁰⁵ and the *National*

²⁰¹ Mohamed-Katerere and Chenje *Environmental Law and Policy in Zimbabwe* 31 <https://www.sardc.net/books/LawAndPolicy/LawAndPolicy.pdf>.

²⁰² The Constitution of Zimbabwe Amendment (No 20) Act 2013 (Hereinafter the *Constitution*).

²⁰³ See section 73 (1) of the *Constitution*.

²⁰⁴ See section 73 (2) of the *Constitution*.

²⁰⁵ See section 4(1) of the *Environmental Management Act 13 (Chapter 20:27)* of 2002 as Amended by Act 5/2004, (hereinafter EMA); see also Chirisa and Muzenda 2013 *SPRJ* 2.

Environmental Policy and Strategies.²⁰⁶ The EMA *gives* effect to section 73 of the *Constitution*.²⁰⁷ Thus, a failure by any organisation or individual to uphold this right is an infringement on other people's rights to live in a clean, safe and healthy environment.²⁰⁸ Enshrining the environmental right in the *Constitution* is undoubtedly a big step forward for Zimbabwe in terms of environmental governance and resource management.²⁰⁹ However, simply including the environmental right in the *Constitution* is not enough; the need to put effort into the implementation and the enforcement of laws to realise the right to a healthy and clean environment is crucial. This can be accomplished by using social, legal and economic enforcement tools that explicitly require the government, corporations, civil society and private individual to be informed and act as knowledgeable and conscientious environmental stewards.²¹⁰

An aspect of concern, however, is that the environmental clause ends with a claw-back provision; which requires the State to take reasonable legislative and other measures, within the constraints of its resources, to accomplish the gradual realisation of the rights outlined in the clause.²¹¹

Consequently, the environmental right clause mirrors the aspirations of the State for environmental governance. Commenting on a similar provision under the *Constitution of the Republic of South Africa*,²¹² Nel and Du Plessis highlighted that the environmental right also establishes a concrete foundation for framework environmental law whose aim is to "define overarching and generic principles in terms of which sectoral-specific legislation is embedded",²¹³ as well as to establish an integrated environmental governance framework.²¹⁴ In Zimbabwe, the constitutional environmental right in terms of SWM is therefore enforced through

²⁰⁶ See point 3.1 of the National Environmental Policy and Strategies of 2009 2; Feresu Zimbabwe Environment Outlook 2: 222.

²⁰⁷ See EMA section 4(1).

²⁰⁸ Phiri and Gunduza Waste Management Issues in the City of Harare 1-18.

²⁰⁹ Chirisa *et al* 2013 *SPRJ* 105.

²¹⁰ Chirisa *et al* 2013 *SPRJ* 104.

²¹¹ See section 73 (2) of the *Constitution*; see also Tsabora *Environmental Rights Clause* 349.

²¹² 1996.

²¹³ Nel and Du Plessis, 2018 *SAJELP* 1-6; see also Tsabora *Environmental Rights Clause* 347.

²¹⁴ Murombo T "Balancing interests through framework environmental legislation in Zimbabwe" 566; see also Tsabora *Environmental Rights Clause* 347.

the EMA,²¹⁵ which serves as the overarching framework environmental law. Furthermore, there are also specific environmental laws, policies and strategies that have been developed as a measure to protect the environment.²¹⁶ This generic framework is briefly discussed below.

3.3.2 The Environmental Management Act (Chapter 20:27 No. 13 of 2002)

As noted above, the EMA is the principal legislation governing environmental issues in Zimbabwe in general, and certainly in Harare.²¹⁷ EMA came about through a wide and inclusive stakeholder consultation which involved different ministries' departments, academia, and local authorities. The consultation was done by the then Ministry of Environment and Tourism in Zimbabwe.²¹⁸ The law sets out the broad legal framework for environmental protection and management throughout Zimbabwe, including the management of solid waste, emissions and pollution and environmental degradation.²¹⁹ The Act gives an overview of the important sectors that are related to waste management, including the environmental rights²²⁰, the general principles of environmental management²²¹, the designated committees that are provided for and the relevant statutory instruments.²²² The Act is complemented by different SI's and policies. However, EMA takes precedence where there are conflicts.

As a starting point, section 4(1) provides for the environmental rights, and section 4(2) of EMA gives the principles for environmental protection and management, which include integrated environmental management, the precautionary principle, the polluter-pays principle, the principle of sustainable development and the duty of care, among others. These principles have a bearing when future legislation on SWM is enacted. The EMA established the Environmental Management Agency,²²³ which is responsible for administering, monitoring and enforcing different

²¹⁵ See section 70 of EMA

²¹⁶ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²¹⁷ See EMA.

²¹⁸ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²¹⁹ Feresu *Zimbabwe Environment Outlook 2*: 223; see also Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²²⁰ See section 4(1) of EMA.

²²¹ See section 4(2) of EMA.

²²² Feresu *Zimbabwe Environment Outlook 2*: 224.

²²³ See section 9 of EMA.

regulations on municipal solid waste management in Harare and other urban areas in Zimbabwe.²²⁴ Section 69 of the EMA specifies standards, measures, and guidelines for waste management which are set up by the Standards and Enforcement Committee. Thus, the measures identify materials and processes that are harmful to human health and cause land degradation.²²⁵ Section 70 of EMA outlines the general duty of any person, organisation or authority in the management of waste to ensure protection of public health and the environment against pollution and environmental degradation.²²⁶ EMA prohibits any person from discharging or disposing of any kind of waste 'whether generated within or outside Zimbabwe, in such a manner as to cause pollution to the environment or ill health to any person'.²²⁷ Waste should only be transported to a waste disposal site using a valid licensed vehicle to transport waste.²²⁸ Section 70 (3) of EMA requires waste generators to use treatment, reclamation and recycling as essential measures to minimise waste.

Thus, taking into perspective section 69 of EMA which prescribes standards for waste, industries that generate waste must implement strategies that minimise such waste. These specified measures are treatment, reclamation, and recycling.²²⁹ If employed, these measures could facilitate the pursuance of sustainable and efficient resource utilisation, thereby promoting socio-economic development towards a circular economy (CE). The provision further emphasizes that contravening this law is an offence punishable by imprisonment of not more than five years or a fine and/or both such fine and such imprisonment.²³⁰ However, Section 70 does not provide any incentives for using the strategies that promote CE.²³¹

Section 83 of EMA prohibits individuals from littering and it reads;

²²⁴ See section 9 of EMA.

²²⁵ See section 69 (a) of EMA.

²²⁶ See section 70 of EMA.

²²⁷ See section 70(1) of EMA.

²²⁸ See section 70(2)(a-b) of EMA.

²²⁹ See section 69 of EMA and section 70 (3) and (4) of EMA.

²³⁰ EMA section 70 (5) (c).

²³¹ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

- (1) No person shall discard, dump or leave any litter on any land or water surface, street, road or site in or at any place except in a container provided for that purpose or at a place which has been specifically designated, indicated, provided or set apart for such purposes
- (2) An owner of a transport conveyance shall ensure that no litter is thrown from his transport conveyance.
- (3) Every person or authority in control of or responsible for the maintenance of any place shall at all times ensure that containers or places are provided which will normally be adequate and suitable for the discarding of litter.²³²

A fine not exceeding level three is imposed for contravening this section if one is found guilty of any offence.²³³ In light of the current situation in Harare CBD, littering is one of the major challenges confronting HCC due to vendors haphazardly selling all sorts of items from fruits, cooked food, vegetables, PET drinks, to second-hand clothes and cellphones during the day and until late in the evening. Thus, vegetable matter, kaylites, empty plastic bottles, and cardboard boxes are thrown everywhere, and this problem is compounded by the non-availability of nearby bins or receptacles. Indiscriminate littering in Harare CBD is also caused by a negative culture and a lack of ethical values by citizens regarding waste management.

The EMA has also established a waste management hierarchy, which provides guidance on the most sustainable ways to manage solid waste. The EMA's waste management hierarchy prioritises waste reduction, reuse, and recycling because they are the most sustainable ways to manage solid waste.²³⁴ The waste management hierarchy is a crucial tool for encouraging sustainable waste management techniques and minimising the effects of solid waste on the environment. It encourages individuals, households, businesses, and governments to prioritise waste reduction reuse, and recycling over disposal in landfills, which is the least sustainable option. By implementing and promoting the waste management hierarchy, stakeholders can reduce the amount of waste that ends up in landfills and conserve valuable resources.²³⁵ The *Environmental Management*

²³² See EMA section 83 (1) to (3).

²³³ See EMA section 83 (4).

²³⁴ See EMA section 70(3) which emphasises minimising waste through waste treatment, reclamation and recycling.

²³⁵ See EMA section 70(3).

Act is also supported by its ancillary national and city-level regulations. These are discussed below.

3.3.2.1 *Statutory Instrument 6 of 2007, (Environmental Management Act: Effluent and Solid Waste Disposal Regulations)*

One of the very important instruments is the *Effluent and Solid Waste Disposal Regulations*.²³⁶ This SI is administered by the Environmental Management Agency, whose duty is to issue waste licences in terms of these regulations, and in general the Agency controls and regulates the 'disposal of waste or effluent, which may affect the quality of the environment'.²³⁷ The SI requires local authorities to ensure a 'waste collection frequency that minimises accumulation and avoids decomposition of waste on collection sites'.²³⁸ The regulation does not explicitly promote circularity as an industry and can budget for disposal only and not work towards circularity, as it puts more emphasis on collection and disposal rather than a reduction in waste generation.²³⁹ Therefore, it can be argued that the SI regulates the disposal of waste (solid waste and effluent), using the polluter-pays principle as it requires the polluter to pay a fine or imprisonment and/or both as well as closure of the site.²⁴⁰ The SI puts into effect EMA detailing the control, monitoring and regulation of disposal of waste.²⁴¹

Section 12 (1) of *SI 6 of 2007* talks of an annual waste management plan that every generator of waste (except at the household level) is required to prepare, implement and adhere to every year. The plan generally talks of the adoption of environmentally sound management of waste.²⁴²

²³⁶ (SI 6 of 2007).

²³⁷ See section 3 (a) of SI 6 of 2007.

²³⁸ See section 14 (1) of SI 6 of 2007.

²³⁹ See section 12(1)(b), see also Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²⁴⁰ See section 22(4) of SI 6 of 2007; see also section 4(2)(g) of EMA, see also Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²⁴¹ Feresu Zimbabwe Environment Outlook 2: 224.

²⁴² Section 12 (1) of SI 6 of 2007.

3.3.2.2 *Statutory Instrument 98 of 2010, (Environmental Management Act: Plastic Packaging and Plastic Bottles Regulations)*

This instrument was enacted in response to the ever-increasing amount of plastic in the environment. This instrument prohibits the production, sale, or importation of plastic packaging with a wall thickness of less than thirty (30) micrometres for use in Zimbabwe unless it is biodegradable plastic packaging or plastic bread packaging with a wall thickness of between 25 micrometers and 30 micrometers.²⁴³ It sets the minimum requirements for plastic packaging. This is a product policy since it exclusively incentivises circularity only on the plastic packaging design, production, distribution, or import, although many of these policies are limited to very certain product categories or materials.²⁴⁴

As postulated by Rukani, plastic waste is still a challenge in Harare in particular and Zimbabwe at large, as evidenced by their presence on sideroads, open dump sites, building alleys, buses, trains, and basically everywhere. Therefore, the regulations have not achieved the intended objectives of sustainable plastic waste management. There is potential for improvement if other options are used and include Life Cycle Thinking (LCT) to allow the re-use, refurbishment, and remanufacturing of the plastic containers and re-thinking about the design of these plastic packaging and containers.²⁴⁵ An example, in closed-loop recycling, would be PET packaging and plastic bottles, which can be made from plastic recyclates or a combination of plastic recyclates and their virgin counterparts. In an open-loop system, at least some of the plastic items are utilised in products other than those from which they were collected, for example the manufacture of textile fibres from recycled PET bottles or the use of recycled material in pavement engineering.²⁴⁶

²⁴³ See section 3(1) of Statutory Instrument 98 of 2010, (Environmental Management Act: Plastic Packaging and Plastic Bottles Regulations).

²⁴⁴ See section 4(1) and 4(2) of SI 98 of 2010.

²⁴⁵ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2117; Rukani 2019 *Plastic and Circular Economy* 47.

²⁴⁶ Santos, Pizzol and Azarijafari "Life Cycle Assessments (LCA) of using recycled plastic" 273-302 <http://www.sciencedirect.com/topics/engineering/life-cycle-thinking#>.

3.3.2.3 *Statutory Instrument 10 of 2007, (Environmental Management: Hazardous Waste Management Regulations)*

This SI provides for the issuance of licences for the generation, storage, use, recycling, treatment, transportation, or disposal of hazardous waste for waste generators and waste handlers.²⁴⁷ Although this research excludes the in-depth study of hazardous wastes, there are other municipal solid wastes that can be classified as hazardous waste.²⁴⁸ Generators of hazardous waste are also required to prepare waste management plans and targets.²⁴⁹ The SI also regulates waste collection and management by local authorities including HCC. Importantly, the waste management plan by generators of hazardous waste shall consist of 'an inventory of waste-management situation specifying the quantity of waste produced and the components of such waste'²⁵⁰ and 'specific goals'.²⁵¹

These strategies are a requirement to ensure that objectives are set for the adoption of cleaner production methods, waste minimisation and recycling that does not harm the environment. Generally speaking, it calls for the adoption of ecologically responsible waste management practices.²⁵² However, it was noted that implementation in terms of these strategies is still a challenge as the major emphasis is mainly on disposal licences rather than waste reduction. Thus, these provisions do not give an explicit outline of circularity; rather they promote linearity to waste management.²⁵³

As already mentioned, waste management systems in Harare are currently in a very bad state and are largely dysfunctional as HCC, which is mandated to collect refuse from industry and residential areas, is incapacitated due to limited financial, technical and human resources.²⁵⁴ This menace has resulted in the declaration of

²⁴⁷ See section 4(1) of SI 10 of 2007.

²⁴⁸ See Basel Convention Article 1 and Annex 111, see also Basel Convention 5.

²⁴⁹ See section 13(1) of SI 10 of 2007.

²⁵⁰ See section 13(1)(a)(i)-(ii) of SI 10 of 2007.

²⁵¹ See section 13(1)(b)(i)-(v) of SI 10 of 2007.

²⁵² See section 13(1)(b)(i)-(v) of SI 10 of 2007; Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²⁵³ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

²⁵⁴ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity*: 2116.

a State of Disaster on solid waste in the Harare Metropolitan Area by the president of Zimbabwe.²⁵⁵

3.3.3 *The Urban Councils Act [Chapter 29:15] (Revised Edition 1996)*

Apart from Acts of Parliament discussed so far, this Act also regulates waste management by governing every city, municipality, every local government area and local board through empowering them to provide and operate a service for removing solid waste.²⁵⁶ The Third Schedule to the *Urban Councils Act* allows the framing of council by-laws for a wide range of purposes, including waste management.²⁵⁷ Thus, Part XV of the schedule enables by-laws controlling air pollution from fires and combustible materials. Part IX of the schedule by-laws may regulate the removal of effluent and refuse and waste material.²⁵⁸ Another Act which has an effect on waste management is the Public Health Act [Chapter 15:09]. A discussion of the two by-laws under the *Urban Councils Act* follows below.

3.3.3.1 *Harare (Anti-Litter) By-laws Statutory Instrument 30 of 2016 (HAL)*

The by-law ensures that any individual who is caught throwing litter in a public place, is liable to pay a fine²⁵⁹ and anyone who causes or permits litter to be deposited /abandoned in a public place is also fined.²⁶⁰ Section 7 (a) of HAL deals with a person who fails to pick up litter, which in the exercise of his/her duties has fallen at any public place, whereas section 7(b) of HAL fines a person who fails to provide an adequate number of bins in and around their area of business. This Anti-litter by-law has not been enforced for some years. HCC intends to start enforcing the Anti-Litter by-laws which the City has not been enforcing for some time. It also intends to provide 1500 bins in the CBD and property owners shall be

²⁵⁵ See the preamble to the *Declaration*.

²⁵⁶ See section 218(b) of *Urban Councils Act* [Chapter 29:15]; Makamba *IJEHSS* 237 ; see also Feresu *Zimbabwe Environment Outlook* 2: 226.

²⁵⁷ See section 227(1) of *Urban Councils Act* [Chapter 29:15]; Makamba *IJEHSS* 238 .

²⁵⁸ See the *Urban Councils Act*; see also Mohamed-Katerere and Chenje "Environmental Law and Policy in Zimbabwe" 30.

²⁵⁹ See section 4(1) of SI 30 of 2016 *HAL By-Laws*; see also Kugwa 2023 *Council targets litterbugs* <https://www.hararecity.co.zw/news/read/council-targets-litterbugs>.

²⁶⁰ See section 4(1) of *HAL By-Laws*;

forced to provide bins.²⁶¹ The recent cholera outbreaks due to poor MSW in the CBD require these by-laws to be enforced. However, it is yet to be seen if the enforcement will be done.

3.3.3.2 Harare (*Incorporated and Local Government Areas*) (*Waste Management (Amendment) By-Laws*, 2022 (No.29). *Statutory Instrument* 153 of 2022

Harare City Council has established Solid Waste Management By-laws, which provide guidelines for the collection, transportation, and disposal of waste in the city.²⁶² The by-laws also provide for penalties and fines for those who violate the regulations.²⁶³ Thus, a fine for domestic waste from a standard-size receptacle/cart is US\$40, while for domestic waste from a vehicle is US\$115, and fines for industrial and commercial waste dumping is US\$385 at prevailing bank rate.²⁶⁴ The Waste Management Department of the HCC is tasked with implementing the by-laws and ensuring that solid waste is managed effectively and efficiently in the city.²⁶⁵ The enforcement of the by-laws is crucial for ensuring compliance and deterring illegal dumping and other forms of waste mismanagement. Penalties for violators of the by-laws can include fines or even imprisonment, which can serve as a deterrent to would-be offenders.²⁶⁶

As previously noted in this research, the current situation for municipal solid waste in Harare is characterised by archaic waste management, including open dumping of garbage, illegal dumping, and littering. As a result there are inherent risks to the environment and obstacles to the realisation of the right to a clean, safe, and healthy environment, which is guaranteed by Section 73 of the Constitution of Zimbabwe.²⁶⁷

²⁶¹ Online Reporter 2023 <https://www.sundaymail.co.zw/new-harare-to-enforce-bylaws-on-littering>.

²⁶² See Part 1 section 1 of SI 153 of 2022.

²⁶³ See section 13(1) of SI 153 of 2022.

²⁶⁴ See section 13(1) of SI 153 of 2022; see also Kugwa 2023 *Council targets litterbugs* <https://www.hararecity.co.zw/news/read/council-targets-litterbugs>

²⁶⁵ See section 227(1) of *Urban Councils Act* [Chapter 29:15];

²⁶⁶ See section 13(1) of SI 153 of 2022.

²⁶⁷ Voices A Newsday 2023 <https://www.newsday.co.zw/thestandard/standard-people/article/200015561/dealing-with-harares-solid-waste-management-crisis>.

The current situation in the capital is very terrible, as HCC is failing to collect garbage sufficiently and efficiently from both residential and commercial waste generator.

Where collection is happening it is erratic, yet collection of waste should be done weekly for residential and even more frequently for commercial waste generators, depending on the amount of waste generated. It can be concluded therefore, that the city by-laws on municipal solid waste management have not been enforced at all, which has led to the dire conditions the capital city is currently in.

3.3.4 Statutory Instrument 140 of 2023 the Civil Protection (Declaration of State of Disaster: Emergency Solid Waste Management Harare Metropolitan Province) Notice 2023

In response to the HCC's failure to tame the severe crisis of waste management, on 31 July, 2023, *Statutory Instrument 140 of 2023* came into force.²⁶⁸ The SI effectively declared a State of Disaster in the Harare Metropolitan Province in terms of section 27 of the *Civil Protection Act* [Chapter 10.06].²⁶⁹

According to the SI, the government has observed that the Harare Metropolitan Province lacks cleanliness as a result of waste dumps and litter, burning of rubbish, indiscriminate illegal solid waste disposal, and littering in the province's business and residential areas. The preamble of the SI reads as follows;

WHEREAS Government has noted with great concern the deplorable state of cleanliness of the Harare Metropolitan Province, characterised among other things by litter and waste dumps accumulating in business and residential areas of the Province, open burning of garbage and indiscriminate dumping of solid waste and littering.

And WHEREAS the local authorities in the Province are unable to manage the waste due, among other reasons, to their failure to invest in waste management infrastructure, and the related equipment and human resources; and to their inefficient collection practices and lack of environmental control systems²⁷⁰

²⁶⁸ See the preamble of the *Declaration*.

²⁶⁹ See section 2 of the *Declaration*.

²⁷⁰ See the preamble of the *Declaration*.

This Declaration so serves to highlight the gravity of the threat and the extent to which people's rights to a healthy and safe environment are being violated.²⁷¹ Evidently, it appears that the Declaration is an attempt to guarantee the protection of the right to a clean, safe, and healthy environment.²⁷²

The declaration of a State of Disaster combines the efforts of HCC with those of the Environmental Management Agency in coordinating waste management activities in Harare, which is a positive move.²⁷³

3.4 Plans and strategies

In response to the crisis, various plans and strategies governing SWM have been developed, such as the *National Environmental Policy and Strategies 2009*,²⁷⁴ Zimbabwe's *Integrated Waste Management Plan* (IWMP) 2014,²⁷⁵ National Climate Change Response Strategy 2015, the National Development Strategy 1 (2021-2025) and the recently adopted City of Harare's *Integrated Solid Waste Management Plan* (2021-2026).²⁷⁶ The discussion will divide these into national and HCC plans.

3.4.1 National Environmental Policy and Strategies (NEPS) 2009

The *National Environmental Policy and Strategies* (2009) was developed as a follow-up to *UNCED* and *Agenda 21*.²⁷⁷ The purpose of national-level environmental planning is to promote and facilitate the consolidation and coordination of strategies, plans and activities developed at different levels and in various sectors of the economy. The policy aimed to accomplish the objective of creating a clean, healthy and productive environment, which have a bearing on waste management.²⁷⁸ NEPS objectives which have bearing on solid waste are:

²⁷¹ See section 73 of the *Constitution*.

²⁷² see Zimbabwe Environmental Lawyers Association 2023 <http://zela.org>.

²⁷³ See section 4 (a) to (e) of the *Declaration*.

²⁷⁴ Government of Zimbabwe *National Environmental Policy and Strategies* (2009) Ministry of Environment and Natural Resources Management Foreword (i).

²⁷⁵ Government of Zimbabwe *Integrated Solid Waste Management Plan* (2014)

²⁷⁶ Government of Zimbabwe *National Environmental Policy and Strategies* (2009) Ministry of Environment and Natural Resources Management Foreword (i).

²⁷⁷ See NEPS 25.

²⁷⁸ See guiding principle 49 and strategic directions 25 of NEPS.

- 3). To encourage sustainable development by optimizing the use of resources and energy, and minimising the irreversible environmental damage, waste production and pollution, through incorporating provisions for environmental assessment and management in all economic and development activities.
- (4). Promote public participation and a sense of responsibility for the environment through environmental education and awareness and by promoting environmentally sustainable lifestyles.
- (5). Establish and support an effective institutional framework, committed to sustainable development and able to collate and manage environmental information.²⁷⁹

The NEPS notes that solid waste has had a direct but underestimated influence on the environment, such as pollution and health issues. On the positive side, the waste can be reduced and resources can be used more efficiently and waste material such as plastic and paper can be recycled more.²⁸⁰ Guiding principle 48 emphasises 'the efficient use of natural resources, including recycling and re-use, where appropriate, is cost effective'.²⁸¹ Thus, the government supports initiatives to lower waste output and to provide incentives to encourage the recycling of waste, as well as, 'promote and encourage the financial sector to fund cleaner production and other environmentally-responsible initiatives'.²⁸²

Guiding principle 49 of NEPS notes that enacting legislation and regulations which places duties and obligations on society for the sustainable use, management, and preservation of the environment, is a necessary step toward improving the quality of life and effectively managing the environment. NEPS promotes both the polluter-pays and precautionary principles.²⁸³ Therefore, NEPS sets direction for local authorities in drafting their localised environmental policies and plans. However, HCC has been operating without a Local Environmental Action Plan (LEAP) strategy document since 2021.²⁸⁴ In order to improve environmental performance and address identified issues, LEAP documents must identify the

²⁷⁹ See para 2.3 Objectives (3, 4, 5).of NEPS 2009 2.

²⁸⁰ See para 6.2.10 of NEPS 25.

²⁸¹ See guiding principle 48 of NEPS 2009.

²⁸² See NEPS Strategic Directions 25.

²⁸³ See NEPS Strategic Direction 25.

²⁸⁴ Zhakata 2023 Suburban <https://www.suburban.co.zw/harare-has-no-environment-strategy/> accessed 9 November 2023; Also, in terms of section 95(1) of EMA, there is a requirement that every local authority must prepare an *Environmental Action Plan* for the area under its jurisdiction.

primary environmental challenges and provide a clear plan of action with specific goals. It covers the current conditions of the environment including formal planning procedures.²⁸⁵ One could therefore arguably posit that the proliferation of illegal dumps, scarcity of water, contamination of water sources and unlawful occupation of wetlands have all been further exacerbated by the failure of HCC to implement LEAP.

3.4.2 National Climate Change Response Strategy (NCCRS) 2015

Zimbabwe signed and ratified the *UNFCCC* in 1992 and also acceded to the *Kyoto Protocol* in 2009.²⁸⁶ The contribution of solid waste to climate change is through methane gas, which is produced by anaerobic respiration of microorganisms when they decompose biodegradable waste.²⁸⁷ This is a significant problem given that at least 50% of the waste produced in Zimbabwe's urban centres is biodegradable waste. Additionally, most dumpsites frequently experience natural or human-caused fires which are fueled by the released methane and result in the further release of CO₂.²⁸⁸ The NCCRS offers a framework for a comprehensive and strategic approach to issues relating to adaptation, mitigation, technology, financing, public education and climate change awareness.²⁸⁹ Therefore, proper waste management practices can result in climate benefits through the capturing of methane gas at landfills, incinerators and waste water treatment plants.²⁹⁰ Adoption of the ISWM systems which prioritise waste minimisation, re-use, recycling and waste-to-energy recovery, could also result in these benefits. It encourages a wider participation of stakeholders in waste management that includes the informal waste sector as it has potential for resource recovery.²⁹¹ Some of the strategic objectives of NCCRS which have a bearing on waste management include:

- (a) mainstream climate change in all the key sectors of the economy.

²⁸⁵ Zhakata 2023. Suburban <https://www.suburban.co.zw/harare-has-no-environment-strategy/>.

²⁸⁶ See Zimbabwe NCCRS 2015 Executive Summary (ii).

²⁸⁷ See Zimbabwe NCCRS 2015 51.

²⁸⁸ See Zimbabwe NCCRS 2015 51.

²⁸⁹ See Zimbabwe NCCRS 2015 Executive Summary (ii).

²⁹⁰ See Zimbabwe NCCRS 2015 51.

²⁹¹ See Zimbabwe NCCRS 2015 51.

- (b) promote resource use efficiency and less carbon intense pathways in all economic activities and develop a climate change resilient energy infrastructure that is not carbon intense.
- (c) promote and protect health under a changing climate'.²⁹²

It employs the following strategies for solid waste induced climate change;

- (a) capacitate local authorities to deliver proper, effective and efficient waste management services in order to reduce GHG emissions from waste management enabling.
- (b) create an enabling policy environment which encourages investment into alternative energy production using waste products.
- (c) develop an enabling framework to promote waste minimisation through education and behavioral change of waste generators.²⁹³

The guiding principles of NCCRS are sustainable development, participation and engagement of all stakeholders, access to information, the precautionary principle and mainstreaming of the rights-based approach.²⁹⁴

3.4.3 Zimbabwe Integrated Waste Management Plan 2014

Zimbabwe has an Integrated Waste Management Plan that was published in 2014 and acknowledges that SWM is a challenge to urban areas in Zimbabwe. The ZIWMP promotes the integration of waste management practices.²⁹⁵ Its mission is to minimise solid waste, enhance service delivery, optimise resource recovery, and safeguard ecological and public health through a participatory approach to sustainable waste management.²⁹⁶ The Plan encourages the adoption of a waste management hierarchy²⁹⁷ and upholds the fundamental right of every citizen of Zimbabwe to a clean and healthy environment.²⁹⁸

3.4.4 Integrated Solid Waste Management Plan (ISWMP) 2021-2026

The Harare City Council has developed its draft *Integrated Solid Waste Management Plan* running from 2021 to 2026. Various stakeholders met in Harare

²⁹² See para 1.2.4 (a)(b)(h) of NCCRS 2015, 10.

²⁹³ See para 3.3.4 strategies (a,b,c) of NCCRS 2015, 51.

²⁹⁴ See para 1.2.6 (f,h,i,j) of NCCRS 2015, 10.

²⁹⁵ See the *Zimbabwe Integrated Waste Management Plan* 2014: Vision, Mission, Goals, Guiding Principles and Strategic Objectives 4-7.

²⁹⁶ See section 2.2 of ZIWMP 2014 4.

²⁹⁷ See the goals, section 2.3 of *Zimbabwe Integrated Waste Management Plan* 2014 4-5.

²⁹⁸ See the guiding principles, section 2.4 of ZIWMP 2014 5.

in September 2021 to review and finalise the plan.²⁹⁹ This ISWMP has been recently adopted.³⁰⁰ The main objectives of ISWMP are to prevent, or minimise the solid waste generation, divert as much waste as feasible from landfills, and enhance the effectiveness of SWM.³⁰¹ Sustainable production, packaging and consumption policies, strategies, and activities can prevent and reduce waste largely at the source during the stages of manufacturing, packaging and consumption.³⁰² The Plan was developed according to waste management hierarchy.

The ISWMP aims to address the SWM issues that the HCC is presently experiencing, such as the absence of a scientific landfill and insufficient equipment for refuse collection, and inadequate funding and other resources which has led to the buildup of uncollected garbage in public areas, open spaces and illegal dumping.³⁰³

3.4.5 The National Development Strategy 1 (2021 -2025)

The National Development Strategy 1 (NDS 1) notes that, despite having a robust legal, policy and institutional framework and a high level of biodiversity of global significance, the country is facing growing environmental challenges, such as air, water and land pollution, littering, the proliferation of illegal dumps, siltation, climate change, and biodiversity loss.³⁰⁴ The NDS 1 recognises that lack of the required infrastructure makes essential services like waste management and sanitation inaccessible.³⁰⁵ One of the strategies to improve this is through partnership with the private sector to upgrade waste management infrastructure and promote recycling services initiatives.³⁰⁶ To reduce littering, the president launched *National Cleanup Programme* every last Friday of the month as a way to

²⁹⁹ <https://www.gbg.co.zw/2022/01/19/harare-city-developing-an-integrated-solid-waste-management-plan-to-address-growing-waste-challenges/>.

³⁰⁰ Voices 2023 <https://www.newsday.co.zw/thestandard/standard-people/article/200015561/dealing-with-harares-solid-waste-management-crisis>.

³⁰¹ Integrated Solid Waste Management Plan.

³⁰² <https://www.gbg.co.zw/2022/01/19/harare-city-developing-an-integrated-solid-waste-management-plan-to-address-growing-waste-challenges/>.

³⁰³ <https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-management-plan/>.

³⁰⁴ See Strategy 812 of NDS1 2021-2025.

³⁰⁵ See Strategy 821 of NDS1 2021-2025.

³⁰⁶ See Strategy 821 of NDS1 2021-2025

instil a culture of improved cleanliness and reduction in littering, at the same time encouraging corporate companies to support programs for waste recycling.³⁰⁷ Thus, during the NDS1, the goal of government is to support implementation of pollution and waste management programmes.³⁰⁸

HCC is also faced with lack of accountability on the use of rates it collects from residents. There have been allegations of public funds misuse and corruption. According to the 2020 auditor general's report, the HCC's books of accounts contained many abnormalities totaling \$190 million.³⁰⁹

Although in general, Zimbabwe has a sound legislative and policy framework for SWM as highlighted in the discussion above, it has been difficult to fully implement and enforce these laws.³¹⁰ For instance, SI 6 of 2007's obligations have been partially enforced, thus, the requirement for waste generators to establish yearly waste management plans, objectives, and actions for waste reduction are not being properly implemented. This is despite efforts by the Environmental Management Agency to consistently encourage waste generators to submit their plans. The major challenge is that SI 6 of 2007 does not criminalise and/or penalise non-submission of plans. Thus, waste generators have taken advantage of the existing gap. However, EMA noted the gap and made recommendations to make non-submission an offence, thus ensuring there is compliance.³¹¹ Enforcement of all aspects of the legislation is important for creating information on waste management to inform policy.³¹²

3.5 Conclusion

The complexity of the legal and policy framework for solid waste management in Harare is evident, and understanding its historical context is crucial for grasping the current deplorable waste situation. Zimbabwe has enacted numerous laws to address improper waste management, showcasing a robust legislative foundation.

³⁰⁷ See Strategy 817(1) of NDS1 2021-2025.

³⁰⁸ See Strategy 822 of NDS1 2021-2025.

³⁰⁹ *Zimbabwe Environmental Lawyers Association* <http://zela.org>

³¹⁰ See para 3.3.4 of NCCRS 51.

³¹¹ Feresu Zimbabwe Environment Outlook 2: 225.

³¹² Feresu Zimbabwe Environment Outlook 2: 225.

The abundance of laws, regulations, policies, plans, and strategies reflects the country's regulatory commitment to waste management. However, the key question lies in the effective governance, implementation, and enforcement of these legal instruments to realize the goal of a clean and sustainable city, aligning with the SDGs and contributing to climate change mitigation. How this plays out in the context of HCC is investigated in the next chapter.

4 CHAPTER 4: THE GOVERNANCE AND ENFORCEABILITY OF SOLID WASTE MANAGEMENT IN HARARE

4.1 Introduction

In general, a crucial strategy for protecting the ecological environment is to improve and enhance the mechanisms for enforcing environmental laws and regulations.³¹³ Enforcement is understood as:

the range of procedures and actions employed by a State, its competent authorities and agencies to ensure that organisations or persons, potentially failing to comply with environmental laws or regulations, can be brought or returned into compliance and /or punished through civil, administrative or criminal action³¹⁴

The above exposition of enforcement forms the basis for this chapter's exploration of the governance mechanisms and the implementation of the environmental legal and policy framework put in place to tackle SWM in Harare. 'Governance', for the purposes of this chapter, includes the range of legal and other tools employed in both the private and public sectors to foster environmental protection. As such, by examining the governance and enforcement mechanisms, this chapter aims to shed light on the strengths and weaknesses of the existing legal and policy framework in Harare's SWM sector. This could serve as a foundation for proposing improvements and innovative solutions that may enhance the overall efficiency and effectiveness of waste management practices. The chapter elaborates the different approaches to environmental governance and enforcement of the legal and policy frameworks in general. The different enforcement instruments and/or tools as contained in the legislation, regulations, policies and plans, are identified and the extent to which these are achieving the goal of environmental sustainability in Harare, is discussed. Additionally, the chapter briefly examines the roles and responsibilities of different stakeholders in SWM, including government agencies, HCC, community organisations and individual residents. The chapter will also discuss the challenges faced by the city in enforcing environmental regulations and explore how these challenges impact waste management efforts.

³¹³ UNEP 2014 Enforcement of Environmental Law 1.

³¹⁴ UNEP 2014 Enforcement of Environmental Law 1.

Furthermore, it will examine the implications of inadequate enforcements on public health, water quality, pollution and overall environmental sustainability.

4.2 Overview of the role players in SWM

In most cases, the legal instruments have established some institutions through legislation, granting them authority and requiring them to implement and enforce specific legislation.³¹⁵ Thus, implementation requires identification of different role players and their distinctive duties in SWM. Basically, the major role-players in this instance include the Ministry of Local Government and Housing Development,³¹⁶ the Ministry of Environment and Climate,³¹⁷ the HCC,³¹⁸ the Environmental Management Agency³¹⁹ and the Standards and Enforcement Committee, business organisations, NGOs and individual residents.³²⁰ These institutions must collaborate to ensure that solid waste is managed effectively and efficiently in the city.³²¹ Other institutions for enforcement are the police and the judiciary.

HCC is the primary institution in charge of MSWM in Harare, which includes waste collection, transportation, treatment and disposal. The HCC has a Waste Management Department that oversees the implementation of waste management policies and regulations.³²² Furthermore, the Council has established Harare waste management by-laws, which provide guidelines for the management of solid waste, including penalties for non-compliance.³²³

Section 9 of EMA, for instance, has created the Environmental Management Agency³²⁴ which is mandated with creating quality standards on water, air, soil and waste management. It is also expected to support and participate in any issue

³¹⁵ Mandevere Household Solid waste management strategies in Harare, Zimbabwe.

³¹⁶ See the *Urban Councils Act* [Chapter 29:15] Section 2 Interpretation of 'Minister'.

³¹⁷ See *EMA section 5* (1) (a-g).

³¹⁸ See *Urban Council's Act* [Chapter 29:15].

³¹⁹ See *Section 9 of EMA*.

³²⁰ *Section 9 of EMA*; see also Mandevere Solid waste management strategies in Harare, Zimbabwe.

³²¹ Scheinberg A 2012 Women in Informal Employment Globalizing and Organizing (WIEGO) 23.

³²² *Urban Council's Act* [Chapter 29:15]; Chirisa et al 2017 *Applied Water Science* 1069-1078.

³²³ See *SI 153 of 2022*.

³²⁴ See *section 9 of EMA*.

related to environmental management. The Agency is also mandated with the tasks to control, plan, oversee, advise, and monitor all environmental activities in addition to enforcing environmental laws.³²⁵ Thus, the Agency oversees the implementation of EMA and ensures that all waste management activities within Harare comply with the law. The Agency is also responsible for issuing permits and licenses³²⁶ to waste management companies as well as imposing penalties and fines for non-compliance. In addition to its role in monitoring and enforcing regulations, the Agency plays a crucial role in promoting sustainable waste management practices in Harare.³²⁷

As a fundamental tenet for good governance, the regulatory function by the Environmental Management Agency ought to be kept apart from the functions of policy-making by government ministries and service-delivery by HCC, particularly with regard to compliance monitoring and enforcement.³²⁸ Therefore, without clear function separation, it will not be feasible to guarantee meaningful and unrestricted regulation of waste management activities.³²⁹

4.3 Environmental governance and enforcement approaches or instruments

This section firstly gives a broad overview of the governance and enforcement mechanisms, then delves into how these are faring within HCC. Environmental governance and enforcement instruments can be defined as any mechanism that can be utilised to accomplish an environmental or sustainability-related outcome.³³⁰ Thus, instruments are a means to an end and not an end in themselves.³³¹ To this end, the main approaches for governance and enforcement

³²⁵ See section 10 of EMA which gives the functions and powers of the Agency.

³²⁶ See section 9 (1)(1v) of EMA.

³²⁷ See section 9 of EMA, see also Madebwe, Madebwe and Madebwe 2011 *International Journal of Regulation and Governance* 41-56

³²⁸ <http://wastepolicy.environment.gov.za/book/export/html/245> accessed 17 October 2023.

³²⁹ <http://wastepolicy.environment.gov.za/book/export/html/245> accessed 17 October 2023.

³³⁰ Nel, Du Plessis and Du Plessis 2021 "Instrumentation for local environmental governance" 3-86.

³³¹ Nel, Du Plessis W and Du Plessis A 2021 "Instrumentation for local environmental governance" 3-86.

of environmental legal and policy frameworks on SWM may be categorised into four groups, namely command-and-control, civil-based, market-based and voluntary instruments.³³² These are discussed below.

4.3.1 Command-and-control or Administrative enforcement

Command-and-control (CaC) instruments are the traditional form of regulation and are a form of administrative action which derives power directly from the law, or indirectly by delegation from the State, which has executive powers.³³³ UNEP defines CaC enforcement as “a set of actions that regulatory institutions carry out to ensure compliance with environmental requirements.”³³⁴ CaC can also be defined as “a system where there is strict monitoring by the authorities as to whether the law is being followed and where offenders are prosecuted, using criminal law.”³³⁵

Therefore, it follows that CaC instruments strictly monitor a system or process using clearly laid-down procedures. CaC instruments take the form of criminal sanctions or administrative enforcement. These instruments usually set the goals to be achieved through the regulations and the means through which the prescribed goals must be met.³³⁶

CaC functions through the issuance of permits and licences, suspensions and cancellations of permits, environmental standards, inspections, requests for more information, audits, prosecutions, interdicts, restraining orders, commissions of enquiry, authorisations, notices, directives, penalties, orders, liability reforms, statutory record-keeping and reporting, model by-laws, considerations for EIA's and environmental restoration orders.³³⁷

To be enforceable, the regulatory requirements and criminal sanction for non-compliance of CaC instruments such as permits and licences must generally be

³³² Nel and Wessels 2010 Potchefstroom Electronic Law Journal 50.

³³³ UNEP 2014 Enforcement of Environmental Law 9.

³³⁴ UNEP 2014 Enforcement of Environmental Law 9.

³³⁵ Kidd Environmental Law 269; see also Toxopeus *Civil-based environmental governance in South Africa* 26.

³³⁶ Toxopeus *Civil-based environmental governance in South Africa* 27.

³³⁷ Nel and Alberts “Environmental management” 1-56.

clear, precise, streamlined and unambiguous, to provide a degree of certainty.³³⁸ However, the lack of financial and administrative resources, hampers effective monitoring and enforcement of these regulations.³³⁹ In addition, the legal penalties, particularly for environmental offenses, are negligible when compared to the revenues and profits of large corporations.³⁴⁰

Although the application of criminal sanctions is likely the most common form of enforcement practice, it should be pointed out that these sanctions are not always as effective as they might be, as they encounter problems with institutional coordination and collaboration.³⁴¹ The problems are frequently brought on by lack of clarity of roles in establishing or enabling statutes or roles for each institution.

Inspections and monitoring of CaC enforcement provide an effective way of detecting violations of laws, and monitoring compliance with the law. However, a reliance on “punitive” command-and-control enforcement alone such as fines, penalties and imprisonment, has often been demonstrated to be ineffective, particularly in situations where the legal system is underdeveloped and weak or if resources and commitment to continuous enforcement are lacking. Persuasive approaches such as providing incentives can help make real progress in such situations. At the same time, however, environmental regulators must be equipped with a variety of instruments/tools at their disposal to handle the wide range of pollution problems and local circumstances.³⁴²

4.3.2 Civil-Based Instruments or Civil enforcement

Civil-based instruments (CBIs) “include all measures to empower, inform, educate and co-opt civil society to be involved in the enforcement process.”³⁴³ UNEP defined civil enforcement as implying:

“a set of actions that can help governmental and non-governmental stakeholders and individuals to use civil or alternate remedies to assist in ensuring compliance with and enforcement of environmental requirements”.³⁴⁴

³³⁸ INECE 2009 Principles of Environmental Compliance and Enforcement Handbook 29.

³³⁹ INECE 2009 Principles of Environmental Compliance and Enforcement Handbook 29.

³⁴⁰ Toxopeus *Civil-based environmental governance in South Africa* 27.

³⁴¹ UNEP 2014 Enforcement of Environmental Law 26.

³⁴² Mohamed-Katerere and Chenje (eds) *Environmental Law and Policy in Zimbabwe* 30.

³⁴³ Nel and Wessels 2010 *PERJ* 50.

CBIs may be utilised to fulfill important standards of environmental rights.³⁴⁵ Examples of civil-based enforcement instruments include education, public awareness, access to information, access to justice, public participation, increased *locus standi*, class action, private prosecutions, beneficial cost awards, green rights, protection of whistle-blowers, protection of workers, eco-labelling, public waste and pollution inventories.³⁴⁶ The three core elements of CBIs are access to information, access to justice and public participation.³⁴⁷ CBIs are essential to environmental governance and enforcement since CBIs are outlined in legislation and sometimes even included as a requirement for obtaining environmental authorisations. For instance, when applying for an environmental authorisation for a listed activity under EMA such as operating a new dumpsite, the applicant must ensure that public participation procedures are followed.³⁴⁸

Legislative provisions that support prospective civil litigants are extremely valuable. These clauses include those that establish *locus standi*, or the capacity and right to sue, and those that take away obstacles to filing a lawsuit.³⁴⁹

Civil enforcement measures can offer crucial support mechanisms for both administrative and criminal enforcement.³⁵⁰ However, for measures to be successful civil society, the general public and individuals themselves must be aware of the measures available to them, and must feel sufficiently involved with the issues at hand to be prepared to employ such measures.³⁵¹

4.3.3 Market-based or Economic enforcement strategies

Market-based instruments (MBIs) can be defined as “fiscal and other economic incentives and disincentives to incorporate environmental costs and benefits into the budgets of households and enterprises”.³⁵² The instruments make use of market-based, disincentive-directed or incentive-directed measures in order to

³⁴⁴ UNEP 2014 Enforcement of Environmental Law 20.

³⁴⁵ Toxopeus *Civil-based environmental governance in South Africa* 23.

³⁴⁶ Nel, Du Plessis and Du Plessis “Instrumentation for local environmental governance” 3-86.

³⁴⁷ Toxopeus *Civil-based environmental governance in South Africa* 25.

³⁴⁸ See section 4(2) (c-d) of EMA.

³⁴⁹ UNEP 2014 Enforcement of Environmental Law 21.

³⁵⁰ UNEP 2014 Enforcement of Environmental Law 23.

³⁵¹ UNEP 2014 Enforcement of Environmental Law 20

³⁵² Organisation for Economic Cooperation and Development 2007 <https://stats.oecd.org>.

achieve the desired behavior.³⁵³ They employ a variety of economic measures in waste management to improve the efficient use of the system and to internalise the costs so that they are borne by those who create the waste, and therefore move towards a sustainable waste management system. Therefore, enterprises and individuals tend to function in an environmentally responsible manner by reducing pollution and environmental degradation as they adopt environmentally controlled technology.³⁵⁴ As an enforcement and governance tool, MBIs provide greater flexibility than the CaC.³⁵⁵ MBIs represent the polluter-pays principle, since the cost of pollution is passed on to the polluter.³⁵⁶ Conventional economic approaches include financing mechanisms and disposal levies or fees that operate in tandem to reduce waste generation and finance waste minimisation initiatives.³⁵⁷

These instruments can provide the financial incentive through fees, marketable permits, taxes, tariffs, subsidies, changes to property rights, tradable emission permits, performance bonds and so on.³⁵⁸ One important non-financial incentive is recognition schemes used to publicly recognise significant achievements in waste management, thus making the public aware of sound waste management practices and in so doing, to encourage the regulated community such as companies to also adopt innovative waste management practices.³⁵⁹

4.3.4 Voluntary enforcement strategies or Agreement based or Self-regulatory

Voluntary instruments are measures that industries choose to undertake to advance their environmental performance, and they are therefore not mandatory under law.³⁶⁰ Meanwhile, according to Protoski and Prakash, governments the world over have been offering incentives to businesses that self-police their

³⁵³ Nel and Wessels 2010 *PELJ* 50.

³⁵⁴ Stavins "Market-Based Environmental Policies" 33; see also Toxopeus *Civil-based environmental governance in South Africa* 28.

³⁵⁵ Toxopeus *Civil-based environmental governance in South Africa* 28.

³⁵⁶ See Nyakudya, Madyira, Madhushele 2022 *Seeking Circularity* 2116.

³⁵⁷ UNEP 2016: Guideline for Framework Legislation for Integrated Waste Management 6.

³⁵⁸ Gaitan-Cremaschi *et al* 2017:186

³⁵⁹ Nel, Du Plessis and Du Plessis 2021 "Instrumentation for local environmental governance" 3-1 3-86.

³⁶⁰ Craige, Snijman and Fourie "Dissecting Environmental Compliance and Enforcement" 60; Toxopeus *Civil-based environmental governance in South Africa* 28.

regulatory compliance and promptly report and correct violations.³⁶¹ An example of self-regulations is ISO 14001. It can be argued that cooperative regulatory enforcement which combines voluntary regulation and mandatory regulations yield optimal win-win outcomes, but only when both sides cooperate.³⁶²

Voluntary instruments also include the incorporation of international environmental instruments as well as cooperation agreements.³⁶³ Environmental management contracts may also be concluded between organs of state themselves and between government and other parties as per the recommendation of the 1992 *Rio Declaration on the Environment and Development* and as reconfirmed at Johannesburg in 2002.³⁶⁴ Agenda 21 advocates for providing effective enforcement and compliance mechanisms for the protection of the environment.³⁶⁵

At this juncture, it should be highlighted that selection of the right governance or enforcement tool to achieve the most effective result is one of the biggest issues facing environmental governance. This is so because each tool has strengths and shortcomings of its own. Therefore, it calls for a medley of tools to be used as a way to guarantee effective environmental governance and enforcement. It also permits a wide adoption of tools to meet the requirements of the enforcement regime.³⁶⁶ The following discussion dwells on the extent of enforcement of the legal and policy framework on SWM in Harare. A discussion is now undertaken of section 73 of the Constitution, EMA and policies as they relate to governance and enforcement to ensure compliance.

4.4 Enforcement of the legal and policy framework on SWM in Harare within broad governance strategies

In Zimbabwe, environmental legislation, although fairly new, has been in existence for some time now, since 2002 with the promulgation of the EMA; however,

³⁶¹ Potoski and Prakash 2006 *American journal of political science* 354.

³⁶² Potoski and Prakash 2006 *American Journal of political science* 354.

³⁶³ Weiss 2014 *Environmental Policy and Law* 86.

³⁶⁴ Weiss 2014 *Environmental Policy and Law* 86.

³⁶⁵ See para 8.13 of *Agenda 21*.

³⁶⁶ Toxopeus *Civil-based environmental governance in South Africa* 26.

enforcement of the legislation seems to be weak and lacking. In most jurisdictions, the main objective of enforcement is to promote environmental or ecological integrity.³⁶⁷ Thus, all legislation and policies as discussed in Chapter 3 must be implemented and enforced to ensure compliance, thereby ensuring environmental protection. The foundation of Zimbabwe's environmental legislative framework is found in section 73 of the Constitution. Section 73 explicitly demands protection of the environment and warrants that it be protected through the rest of the legislative framework, which is EMA and its ancillary statutory instruments.³⁶⁸ Thus, the interpretation and enforcement of the legal and policy framework is all done within the spirit of s73. Therefore, the governance and enforcement of the legal framework can be assessed based on several key factors.

4.4.1 The existence and effectiveness of laws, regulations and policies as Command and Control

The question sought is how comprehensive and up-to-date is the legal framework and whether it addresses all aspects of waste management from prevention to recycling. In Chapter 3, a comprehensive legislative framework and policies were discussed in detail.³⁶⁹ The different legislation, regulations, by-laws, policies, plans and strategies, as identified and discussed in Chapter 3, put much emphasis on CaC instruments as the primary method of governance and enforcement. Thus, both criminal sanctions and administrative enforcement are used to ensure compliance. The different CaC tools identified in these legislations and policies include: licensing, cancellations of licences; penalties; model by-laws, fines; environmental levies; environmental standards; imprisonment; routine inspections and audits; community service; environmental impact assessments; compliance notices; orders to close sites; directives; and directives for any specified authority to prepare Environmental Management Plans.

It should be highlighted that the legislation is presumed to utilise the governance and enforcement instruments as contained in them. However, it seems these CaC

³⁶⁷ Davids 2020 'Compliance and enforcement' 14; See also Murombo and Munyuki *PER/PEL* 2019 22.

³⁶⁸ See section 73 of the *Constitution*.

³⁶⁹ See detailed discussion of the legal and policy framework on SWM in Chapter 3.

instruments are not being effectively and adequately used to combat solid waste and to change behaviours of the regulated community, as evidenced by the amount of littering and solid waste illegal dumps still present in the community.³⁷⁰ Illegal dumping and open burning of garbage is prevalent despite laws and governance instruments in place which prohibit such. Arguably, this might imply that the permitting and licensing system is not being adequately implemented, regularly inspected and monitored to ensure compliance. Although much of the legislation, regulations and by-laws come with penalties and fines, these are not deterrent enough to encourage responsible waste-handling practices as the penalties charged are too low and trivialise the offences.³⁷¹

It follows that there is weakness or a lack of adequate enforcement of the legislation. Criminal sanctions are clearly laid out in all these legal frameworks and instructions on administrative sanctions are given. The waste regulations set standards for waste handling, recycling, and disposal. Standards recommend the measures necessary to identify materials and processes that are dangerous to human health and the environment.³⁷² Thus, section 69 of EMA highlights the Standards for Waste Management which is treatment, reclamation and recycling. However, these standards are rarely implemented by waste generators as evidenced by the amount of recyclables found in open and illegal dumps such as plastic bottles, cardboard boxes, glass bottles, paper and so on.³⁷³ EMA makes provision for these waste management standards and regulations but these are not yet fully operational. They are just good on paper but in reality, there is no implementation.

Furthermore, although HCC has such robust laws on anti-littering,³⁷⁴ which come with a criminal sanction such as fines and penalties, Harare remains a messy place in terms of litter. Currently, there is no enforcement of these by-laws. Lack of enforcement is exacerbated by the absence of arresting powers on municipal

³⁷⁰ Rukani *Plastics and Circular Economy* 47.

³⁷¹ Makamba *IJEHSS* 242.

³⁷² See for instance section 69 of EMA.

³⁷³ Rukani *Plastics and Circular Economy* 46-47.

³⁷⁴ See discussion in Chapter 3.

police³⁷⁵ as well as absence of municipal courts responsible for trying and meting out punishment on municipal law offenders and lack of capacity in terms of resources.³⁷⁶ This has resulted in hindrances in the war against littering. However, HCC recently notified residents of its intention to start enforcing the anti-litter by-laws and to roll out anti-litter campaigns.³⁷⁷

Effective enforcement is also inhibited by simply lax regulations and policies which lead to non-compliance. It seems that the fines and penalties passed to offenders are not deterrent enough, as they tend to trivialise the offense such that offenders can repeat again and again. Thus, there is a need for strengthening the provisions of the regulations by increasing penalty fees on polluters and jail terms to ensure compliance and effective enforcement.³⁷⁸

4.4.2 Monitoring and Reporting Mechanisms

Despite the establishment of the Environmental Management Agency³⁷⁹, whose functions and powers include formulating quality standards for waste management and monitoring, auditing and enforcing compliance with waste management regulations, it seems there are no regular inspections, monitoring and audits and it is a question whether there is a system for reporting and addressing non-compliance. An example of the lack of inspections and audits is the level of non-compliance with the *Plastic Packaging and Plastic Bottles Regulations*. The establishment of monitoring and reporting mechanisms to track waste generation, treatment and disposal activities can be used for compliance assessment, identification of areas to be improved and the making of informed policy decisions.

Despite having such clear regulation, MSWM in terms of plastic packaging and plastic bottles is still a very big challenge in Harare. It seems there is reluctance by government departments and agencies to prosecute companies and individuals

³⁷⁵ Kugwa 2023 City of Harare <https://hararecity.co.zw/news/read/council-targets-litterbugs>; see also Rukani *Plastics and Circular Economy* 46-47.

³⁷⁶ Kugwa 2023 City of Harare <https://hararecity.co.zw/news/read/council-targets-litterbugs>; See also Makamba *IJEHSS* 238-243.

³⁷⁷ Online Reporter 2023 <https://www.sundaymail.co.zw/new-harare-to-enforce-bylaws-on-littering#>

³⁷⁸ Makamba *IJEHSS* 238-243.

³⁷⁹ See section 9 of EMA.

that violate provisions of the legislation.³⁸⁰ An example is the difficulty in the implementation and enforcement of the SI on *Plastic Packaging and Plastic Bottles Regulations* due to resistance, particularly from the informal sector that uses kaylites and thin plastics for packaging.³⁸¹ Thus, lack of enforcement due to inadequate monitoring, inspections, auditing and reporting is one of the reasons why HCC is encountering solid waste challenges.³⁸²

4.4.3 Institutional Mechanisms

Enforcement requires an assessment of the organisational structure and coordination among relevant government agencies and departments responsible for waste management. Lack of synergies is compounded by the fact that the roles and responsibilities of various stakeholders are not clearly stipulated and accountability mechanisms are not in place, as well as the seemingly polarised attitude and lack of political will on the part of government and the HCC.³⁸³ This results in ineffective enforcement of the laws and regulations.

Synergies among the numerous pieces of legislation dealing with SWM have not been properly researched to assess compatibility. There is a lot of fragmentation of the law dealing with SWM and each statute has its own requirements and fines and penalties. This results in double fines for offenders.³⁸⁴ For example, Statutory Instrument 153 of 2022, HAL by-laws, and section 83 of EMA prohibit individuals from littering and dumping waste and these provides different fines and penalties for the same offences.

It is crucial to note that enforcement should be accompanied by effective waste management infrastructure in addition to adequate resources and continuous monitoring.³⁸⁵ The capital city, Harare, lacks proper infrastructure for effective MSWM. HCC only has one functional dumpsite, which is not properly lined and

³⁸⁰ There are no records of recorded case law on this.

³⁸¹ Rukani *Plastic Waste and Circular Economy* 13.

³⁸² See Rukani *Plastic Waste and Circular Economy* for a detailed discussion of the reasons for lack of enforcement on plastic waste 46-48.

³⁸³ Makamba 2022 *IJEHSS*.

³⁸⁴ See section 10(1)(a-b) of EMA.

³⁸⁵ Rukani *Plastic Waste and Circular Economy* 12, 16, 78.

engineered.³⁸⁶ The city does not have working incinerators and lacks proper garbage vehicles to collect garbage at frequent intervals.³⁸⁷ The HCC lacks technological innovation in waste management practices. The city lacks a system for waste segregation, recycling and treatment. Zimbabwe has legislation, statutory instruments and policies that should help in reducing the amount of solid waste generated and the management of waste. However, these are not fully implemented because of lack of resources for building the requisite infrastructure and for enforcing legislation.³⁸⁸

4.4.4 Enforcement teams and inspections

EMA talks of the appointment of inspectors and other officers such as environmental officers, licensing officers and other officers³⁸⁹ to carry out inspections and to ensure the proper enforcement of the Act. However, due to limited resources, the Agency does not employ enough dedicated inspectors to do the inspections, audits and monitoring. Corruption and bribery in Zimbabwe is rampant³⁹⁰ and this has also been affecting the country's enforcement drive for SWM as the EMI's are not left out in the corruption. They are bribed by offenders, thereby affecting the enforcement of the legal and policy frameworks on SWM.³⁹¹

Furthermore, most public transport facilities do not have bins inside, a requirement in terms of section 83(2); thus, passengers tend to throw away trash especially PET bottles, fast food boxes and kaylites (kaelites?) through the windows, thereby polluting the environment and risking public health. There are no enforcement teams to even check whether businesses are keeping bins and whether HCC is making the availability of receptacles easy.

³⁸⁶ Mandevere Household Solid Waste Management Strategies in Harare 11,15.

³⁸⁷ Mandevere Household Solid Waste Management Strategies in Harare 58.

³⁸⁸ See Zimbabwe National Climate Change Response Strategy (NCCRS) 51.

³⁸⁹ See section 35(1) of EMA.

³⁹⁰ Zimbabwe scores just 21/100 in Transparency International's Corruption Perceptions Index "Scores range from 0 (highly corrupt) to 100 (very clean)." http://www.transparency.org/country/#ZWE_DataResearch. See also Makwara and Magudu 2013 *European Journal of Sustainable Development* 74, 86.

³⁹¹ Makwara and Magudu 2013 *European Journal of Sustainable Development* 74; see also Dzawanda and Moyo 2022 *Environ Monit Assess* 12. Staff Reporter 10 Jan 2023 <http://www.newsday.co.zw/local-news/article/200006003/service-delivery-corruption-to-haunt-councils-into-2023>.

4.4.5 Planning and Strategy

Enforcement of the legal frameworks can be evaluated through the existence and implementation of a comprehensive waste management plan or strategy (WMP) in Harare. The plan must outline objectives, targets, and timelines as well as providing specific provisions for waste reduction, reusing, recycling and resource recovery. However, it has been noted that HCC has been operating without a WMP for a very long time, i.e. since 1993.³⁹² Only recently, it has adopted an IWMP, but this is yet to be implemented and evaluated. Thus, it is arguable that the lack of plans and strategies is a primary reason for the evidently weak enforcement drive for the city.

4.4.6 Financial resources

The implementation and enforcement of plans and strategies and the legislation requires financial resources to be effective. The availability and allocation of funding for waste management activities needs to be assessed regularly.³⁹³ Financial resources are needed to support infrastructure, human resources, technology and public awareness campaigns. Also, assessment of whether there is a system in place to generate revenue from waste management activities is needed. In the case of the HCC, there have been resource constraints, thus impacting negatively on the enforcement of SWM.³⁹⁴ The HCC does not have enough vehicles to collect solid waste, and those available are part of an old fleet which experience breakdowns.³⁹⁵ The city does not have landfills; it uses Pomona open dumpsite which is not lined and well-engineered to handle leaching,³⁹⁶ and human resources are not enough to carry out enforcements and monitoring as per set standards.³⁹⁷

³⁹² Makamba *IJEHSS* 238.

³⁹³ Nyakudya, Madyira and Madushele 2022 *Seeking Circularity* 2119, 2120.

³⁹⁴ Makamba *IJEHSS* 238; see also Makwara and Magudu 2013 *European Journal of Sustainable Development* 81.

³⁹⁵ Mandevere *Household Solid Waste Management Strategies in Harare* 58 for a table indicating the number of vehicles used for SWM by HCC 58, 67; see also Machivenyika 2023 <https://herald.co.zw/harare-waste-management-declared-state-of-disaster/>.

³⁹⁶ Mandevere *Household Solid Waste Management Strategies* 11,15,19,69.

³⁹⁷ Makwara and Magudu 2013 *European Journal of Sustainable Development* 81.

4.4.7 Performance Evaluation

This enforcement strategy assesses the availability and effectiveness of performance indicators and monitoring systems in order to gauge the success of waste management programmes or initiatives. It identifies whether there are systems in place to track progress, assess outcomes, and make the required modifications to improve overall performance. HCC does not have any performance evaluations for SWM; however, it should be noted that the declaration of a State of Disaster is in some way a result of having observed or evaluated the dire state of waste, thus some form of performance evaluation.

4.4.8 Community Engagement as Civil-Based Instruments

Besides the dominant CaC, the EMA and related legislation recognises CBIs such as public participation, access to information and access to justice. Thus, section 4(2)(c) of the EMA calls for public participation by all interested and affected parties in environmental governance. Thus, citizens, community members and NGOs can participate in decisions concerning SWM in their areas of residence. Public participation allows residents to have their voices heard, actively contribute to solutions, and work towards a cleaner and more sustainable city. These groups can actually supplement the criminal sanctions and administrative enforcement efforts of the State and Council authorities by drawing attention to violations,³⁹⁸ and by providing an impetus for the allocation of additional resources to environmental monitoring and protection. The State through the Environmental Management Agency, can conduct investigations; promote civil actions and prosecutions to enforce constitutional environmental rights.³⁹⁹ The Agency website indicates that it promotes whistleblowing for the public to alert the Agency of violations.⁴⁰⁰

However, the participation of the public is not actually taking place in Harare as evidenced by the lack of community meetings, public hearings, outreach programs and surveys on SWM which would allow the residents to engage directly with the

³⁹⁸ UNEP 2021.

³⁹⁹ McAllister "Making Law Matter" 11.

⁴⁰⁰ EMA 2023 <http://www.ema.co.zw>.

HCC authorities, thus raising awareness about waste management practices and contribute their ideas and opinions on how to improve waste management in Harare.⁴⁰¹ Despite the President of Zimbabwe having declared (in January 2020) every first Friday of every month, as a clean-up campaign day, involving everyone, which aids integrated solid waste management at national level,⁴⁰² there is no public record of any initiatives of this kind having been undertaken by the HCC.⁴⁰³

Whereas section 4(2)(d) of EMA recognises education of the citizens, it seems the populace in Harare has little sensitivity towards littering. The attitudinal problems might be due to lack of educational awareness, communication and outreach to the regulated community. Competent authorities should communicate strategies to reduce solid waste in a comprehensive, comprehensible and transparent manner. Therefore, what is lacking is the creation of conditions for public participation and information exchange that could build capacity for improved environmental compliance and enforcement.⁴⁰⁴

4.4.9 Enforcement through Market-Based Incentives

In addition to CaC and CBIs, the legal framework also contains some MBIs in its governance and enforcement strategies. For instances, section 135 of the EMA gives the incentives for environmental management. Thus, the Minister on the recommendation given by the Agency and in consultation with the Finance Ministry, shall determine;

- (a) such fiscal, economic or social incentives as are necessary for promoting the protection and management of the environment and the conservation and sustainable utilisation of natural resources; and
- (b) such measures as are necessary for preventing the unsustainable use of natural resources and controlling the generation of pollutants.⁴⁰⁵

⁴⁰¹ Machivenyika 2023 <https://herald.co.zw/harare-waste-management-declared-state-of-disaster/>

⁴⁰² Muzvondiwa 2021 *the Dyke MSU Press* 118.

⁴⁰³ Machivenyika 2023 <https://herald.co.zw/harare-waste-management-declared-state-of-disaster/> . Thus lack of programmes about SWM on national radio and television, roadshows and sector specific cluster meetings inhibits public participation of all interested stakeholders on SWM.

⁴⁰⁴ INECE 13.

⁴⁰⁵ See section 135 of *EMA*.

The tools utilised include subsidies, taxes and levies and assurance bonds. However, there has been reluctance, slow adoption and limited use of MBIs in Zimbabwe. These are clearly mentioned but their use is limited. Thus, the polluter-pays principle is rarely applied. As initially envisioned, the principle's original intent was to make industries bear the negative consequences they produce through assurance bonds to insure against worst-case environmental damage. The bond's funds would be recouped if nothing happens; alternatively, if damage occurred, the bond's proceeds would be used for environmental restoration and to compensate any affected parties.⁴⁰⁶ In Harare, Mukuvisi River which flows through the city, is polluted by several industrial and commercial businesses as well as individuals who dump solid waste in the river, but these offenders get off scott-free without paying for any environmental damages for the pollution except one or two cases. There are very few cases in Harare of organisations which were fined by EMA or HCC, one example being ZIMPHOS, a fertiliser manufacturing company which was found guilty of dumping waste into Mukuvisi River.⁴⁰⁷ And there are no cases of organisations which were given directives to decontaminate the Mukuvisi River or any other environmental damage in Harare.

Therefore, the inability of the government to enforce waste and environmental legislation has given rise to a culture of impunity and has weakened the effectiveness of waste management in general.⁴⁰⁸ Currently, the state of waste management systems in Harare is quite bad and is largely dysfunctional due to the incapacity of HCC, which is mandated to collect waste from waste generators.⁴⁰⁹

4.4.10 Voluntary enforcement

EMA is somewhat silent on voluntary enforcement such as the ISO 14000 codes. However, it encourages the country to ratify certain treaties which are crucial in

⁴⁰⁶ <https://www.herald.co.zw/polluter-pays-as-environmental-management-principle/#>; see also Karuweni 2019 <https://ztn.co.zw/mukuvisi-river-choking-from-pollution/>.

⁴⁰⁷ Karuweni 2019 <https://ztn.co.zw/mukuvisi-river-choking-from-pollution/>.

⁴⁰⁸ Godfrey et al Intech Open 4; See also UNEP 2014 Enforcement of Environmental Law.

⁴⁰⁹ Nyakudya, Madyira, Madushele 2022 *Seeking Circularity* 4.

these instances. EMA requires that an annual audit be done on the government's performance with respect to Agenda 21 commitments.⁴¹⁰

It should be noted that the laws on SWM in Zimbabwe are fragmented and there is no Act that purposely deals with SWM at national level. With a primary focus on reactive and passive enforcement strategies that encourage fines for offenders, EMA tends to govern corporations more than individuals, yet residents are involved in severe illegal dumping and littering.

4.5 Utility of policies and plans

To aid in their implementation, government policies and plans are translated into legal and economic instruments such as Acts, Statutory Instruments and By-laws that the government uses to help carry out its objectives and programs. These are CaC instruments that outline the guidelines and limits that must be adhered to. They often consist of both incentives for minimising waste and disincentives, which might be in the form of tax, fee, levy, fine or penalty for waste generators.⁴¹¹

The NEPS for instance, encourages the use of MBIs in governance and enforcement. Guiding principle 57 of NEPS states that "fiscal, economic and social incentives can promote the protection and management of the environment and conservation and sustainable use of natural resources". Furthermore, NEPS identifies the following MBIs, among others: reductions in subsidies to organisations that produce adverse environmental outcomes; environmental taxes and charges; user charges; deposit refund schemes; certification, selective procurement; tradeable permits and rights; international offset schemes for carbon; and expansion of property rights.⁴¹² A balance is therefore needed between regulation and use of suitable direct and indirect market interventions.⁴¹³

⁴¹⁰ See section 132 (1) of NEMA; See section 10(1)(xiv) of EMA, which require EMA to carry out periodic environmental audits

⁴¹¹ See ZISWMP 64.

⁴¹² See Para 7.1.4 of NEPS 28.

⁴¹³ See Para 7.1.4 of NEPS 28.

In the context of Zimbabwe, although these instruments are on record in the policy documents, their actual enforcement is lacking. For example, there seems to be an absence of adequate institutional measures to educate citizens on environmental rights. As a result of this, citizens hardly exercise or enjoy the benefits which such rights bestow on them.⁴¹⁴ It is arguable that the community's lack of education and public awareness of the policy frameworks leads, in some ways, to a reluctance by the responsible authority such as HCC and the State in providing the services.⁴¹⁵ The authorities are therefore at fault in both failing to conscientize the citizenry on the solid waste policies, as well as in the actual operationalization of the policies.

A few examples demonstrate this. Although most government policies and plans such as ZISWMP and NEPS include the right to a clean environment, the polluter-pays principle and the precautionary principle with regard to anticipated negative impacts of SW on the environment,⁴¹⁶ their actual implementation and enforcement are inadequate due to lack of resources and capacity in terms educating the public.⁴¹⁷ The lack of resources, whether financial, human capital, infrastructural or technological, has been hampering progress in SWM. HCC previously depended on donor funds from international developmental partners to finance its activities. This has dwindled due to the resultant economic meltdown since mid-2000, and HCC has failed to find ways to adapt.

Also, although the HCC has adopted an Integrated Waste Management Plan (ISWMP),⁴¹⁸ such a plan is yet to become fully operational. The jury is still out on whether the ISWMP brings about change in illegal dumping and littering. It should be noted the HCC has all along been operating without a comprehensive waste

⁴¹⁴ Madebwe 2015 African Human Rights Law Journal 120

⁴¹⁵ Rukani Plastic Waste and Circular Economy 47-48.

⁴¹⁶ See Para 5.3 ZISWMP 64, See also NEPS Para 3.2 General Principles 7 and 6; 3.

⁴¹⁷ The ZISWMP promotes the involvement and education of the communities on recycling and the governance of SWM, however, there are no such recycling projects for community members which are run by the government, its agencies or the HCC.

⁴¹⁸ Nyakudya, Madyira, Madushele 2022 *Seeking Circularity* 2117-2118. The ISWMP encourages a waste management hierarchy that promotes a circular economy. The plan will take a holistic approach in managing waste as it integrates all processes from waste generation to how waste can be converted into a valuable resource. ISWMP will promote the use of CBIs thus involves all I&AP.

management plan or strategy which clearly outlines objectives, targets and timelines and whether it promotes the waste management hierarchy.

Lack of political will of those in authority is a cause for concern, and lack of understanding and appreciation of latest technologies in SWM is also to blame for the SWM crisis in Harare.⁴¹⁹ Commonly, the underlying causes of the environmental challenges in Zimbabwe include weak legislation, but even more importantly, weak implementation and enforcement of the existing legislation, poor institutional capacity, weak governance structures including inadequate coordination, which is underpinned by corruption⁴²⁰ and a tendency by HCC of not prioritizing investments in waste management activities.⁴²¹ Furthermore, many of the environmental problems are poverty-induced, worsened by the political and economic difficulties during the last decade.⁴²²

4.8 Conclusion

Within the national legal system, it is becoming more and more clear that merely having laws 'on the books' is insufficient – and that criminal law alone is never sufficient, not even in systems where criminal provisions are successful implemented and enforced.⁴²³ Effective administrative practices and the availability of means for civil society to become involved are just as important. Thus, enhancement of all the areas of CaC/administrative, civil, market-based, voluntary and criminal practices is needed for enforcement to be optimal.⁴²⁴ A shift away from CaC bias to environmental governance and enforcement, towards an innovative hybridisation of multiple instruments and tools as illustrated above, is what is required.

⁴¹⁹ Rukani Plastic Waste and Circular Economy 12,64,65,76; see also Nyakudya, Madyira, Madushele 2011 Seeking Circularity 2119.

⁴²⁰ Zimbabwe scores just 21/100 in Transparency International's Corruption Perceptions Index "Scores range from 0 (highly corrupt) to 100 (very clean)." http://www.transparency.org/country/#ZWE_DataResearch

⁴²¹ Chingwere 2023 <https://www.herald.co.zw/low-investment-in-refuse-collection-worrying-vp-chiwenga/>.

⁴²² Akesson et al *Policy Brief Zimbabwe* SIDA 7

⁴²³ UNEP 2014 Enforcement of Environmental Law 1.

⁴²⁴ UNEP 2.

The strengthening of environmental compliance and enforcement requires collective efforts among institutions and individuals. As a principle of good governance, there should be separation of the regulatory role, especially in terms of compliance monitoring and enforcement, from policy-making and service-provision roles. Thus, without a clear separation of roles, it will not be possible to ensure unfettered and meaningful regulation of waste management activities.⁴²⁵ In an effort to bridge the gaps identified on governance and enforcement of MSWM in Harare, the following chapter highlights suggested recommendations and gives a summary and conclusion of the research.

⁴²⁵ <http://wastepolicy.environment.gov.za/book/export/html/245>.

5 CHAPTER 5: SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

The aim of the study was to evaluate the extent to which the legal and policy framework on solid waste management is enforceable and whether it is effective for combating municipal solid waste challenges faced by the HCC. The research sought to answer the question:

How and to what extent is the legal and policy framework on solid waste management enforceable and is it effective for combating municipal solid waste challenges faced by the City of Harare?

The governance and enforcement of the legal and policy framework on SWM in Harare, Zimbabwe has faced significant challenges, which result in inadequate waste management practices. The current framework includes regulations for waste collection, segregation, transportation and disposal, as well as policies to promote recycling and waste reduction initiatives. However, it seems that poor enforcement, due to lack of resources and capacity, and a lack of public awareness and engagement, have hindered the effective implementation of the legislation and policies.

5.2 Summary

Chapter 2 considered the international law that governs SWM and how the different treaties could aid in the enforcement of SWM locally. Some instruments such as *Agenda 21* could aid in the enforcement of the legal and policy frameworks on SWM.⁴²⁶ Zimbabwe is a signatory to several treaties, among them the *Basel Convention*; *Stockholm Convention* and *Bamako Convention*. The chapter also discussed the impacts of improper SWM on human health and the environment. It was concluded that improper solid waste results in pollution and degradation of the environment, resultantly leading to ill-health for humans and climate change through, among other reasons, methane and carbon dioxide

⁴²⁶ See discussion under section 2.6, footnote 165 of this study above.

releases in the atmosphere.⁴²⁷ This is against the SDGs that emphasis cleaner cities and communities.

Chapter 3 elaborated the Zimbabwean legal and policy framework on SWM. It is noteworthy that the country has an environmental right enshrined in the Bill of Rights. It entails the right of everyone to a clean environment that is not detrimental to one's health. Thus, the Constitution gives the foundational principles that govern SWM.⁴²⁸ The chapter further discussed the framework legislation EMA and its ancillary Statutory Instruments. EMA highlights the standards and quality required for environmental protection. The EMA also details the institutions required for ensuring environmental protection, including the appointment of the Environmental Management Agency which is responsible for enforcing the Act through monitoring, assessments and compliance reporting. It acknowledges the environmental right and states the principles of environmental governance and management in section 4(2).⁴²⁹ Chapter 3 went on further to discuss the HCC by-laws which include the *Harare Anti-Litter* and *solid waste by-laws*. The HCC has a mandate for collection, treatment, transportation and disposal of municipal solid waste. Several national policies and plans were discussed and their contribution to SWM pointed out. The policies include the NEPS, NCCRS, ZIWMPS, HCC's IWMP and NDS.

Chapter 4 assessed the extent of governance and enforceability of the existing legal and policy framework in reducing solid waste challenges, and to evaluate the existing SWM infrastructures and practices while identifying gaps that need to be addressed. The roles of the different organisations involved in the implementation and enforcement of the legal and policy framework on SWM were noted and the importance of collaboration of these role-players in SWM was emphasised. The chapter discussed the four governance and enforcement strategies which are CnC, CBIs, MBIs and the voluntary enforcements and the extent of enforcement. Chapter 4 reached the conclusion that despite the SWM laws being fragmented, the legal and policy framework seems to have sufficient provisions for MSWM,

⁴²⁷ See discussion under sections 2.5, 2.5.1 and 2.5.2 of this study above.

⁴²⁸ See discussion under section 3.3.1 of this study above.

⁴²⁹ See discussion under section 3.3.2 of this study above.

along with mechanisms and tools for enforcement. However, these are lacking adequate enforcement and monitoring mechanisms due to resource and capacity constraints. In a bid to improve the enforcement and compliance of the legal and policy framework on SWM, recommendations are given below.

5.3 Recommendations

To improve the enforcement of the legal and policy framework on SWM in Harare, the following recommendations should be considered, and these are divided into state-level, city-level and general recommendations.

5.3.1 State-level recommendations

5.3.1.1 Strengthen monitoring and enforcement mechanisms

The State should implement comprehensive monitoring and inspection systems to ensure compliance with waste management regulations. This should include regular inspections, penalties for non-compliance, and the use of technology for efficient tracking and management of waste. The declaration of a State of Disaster is only a first step, and it should be followed through by strategic plans and actions to ensure that the State of Disaster is addressed. Inevitably, such strategic plans and actions require proper monitoring and evaluation mechanisms.

5.3.1.2 Review and update the legal and policy framework

There is a need to conduct a comprehensive review of the existing legal and policy framework to identify specific gaps or inconsistencies. The State should lead the way in updating the regulations and policies to address emerging challenges and align with international best practices. One avenue could be facilitating the process of promulgating a stand-alone detailed waste act. This could streamline the country's vision for waste management in general, while addressing potential fragmentation issues.

5.3.1.3 Introduce deterrent and realistic penalties and fines

Deterrent penalties and fines should be introduced so as not to trivialise offenses. The State should invest in studies that could indicate the relationship between the

severity and scope of offenses and the amount of penalty, so as to prevent enforcement agents from using wildly divergent discretion when pursuing enforcement measures against offenders.

5.3.1.4 Establish institutional mechanisms

The long-term vision for the government could be to create institutional processes with defined goals and long-term plans, as well as rules on regulatory enforcement and inspections. There is a need for coordination and consolidation of inspection functions. This could, in part, be addressed with the promulgation of a waste act.

Furthermore, to enable effective implementation and enforcement, there is a need to take a multi-stakeholder approach which involves government agencies, HCC, private waste management companies, NGO, residents, businesses, enforcement agencies and even school children.

5.3.2 City-level recommendations

5.3.2.1 Enhance public awareness and participation

HCC could enhance public awareness and participation through launching robust public education campaigns to raise awareness about proper waste management practices, including waste separation, recycling and responsible disposal. The HCC could also engage the public through community initiatives and incentives to promote behavioural changes that support sustainable waste management. As a matter of necessity, such initiatives must take on a publicized approach for effectiveness and in order to reach the intended targets. For example, a multi stakeholder approach to community awareness could take the form of roadshows, radio and television programmes and cluster meetings to educate residents. This could instill good environmental stewardship among citizens who generally have little sensitivity to waste around them or awareness of what represents responsible waste management. There is therefore a need to publicly sensitize the public on the effects of plastic pollution on their health and environment.

5.3.2.2 Strengthen collaboration and partnership

It is necessary to institutionalise good governance in SWM by using inclusivity and participation to bridge the gap between different stakeholders. Therefore, it is necessary to enhance institutional, financial, technological and infrastructural capacity, in order to promote environmentally sound waste management.⁴³⁰

Consequently, HCC should foster collaboration between relevant stakeholders, including municipal personnel, waste management companies, NGOs, and community organisations. This could help leverage resources, expertise and knowledge-sharing to improve waste management practices. Again, such initiatives need to be adopted and seen through in ways that show substantive commitments beyond theoretical aspirations.

5.3.2.3 Increase investment in waste management infrastructure

HCC should allocate more resources and funding towards waste management infrastructure, such as waste collection vehicles, recycling facilities, and landfill infrastructure. This will enhance the capacity of municipal authorities to effectively manage and dispose of solid waste. The HCC should publish and actively operationalize such plans.

5.3.2.4 Introducing of municipal courts

HCC shouldt reintroduce the municipal courts to deal with litter-bugs and municipal police need to be given arresting powers to deal with vending and other nuisances which contribute heavily to poor SWM.

5.3.3 General recommendations

Over-emphasis on CaC is never ideal. It is even more complicated when such CaC approach is weak and ineffective as is the case with Zimbabwe in general and HCC in particular. For this reason, there is need for concerted efforts to encourage more MBIs to introduce some incentives and subsidies that promote investment in solid waste recycling enterprises and facilities. Businesses should be encouraged

⁴³⁰ Godfrey *et al*/Intech Open 5.

to strive for voluntary self-regulation standardisation such as ISO 14001. This could allow for precise target-setting and benchmarking for stakeholders concerned.

The legal framework seems to prioritise end-of-pipe solutions rather than addressing them at the source via waste minimisation through reduced product packaging by manufacturers and supermarkets selling them. Thus, there is need for a circular economy, and there is a need to effectively adopt a waste management hierarchy. This can be done through the establishment of waste collection and recycling programs and the construction of modern waste treatment facilities.⁴³¹ Such an “integrated lifecycle approach” would involve strong controls from the generation of a waste to its storage, transport, treatment, reuse, recycle, recovery and final disposal.

By implementing these recommendations, HCC could significantly improve its SWM practices and foster a cleaner and healthier environment for its residents. It is essential for government, stakeholders, and the public to work together to ensure the effective enforcement of the legal and policy framework, ultimately leading to sustainable solid waste management in the city.

5.4 Conclusion

Despite Zimbabwe having a fairly comprehensive legislative framework on environmental management and SWM, alongside various ancillary laws, regulations, policies, and plans, this research highlights a significant gap in effective enforcement. This is evident from the widespread presence of garbage, as reported by different media houses. The current outbreak of diseases, such as cholera and typhoid, further accentuates issues of poor sanitation and inadequate MSWM by the HCC. The city grapples with numerous challenges in waste management, including insufficient monitoring and enforcement mechanisms, limited resources and capacity, and a lack of public awareness and engagement.

⁴³¹ Anonymous 2022 <http://geographypoint.cm/2022/12/10-ways-to-solve-environmental-problems-in-zimbabwe> accessed 08 October 2023.

While the laws and policies appear robust on paper, their implementation, monitoring, and enforcement pose significant challenges for the reasons mentioned. Therefore, the enforcement of the legal and policy framework on SWM in Harare is deemed crucial to ensure proper waste disposal. The recommendations provided, if embraced, could potentially facilitate effective MSWM in HCC.

BIBLIOGRAPHY

Literature

Akesson U *et al* 2016 *SIDA*

Akesson U *et al* "Environmental and Climate Change Policy Brief Zimbabwe" 2016 *SIDA* 1-37

Birnie, Boyle and Redgewell *International Law*

Birnie P, Boyle A and Redgewell C *International Law and the Environment* 3rd ed (Oxford 2009)

Bullard 2001 *Phylon*

Bullard RD "Environmental justice in the 21st century: Race still matters" 2001 *Phylon (1960-)* 49 (3/4) 151-171

Burnley 2007 *Waste Management*

Burnley S.J "A review of municipal solid waste composition in the United Kingdom" 2007 *Waste Management* 1274-1285

Cahill R, Grimes SM and Wilson 2011 *Waste Management and Research*

Cahill R, Grimes SM and Wilson DC "Extended producer responsibility for packaging wastes and WEEE-a comparison of implementation and the role of local authorities across Europe" 2011 *Waste Management and Research* 455-479

Chatira-Muchopa, Chidarikire, Tarisayi 2019 *Journal for Transdisciplinary Research in Southern Africa*

Chatira-Muchopa B, Chidarikire M, Tarisayi KS "Solid waste management practices in Zimbabwe: A case study of one secondary school" 2019 *Journal for Transdisciplinary Research in Southern Africa*

Chatsiwa, Mujere, Maiyana *Waste Management Techniques for Sustainability*

Chatsiwa J, Mujere N, Maiyana AB Municipal Solid Waste Management; *Handbook of Research on Waste Management Techniques for Sustainability* (2016) 19-43

Chirisa *et al* 2013 *SPRJ*

- Chirisa I *et al* "Environmental Rights as a Substantive Area of the Zimbabwean Constitutional Debate: Implications for Policy and Action" 2013 *Southern Peace Review Journal* (SPRJ) 104-121
- Choksi 2001 *Ecology LQ* 28
- Choksi S "The Basel convention on the control of transboundary movements of hazardous wastes and their disposal: 1999 Protocol on Liability and Compensation" 2001 *Ecology LQ* 509-540
- Craigie, Snijman and Fourie "Dissecting Environmental Compliance"
- Craigie F, Snijman P and Fourie M "Dissecting Environmental Compliance and Enforcement" in Paterson A and Kotze LJ (eds) *Environmental Compliance and Enforcement in South Africa* (Juta Cape Town 2009) 41-64
- Davids FA *Compliance and enforcement*
- Davids FA 2020 *Compliance and enforcement: The Legal Suitability of the Utilisation of Criminal Sanctions in South African Environmental Law* (LLM Mini-Thesis University of the Western Cape 2020)
- Du Plessis and Nel "Driving Compliance and Enforcement of South African"
- Du Plessis W and Nel J "Driving Compliance and Enforcement of South African Legislation by Means of a Hybrid of "New" Environmental Governance Instruments" in Paddock L *et al.* (eds) *Compliance and Enforcement in Environmental Law* (Edward Elgar Publishing Inc. Massachusetts 2011) 259-288
- Dzawanda and Moyo 2022 *Environ Monit Assess*
- Dzawanda B and Moyo GA "Challenges associated with household solid waste management (SWM) during COVID-19 lockdown period: a case of ward 12 Gweru City, Zimbabwe" 2022 *Environ Monit Assess* 1-15
- Dzingirai, Dube, & Chikandiwa (2010) "Environmental management in Harare"
- Dzingirai V, Dube B, & Chikandiwa "A Environmental management in Harare" In Manzungu E, & Mwangore GM (eds.) *Environmental Planning and Management in Zimbabwe* (Weaver Press 2010)
- Edensor 2016 "Walking through ruins"
- Edensor Walking through ruins *In ways of walking* (Routledge 2016) 135-154

Folz and Giles 2002 *State and Local Government Review*

Folz DH and Giles JN "Municipal experience with "pay-as-you-throw" policies: Findings from a national survey" 2002 *State and Local Government Review* 34(2) 105-115

Gaitan-Cremaschi *et al* 2017 *Land Use Policy* 186.

Gaitan-Cremaschi D *et al* "Applicability of economic instruments for protecting ecosystem services from cultural agrarian landscape in Donana SW Spain" 2017 *Land Use Policy* 185-195

Gasper, Shah and Tankha 2019 *Global Policy*

Gasper D, Shah A and Tankha S "The framing of sustainable consumption and production in SDG 12" 2019 *Global Policy* 83-95

Godfrey *et al Intech Open*

Godfrey L *et al* "Solid Waste Management in Africa: Governance Failure of Development Opportunity?" *Intech Open* 1-14.

Gutberlet *Waste in the City*.

Gutberlet J *Waste in the City: Challenges and Opportunities for Urban Agglomerations* (Urban Agglomerations IntechOpen 2018) 192-208

Hackett 1989 *Am. UJ Int'l L & Pol'y* 5

Hackett D.P "Assessment of the basel convention on the control of transboundary movements of hazardous wastes and their disposal" 1989 *Am. UJ Int'l L & Pol'y* 5 291-232

Harare City Council 2019 *Harare City Council Press* 8.

Harare City Council (2019) *Harare City State of the Environment Report*, *Harare City Council Press* 8

Hoornweg D and Bhadha Tata What a waste

Hoornweg D and Bhadha Tata *What a waste: A global review of solid waste management* (2012) 1-116

Hoornweg, Bhada-Tata and Kennedy 2013 *Nature*

Hoornweg D, Bhada-Tata P and Kennedy C "Environment: Waste production must peak this century" 2013 *Nature* 615-617

Hutton 2016 *Journal of Water, Sanitation and Hygiene for Development*

- Hutton G "Can we meet the costs of achieving safely managed drinking water, sanitation and hygiene services under the new sustainable development goals" 2016 *Journal of Water, Sanitation and Hygiene for Development* 191-194
- INECE *Compliance and Enforcement*
The International Network for Environmental Compliance and Enforcement (INECE) *Principles of Environmental Compliance and Enforcement Handbook* 2009 13-29
- Jennings and Li 2015 *Journal of Environmental Management*
Jennings AA and Li Z "Residential surface soil guidance values applied worldwide to the original 2001 Stockholm Convention POP pesticides" 2015 *Journal of Environmental Management* 16-29
- Jerie and Tevera 2014 *Journal of Waste Management*
Jerie S and Tevera D "Solid Waste Management Practices in the Informal Sector of Gweru, Zimbabwe" 2014 *Journal of Waste Management* 1-7
- Jones *et al* 2018 *Journal of Cleaner Production*
Jones M *et al* "The Basel Convention and the adoption of environmentally sound technologies for hazardous waste treatment and disposal" 2018 *Journal of Cleaner Production* 4235-4243
- Kasimba, Choguya and Muqayi 2023 *Zimbabwe African Journal of Gender, Society & Development*
Kasimba R, Choguya NZ and Muqayi S "Women and Solid Waste Management in High-density Areas: The Case of Hatcliffe, Harare" 2023 *Zimbabwe African Journal of Gender, Society & Development* 1-209
- Kidd *Environmental Law*
Kidd M *Environmental Law* 2nd ed (Juta Cape Town 2011)
- Lallas 2001 *American Journal of International Law*
Lallas PL "The Stockholm Convention on persistent organic pollutants" 2001 *American Journal of International Law* 692-708
- Leggett 2020 *UNFCCC New York*

- Leggett JA "The United Nations Framework Convention on Climate Change, the Kyoto protocol and the Paris agreement: a summary" 2020 *UNFCCC New York* 1-18
- Lehmann 2011 *Sustainable Dev.L. & Pol'y*
- Lehmann S "Resource recovery and materials flow in the city: Zero waste and sustainable consumption as paradigms in urban development *Sustainable*" 2011 *Dev.L. & Pol'y* 28-68
- Madebwe 2015 *African Human Rights Law Journal*
- Madebwe T "A rights-based approach to environmental protection: The Zimbabwean experience" 2015 *African Human Rights Law Journal* 110-128
- Madebwe, Madebwe and Madebwe 2011 *International Journal of Regulation and Governance*
- Madebwe V, Madebwe C and Madebwe TM "Environmental compliance and enforcement in the Midlands Province of Zimbabwe" 2011 *International Journal of Regulation and Governance* 41-56
- Mafume et al 2016 *Journal of Environment and Waste Management*
- Mafume *et al* "Challenges of solid waste management in Zimbabwe: A case of Sakubva High Density" 2016 *Journal of Environment and Waste Management* 142-155
- Makamba 2022 *IJEHSS*
- Makamba NJ "Policy Gaps on Solid Waste Management: Case of Chegutu Municipality Zimbabwe" 2022 *IJEHSS International Journal of Education Humanities and Social Science* 238-243
- Makwara and Magudu 2013 *European Journal of Sustainable Development*
- Makwara EC and Magudu S "Confronting the Reckless Gambling with People's Health and Lives: Urban Solid Waste Management in Zimbabwe" 2013 *European Journal of Sustainable Development* 67-98
- Mandeli 2019 *Cities*
- Mandeli K "Public space and the challenge of urban transformation in cities of emerging economies: Jeddah case study" 2019 *Cities* 1-11
- Mandevere *Solid waste management strategies in Harare, Zimbabwe*

- Mandevere B *An investigation into the effectiveness of household Solid waste management strategies in Harare, Zimbabwe (Doctoral-Thesis University of South Africa 2015)*
- Mandevere and Jerie 2018 *J of Environ Waste Management and Recycling*
- Mandevere B and Jerie S "Household solid waste management: how effective are the strategies used in Harare Zimbabwe" 2018 *J of Environ Waste Management and Recycling* 30-36
- Mapako (2000) *State of the environment*
- Mapako M "State of the environment report for Zimbabwe United Nations Environment Programme" 2000 UNEP 1-140
- Marshall and Farahbakhsh 2013 *Waste management*
- Marshall RE and Farahbakhsh K "Systems approaches to integrated solid waste management in developing countries" 2013 *Waste management* 988-1003
- Maseva 2005 *Waste Management in Zimbabwe*
- Maseva C "A Review of the Legislative and Policy Framework for Waste Management in Zimbabwe with Special Reference to Harare, Chitungwiza Municipality and Epworth Local Board Harare: 2005 *Practical Action Southern Africa* 1-40
- McAllister *Making Law Matter*
- McAllister LK *Making Law Matter* (Stanford University Press 2008) 1-288
- Misra and Pandey 2005 *Environmental International*
- Misra V and Pandey SD "Hazardous waste, impact on health and environment for development of better waste management strategies in future in India" 2005 *Environmental International* 418-431
- Mohamed-Katerere and Chenje *Environmental Law and Policy in Zimbabwe*
- Mohamed-Katerere JC and Chenje M (eds) *Environmental Law and Policy in Zimbabwe* (SARDC Harare 2002) 1-208
- Molaiwa A 2021 *PER/PELJ*
- Molaiwa A "Municipal Courts and Environmental Justice in South African Local Government" 2021 *PER/PELJ* 1-40
- Morton, Pencheon and Squires 2017 *British medical bulletin*

- Morton S, Pencheon D and Squires N "Sustainable Development Goals(SDGs) and their implementation: A national global framework for health, development and equity needs a systems approach at every level" 2017 *British medical bulletin* 81-90
- Muchuru and Nhamo 2019 *African Journal of Science, Technology, Innovation and Development*
- Muchuru S and Nhamo G "Sustaining African water resources under climate change: Emerging adaptation measures from UNFCCC national communications" 2019 *African Journal of Science, Technology, Innovation and Development* 1-16
- Munawer 2018 *Journal of Sustainable Mining*
- Munawer ME "Human Health and Environmental Impacts of coal combustion and post combustion wastes" 2018 *Journal of Sustainable Mining* 87-96
- Murombo and Munyuki 2019 *PER/PELJ*
- Murombo T and Munyuki I "The Effectiveness of Plea and Sentence Agreements in Environmental Enforcement in South Africa" 2019 *PER/PELJ* 1-41
- Murombo "Balancing interests through framework environmental legislation in Zimbabwe"
- Murombo T "Balancing interests through framework environmental legislation in Zimbabwe", in Faure M and Du Plessis W (ed.) *The balancing of interests through framework environmental legislation in Africa* (PULP, 2011) 557-598
- Muzenda *et al* 2011 "Reflecting on Waste"
- Muzenda E *et al* "Reflecting on Waste management Strategies for South Africa" *WCECS 2011 Proceedings of the World Congress on Engineering and Computer Science (19-20 October 2011 San Francisco USA)* 1-6
- Muzenda, Mbohwa & Mohee 2013 *International Journal of Sustainable Development & World Ecology*
- Muzenda E, Mbohwa C & Mohee R "Challenges associated with solid waste management in Harare Zimbabwe" 2013 *International Journal of Sustainable Development & World Ecology* 493-500

Muzvondiwa 2021 *The Dyke* MSU Press

Muzvondiwa R "The role of community participation in solid waste management in Zimbabwe: The case of Nyanga Township" 2021 *The Dyke* MSU Press 116-130

Nel and Alberts "Environmental management"

Nel JG and Alberts R Environmental management and environmental law in South Africa: An Introduction – Chapter 1 In: King ND, Strydom HA and Retief FP (eds), *Environmental Management in South Africa* 3rd edition (Juta Cape Town 2018) 1-56

Nel and Du Plessis 2018 *SAJELP*

Nel J and Du Plessis W "An Evaluation of NEMA Based on a Generic Framework for Environmental Framework Legislation" 2018 *SAJELP South African Journal of Environmental Law and Policy* 1-37

Nel and Wessels 2010 *PERL* 50.

Nel J and Wessels JA "How to Use Voluntary, Self-Regulatory and Alternative Environmental Compliance Tools: Some Lessons Learnt" 2010 *PERL* 48-78

Nel, Du Plessis and Du Plessis "Instrumentation for Local Environmental Governance"

Nel JG, Du Plessis W and Du Plessis A "Instrumentation for Local Environmental Governance" in Du Plessis A (ed) *Environmental Law and Local Government in South Africa* (Juta Cape Town 2021) 3-86

Nnaji 2015 *An International Journal*

Nnaji CC "Status of municipal solid waste generation and disposal in Nigeria: Management of Environmental Quality" 2015 *An International Journal* 53-71.

Nyakudya, Madyira and Madushele "Seeking Circularity"

Nyakudya P, Madyira DM and Madushele N "Seeking Circularity A Review of Zimbabwe Waste Management Policies Towards a Circular Economy": *Proceedings of the 5th European International Conference on Industrial Engineering and Operations Management (Rome, Italy, July 26-28 2022)* 2113-2121

Nyanzou *Solid waste management practices*

Nyanzou P *Analysis of solid waste management practices in high density suburbs: A case of Budiro 3, Harare*, (Unpublished Masters Dissertation Midlands State University 2014)

Ogundele, Rapheal and Abiodun 2018 *Polytechnica*

Ogundele OM, Rapheal OM and Abiodun AM "Effects of municipal waste disposal methods on community health in Ibadan-Nigeria" 2018 *Polytechnica* 61-72

Ogotu *Assessment of the Effectiveness of the Policy Framework on Solid Waste Management*

Ogotu FA *Assessment of the Effectiveness of the Policy Framework on Solid Waste Management in Nairobi, Kenya* (PHD-Thesis University of Nairobi 2019)

Okot-Okumu J 2012 *InTech*

Okot-Okumu J 2012 "Solid Waste Management in African Cities - East Africa in Waste Management- An Integrated Vision" 2012 *InTech* 1-19

Parajuly *et al* 2020 *EU Resources, Conservation & Recycling*

Parajuly K *et al* "Behavioral change for the circular economy: A review with focus on electronic waste management in the EU" 2020 *Resources, Conservation & Recycling* 1-10

Peiry 2010 Basel Convention *United Nations Office of Legal Affairs*

Peiry KK 2010 Basel Convention on the control of transboundary movements of hazardous wastes and their disposal *Nova York United Nations Office of Legal Affairs* 1-10

Phiri and Gunduza *Waste Management*

Phiri and Gunduza *Waste Management Issues in the City of Harare* 1-18.

Prakash and Potoski 2006 *American journal of political science*

Prakash A and Potoski M "Racing to the bottom? Trade, environmental governance, and ISO 14001" 2006 *American journal of political science* 350-364

Praneetvatakul *et al* *Environmental Science & Policy*

- Praneetvatakul *et al* "Pesticides, external costs and policy options for Thai agriculture" *Environmental Science & Policy* 103-113
- Rodan *et al* 1999 *Environ.Sci.Technol*
- Rodan BD *et al* "Screening for persistent organic pollutants: techniques to provide a scientific basis for POPs criteria in international negotiations" 1999 *Environ.Sci.Technol* 3482-3488
- Rukani *Plastic and Circular Economy*
- Rukani P *Plastic and Circular Economy: An Analysis of the Environmental Regulations' Effectiveness in Plastic Waste Management and the Integration of Circular Economy in Harare, Zimbabwe* (Master-Thesis University of Twente 2019), Netherlands
- Santos, Pizzol and Azarijafari 2022 *Civil and Structural Engineering*.
- Santos J, Pizzol M and Azarijafari H "Life Cycle Assessments (LCA) of using recycled plastic waste in road pavements: Theoretical Modelling: In Plastic Waste for Sustainable, Asphalt Roads" 2022 *A volume in Hoodhead Publishing Series in Civil and Structural Engineering* 273-302
- available from <http://www.sciencedirect.com/topics/engineering/life-cycle-thinking#>
- Scheinberg *et al*/ISAWA
- Scheinberg A *et al* "Economic aspects of the informal sector in solid waste" 2010 ISAWA 1-36
- Shekdar *Waste Management*
- Shekdar AV "Sustainable solid waste management: An intergrated approach for Asian countries" 2009 *Waste Management* 1438-1448
- Shen M *et al* 2020 *Journal of Cleaner Production*
- Shen M *et al* "Micro plastic crisis: un-ignorable contribution to global greenhouse gas emission and climate change" 2010 *Journal of Cleaner Production* 254
- Shooshtarian *et al* 2022 *Sustainable Production and Consumption*
- Shooshtarian S *et al* "Transformation towards a circular economy in the Australian construction and demolition waste management system" 2022 *Sustainable Production and Consumption* 89-106

Singh and Sharma 2016 *Procedia Environmental Sciences*

Singh P and Sharma VP "Integrated Plastic Waste Management: Environmental and Improved Health Approaches" 2016 *Procedia Environmental Sciences* 692-700

Stavins "Market-based Environmental Policies"

Stavins RN "Market-based Environmental Policies" in Portney PR and Stavins RN (eds) *Public Policies for Environmental Protection* 2nd ed (RFF Press Books Washington 2000) 31-68

Sukholthaman, Shirahada and Sharp 2017 *Kasetsart Journal of Social Sciences*

Sukholthaman P, Shirahada K and Sharp A "Toward effective multi-sector partnership: A case of municipal solid waste managementservice provision in Bangkok, Thailand" 2017 *Kasetsart Journal of Social Sciences* 324-330

Tchobanoglous, Theisen & Vigil *Integrated solid waste management*

Tchobanoglous G, Theisen H & Vigil S *Integrated solid waste management: engineering principles and management issues* (McGraw-Hill Education India 2014) 1-978

Tecchio P *et al* 2017 *Journal of cleaner production*

Tecchio P *et al* "In search of standards to support circularity in product policies: A systematic approach" 2017 *Journal of cleaner production* 1533-1546

Tickner, Jacobs and Mack Sustainable *Chemistry and Pharmacy* 13

Tickner J, Jacobs MM and Mack NB *Sustainable Chemistry and Pharmacy* 13

Toxopeus *Civil-based environmental governance in South Africa*

Toxopeus M *The promotion of environmental justice through the lens of civil-based environmental governance in South Africa* (LLM-Dissertation North-West University 2015)

Tsabora *Environmental Rights Clause*

Tsabora J *Unpacking the Environmental Rights Clause in the Zimbabwean Constitution* 347-362

Tsiko and Togarepi 2012 *American Journal of Science*

Tsiko R.G and Togarepi S "A Situational Analysis of Waste Management in Harare, Zimbabwe" 2012 *American Journal of Science* 692-706

Weiss 2014 Environmental Policy and Law

Weiss EB "Voluntary Commitments as Emerging Instruments in International Environmental Law" 2014 *Environmental Policy and Law* 82-95

Wilson and Scheinberg 2010 Waste management & research 1055

Wilson and Scheinberg 2010 Waste management & research 1055

Wilson DC *et al*/2010 solid waste management in cities around the world

Wilson *et al*/ Comparative analysis of solid waste management in cities around the world 2010 6.

Wilson, Velis and Rodic "Integrated sustainable waste management"

Wilson DC, Velis CA and Rodic L "May integrated sustainable waste management in developing countries. In *Proceedings of the Institution of Civil Engineers-Waste and Resources Management* (ICE Publishing 2013)

Legislation

Civil Protection Act [Chapter 10:06]

Constitution of Zimbabwe Amendment (No 20) Act 2013

Environmental Management Act 13 [Chapter 20:27] of 2002

Harare (Anti-Litter) By-laws Statutory Instrument 30 of 2016

Harare (Anti-litter) By-laws Statutory Instrument 85 of 1981

Public Health Act [Chapter 15:09]

Salisbury (Waste Management) By-laws Statutory Instrument 477 of 1979

Statutory Instrument 10 of 2007 (Environmental Management: Hazardous Waste Management Regulations)

Statutory Instrument 140 of 2023, the Civil Protection (Declaration of State of Disaster: Emergency Solid Waste Management Harare Metropolitan Province) Notice 2023

Statutory Instrument 153 of 2022, Harare (Incorporated and Local Government Areas)(Waste Management)(Amendment) By-Laws, 2022 (No.29)

Statutory Instrument 559 of 1981, Harare (Incorporated and Local Government Areas)(Waste Management) By-Laws, 1981

Statutory Instrument 6 of 2007, (Environmental Management Act: Effluent and Solid Waste Disposal Regulations)

Statutory Instrument 98 of 2010, (Environmental Management Act: Plastic Packaging and Plastic Bottles Regulations)

Urban Council's Act [Chapter 29:15] (Revised Edition 1996)

Government Publications and Policies

Harare Environmental Management Strategy (1993)

Harare Integrated Solid Waste Management Plan (2021-2026)

National Climate Change Response Strategy (2015)

National Development Strategy 1 (2021-2025)

National Environmental Policy and Strategies (2009)

Zimbabwe Integrated Waste Management Plan (2014)

International Instruments

Agenda 21 (1992)

Bali Declarations (2008)

Bamako Convention (1998)

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)

Integrated Solid Waste Management (ISWM) Framework

Intergovernmental Panel on Climate Change (IPCC) 2nd Assessment Report, Climate Change

Minamata Convention on Mercury (2017)

Paris Agreement (2015)

Rotterdam Convention (2004)

Stockholm Convention on Persistent Organic Pollutants (2001)

The Kyoto Protocol to the United Nations Framework Convention on Climate Change (1997)

United Nations Framework Convention on Climate Change (1992)

United Nations Sustainable Development Goals (2015)

Internet Sources

Aela 2022 <https://aelaschool.com/en/research>

Aela 2022 Desk research <https://aelaschool.com/en/research/desk-research-conduct-secondary-research-efficiently/> accessed 20 July 2023

Africa cdc 2023 <https://africacdc.org/news-item/>

Africa cdc 2023 Africa CDC support on cholera outbreak in Zambia <https://africacdc.org/news-item/africa-cdc-support-on-cholera-outbreak-in-zambia/#> accessed 21 September 2023

Bruna 2023 <http://www.statista.com>

Bruna A 2023 *A Global Waste Generation–Statistics and facts* <http://www.statista.com/topics/4983/waste-generation-worldwide/> # topic overview. Accessed 06 September 2023

China ASEAN Environmental Cooperation Centre & United Nations Environmental Programme 2014 <https://www.un.org/sustainabledevelopment/cities/>

China ASEAN Environmental Cooperation Centre & United Nations Environmental Programme (2014) *Enforcement of Environmental Law Good Practice from Africa, Central Asia ASEAN Countries and China* <http://wedocs.unep.org/20.500.11822/9968> accessed 31 August 2023

Chingwere 2023 <https://www.herald.co.zw/>

Chingwere M 2023 Low investment in refuse collection worrying VP Chiwenga <https://www.herald.co.zw/low-investment-in-refuse-collection-worrying-vp-chiwenga/> accessed 30 October 2023

Ellen MacArthur Foundation (n.d) *What a circular economy?*

Ellen MacArthur Foundation (n.d.) What is a circular economy? Retrieved from <https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy> accessed 20 October 2023

Environmental Management Agency 2023 <http://www.ema.co.zw>

Environmental Management Agency 2023 <http://www.ema.co.zw/waste-management/> accessed 02 Nov 2023

<http://geographypoint.cm/2022/12/10-ways-to-solve-environmental-problems-in-zimbabwe> accessed 08 October 2023

- <http://geographypoint.cm/2022/12/10-ways-to-solve-environmental-problems-in-zimbabwe> accessed 08 October 2023
- <http://wastepolicy.environment.gov.za/book/export/html/245> accessed 17 October 2023
- <http://wastepolicy.environment.gov.za/book/export/html/245> accessed 17 October 2023
- Feresu SB *Zimbabwe Environment Outlook 2*
- Feresu SB (ed.) *Zimbabwe Environment Outlook 2: A Clean, Safe and Healthy Environment*, (Government of the Republic of Zimbabwe, Ministry of Environment, Water and Climate, Zimbabwe 2017) 1-257 available from <https://www.yumpu.com/en/document/read/62842948/zimbabwe-outlook-reporting-2> accessed 10 October 2023
- Mpofu 2021 <https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-management-plan/> accessed 15 September 2023
- Mpofu T 2021 <https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-management-plan/> accessed 15 September 2023
- Anonymous 2022 <https://www.gbg.co.zw/2022/01/19>
- Anonymous 2022 <https://www.gbg.co.zw/2022/01/19/harare-city-developing-an-integrated-solid-waste-management-plan-to-address-growing-waste-challenges/>.accessed 30 August 2023
- Karuweni F 2019 <https://ztn.co.zw/>
- Karuweni F 2019 *Mukuvisi River choking from pollution* <https://ztn.co.zw/mukuvisi-river-choking-from-pollution> accessed 30 August 2023
- Kaza *et al* 2018 *What a Waste 2.0*
- Kaza S *et al* "What a Waste 2.0: A Global Snapshot of Solid Waste Management 2050" Washington DC The World Bank 2018 1-231 available from https://datatopic.worldbank.org/what-a-waste/trends_in_solid_waste_management.html accessed 06 September 2023
- Kugwa 2023 <https://www.hararecity.co.zw/>

- Kugwa K *Council targets litterbugs*
<https://www.hararecity.co.zw/news/read/council-targets-litterbugs>
 accessed 05 October 2023
- Lombardi 2016 <http://www.waste360.com/waste-reduction>
- Lombardi E 2016 <http://www.waste360.com/waste-reduction> *What does the Paris Agreement Say about Waste?* Accessed 27 September 2023
- Matabvu 2023 <http://www.sundaymail.co.zw/ema>
- Matabvu D 2023 *EMA takes over Harare waste management*
<http://www.sundaymail.co.zw/ema-takes-over-harares-waste-management>
 accessed 27 September 2023
- Machivenyika 2023 <https://herald.co.zw/harare-waste-management-declared-state-of-disaster/> .
- Machivenyika F 2023 Harare waste management declared state of disaster
<https://herald.co.zw/harare-waste-management-declared-state-of-disaster/>
 accessed 30 October 2023.
- Mpofu 2021 [https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-](https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-management-plan/)
- Mpofu T 2021 *City of Harare finalises solid waste management plan*
[https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-](https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-management-plan/)
[management-plan/](https://ucaz.org.zw/2021-09-27-city-of-harare-finalizes-solid-waste-management-plan/) accessed 15 September 2023
- Ndebele 2021 <http://www.gbg.co.zw/2021/06/16>
- Ndebele SG 2021 *Harare Waste Management Situational Analysis*
[http://www.gbg.co.zw/2021/06/16/Harare-waste-management-situational-](http://www.gbg.co.zw/2021/06/16/Harare-waste-management-situational-analysis)
[analysis](http://www.gbg.co.zw/2021/06/16/Harare-waste-management-situational-analysis) accessed 02 October 2023
- OECD 2007 <https://stats.oecd.org>.
- Organisation for Economic Cooperation and Development 2007
<https://stats.oecd.org>
- Online Reporter 2023 <https://www.sundaymail.co.zw/new>
- Online Reporter 9 October 2023 *Harare to enforce by-laws on littering*
<https://www.sundaymail.co.zw/new-harare-to-enforce-bylaws-on-littering>
 accessed 31 October 2023
- Palczynski 2002 *Solid waste management options*
- Palczynski RJ "Study on Solid Waste Management Options for Africa"
http://sswm.info/sites/default/files/reference_attachments/AFRICAN

DEVELOPMENT BANK 2002 study on solid waste management for Africa
accessed 05 November 2023

Snigdha and Prasenjit 2003 *Economics of solid waste management*

Snigdha C and Prasenjit S "Economics of solid waste management: A survey of existing literature" 2003 1-59 available on https://www.researchgate.net/publication/285232859_Economics_of_Solid_Waste_Management_A_Survey_of_Existing_Literature accessed 25 October 2023

The World Bank date unknown

The World Bank date unknown https://datatopic.worldbank.org/what-a-waste/trends_in_solid_waste_management.html accessed 06 September 2023.

Transparency International date unknown
http://www.transparency.org/country/#ZWE_DataResearch

Transparency International date unknown Zimbabwe scores just 21/100 in Transparency International's Corruption Perceptions Index "Scores range from 0 (highly corrupt) to 100 (very clean)." http://www.transparency.org/country/#ZWE_DataResearch accessed 25 October 2023

Tsiko 2023 <http://www.herald.co.zw/>

Tsiko S 2020 <http://www.herald.co.zw/Pomona-dump-clouds-harare-waste-management-strategy> accessed 16 September 2023

UN Climate Change News 2021 <https://unfccc.int/news/shifting>

UN Climate Change News 2021 <https://unfccc.int/news/shifting-to-a-circular-economy-essential-to-achieving-paris-agreement-goals> accessed 27 September 2023

UN Habitat 2008/2009 <http://unhabitat.org/sites/default/files/download-manager-files/State>

UN Habitat 2008/2009 *State of the world's cities: harmonious cities* retrieved from <http://unhabitat.org/sites/default/files/download-manager-files/State%20of%20the%20World%E2%80%99s%20Cities%2020082009%20%20Harmonious%20Cities.pdf> accessed 30 September 2023

UNEP date unknown Stockholm Convention <http://leap.unep.org/content/treaty/>

UNEP date unknown *Stockholm Convention* Law and Environment
Assistance Platform available from
<http://leap.unep.org/content/treaty/stockholm-convention> accessed 27
September 2023

United Nations 2015 <http://sdgs.un.org/goals>

United Nations 2015 Sustainable Development Goals
<http://sdgs.un.org/goals>

United Nations 2015 [https:// www.un.org/sustainabledevelopment/cities/](https://www.un.org/sustainabledevelopment/cities/)

United Nations 2015 Sustainable Development Goal 11: *Make cities and
human settlements inclusive, safe, resilient and sustainable* [https://
www.un.org/sustainabledevelopment/cities/](https://www.un.org/sustainabledevelopment/cities/) accessed from 31 August 2023

United Nations Environment Programme 2016
<http://wedocs.unep.org/20.500.11822/31379>

United Nations Environment Programme 2016 *Guideline for Framework Legislation for Int*

United Nations Environment Programme 2016
<http://wedocs.unep.org/20.500.11822/31379> accessed 25 September 2023

United Nations Environmental Programme (UNEP) 2013
<https://www.unep.org/resources/>

United Nations Environmental Programme (UNEP) 2013 *Integrated
Sustainable Waste Management: A set of Tools for Decision-makers*
[https://www.unep.org/resources/report/integrated-sustainable-waste-
management-set-tools-decision-makers](https://www.unep.org/resources/report/integrated-sustainable-waste-management-set-tools-decision-makers) 25 September 2023

United States Environmental Protection Agency Date unknown
<https://archive.epa.gov/epawaste>

United States Environmental Protection Agency Date unknown
<https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/>.

United Nations Zimbabwe 2021: <https://zimbabwe.un.org/sites/default/files/2021>

United Nations Zimbabwe 2021: The UN Common Country Analysis
Zimbabwe 2021 [https://zimbabwe.un.org/sites/default/files/2021-
06/UNCT_ZW_CommonCountryAnalysis_2021Final_0.pdf](https://zimbabwe.un.org/sites/default/files/2021-06/UNCT_ZW_CommonCountryAnalysis_2021Final_0.pdf) 1-89 accessed 20
June 2023

Urban Council Association of Zimbabwe 2021 <https://ucaz.org.zw>

Urban Council Association of Zimbabwe 2021 <https://ucaz.org.zw>

USAID 2015 <http://www.climatelinks.org>

USAID 2015 Climate Change information Fact Sheet Zimbabwe <http://www.climatelinks.org>

Voices 2023 <https://www.newsday.co.zw/thestandard/standard->

Voices A 2023 Dealing with Harare's solid waste management crisis

<https://www.newsday.co.zw/thestandard/standard->

people/article/200015561/dealing-with-harare-solid-waste-management-

crisis accessed 25 September 2023

WHO 2021 <https://www.who.int/tools/>

WHO 2021 *Solid Waste* <https://www.who.int/tools/compendium-on-health-and-environment/solid-waste>

Wilson *et al* 2015 Global Waste Management Outlook

Wilson *et al* 2015 *Global Waste Management Outlook: Summary for Decision Makers* 1-8 available from

https://issuu.com/zoienvironment/docs/gwmo_summary 2 accessed 17 September 2023

World Bank 2012 <http://doi.org/10.1596/978-0-8213-8810-5>

World Bank 2012 World Development Report 2012: Gender Equity and Development The World Bank <http://doi.org/10.1596/978-0-8213-8810-5> accessed 20 September 2023

World Bank 2014 <https://doi.org/10.1596/978-1-4648-0245-4>

World Bank 2014 *The World Bank Annual Report 2014* Washington DC om <https://doi.org/10.1596/978-1-4648-0245-4> accessed 30 September 2023

World Health Organisation 2014 *A global brief on vector-borne diseases*

World Health Organisation 2014 *A global brief on vector-borne diseases* (No. WHO/DCCO/WHO/2014.1) World Health Organisation

Zhakata 2023 <https://www.suburban.co.zw/>

Zhakata I. 2023 Harare has no environment strategy Suburban <https://www.suburban.co.zw/harare-has-no-environment-strategy/> accessed 9 November 2023.

Zimbabwe Environmental Lawyers Association 2023 <http://zela.org>

Zimbabwe Environmental Lawyers Association 2023 <http://zela.org>
Zimbabwe National Statistics Agency 2022 <http://www.zimstat.co.zw>
Zimbabwe National Statistics Agency 2022 *Zimbabwe 2022 Population and
Housing Census Report Volume 1* available from
<https://www.zimstat.co.zw/wp>-accessed 10 October 2023