



Legal Implications of Improper Municipal Solid Waste Management on Human Health and the Environment

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Declaration

I declare that the mini-dissertation titled "Legal Implications of Improper Municipal Solid Waste Management on Human Health and the Environment" is my work. All the sources I have used and quoted have been indicated and acknowledged using complete references.

Dedication

To God almighty who gave me strength, Grace and Wisdom throughout my studies.

Acknowledgements

I thank God for seeing me through all the challenges I faced during my studies. I am grateful to my husband (Hlumelo Zonyane), and my children (Lereko and Bohlokwa) for their encouragement and support. My sisters (Mpolokeng Mokabo and Dikeledi Mokabo), thank you for caring for my children in my absence.

I want to thank my supervisor for his support, for reading countless drafts, and for taking a chance on me even though I had no law background. May the good God our Lord continue to bless him.

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Abstract

This study set out to determine the legal implications of improper municipal solid waste management on human health and the environment by consulting primary and secondary sources of law. Primary sources of law included international law, the *Constitution*, legislation and case law, and secondary sources included journal articles, books, book chapters and internet sources.

Improper waste management has negative consequences for human health and the environment. People living within a five-kilometre radius of waste disposal are at greater risk of developing respiratory tract diseases. Leachate produced at landfill sites pollutes groundwater sources. Burning waste releases dioxins, particulate matter, and polycyclic aromatic hydrocarbons. Illegal dumping introduces heavy metals into the receiving soil, leading to contamination of edible vegetables and affecting the quality of the soil.

Waste management regulation is founded on the provisions of section 24 of the *Constitution*. The *National Environmental Management Act* 107 of 1998 (*NEMA*) forms the legislative framework for environmental law. The *NEMA* provides for environmental management principles and cooperative environmental governance. The *National Environmental Management: Waste Act* 58 of 2008 (*Waste Act*) aims to ensure the implementation of a waste management hierarchy. It provides for the establishment and implementation of the National Waste Management Strategy. Environmental management inspectors (hereafter EMIs) are designated in terms of the *NEMA* to enforce environmental laws. Only Grade 1 EMIs have full powers. Adding environmental health practitioners to the Environmental Management Inspectorate could help with the enforcement of waste regulations in the local sphere of government. Training of the National Prosecuting Authority and members of the judiciary and the establishment of environmental courts are essential for the proper enforcement of waste management regulations.

Keywords: Waste Management, Environment, Health, Municipal Solid Waste

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Chapter 1: Introduction

1.1 Background

Improper waste management has negative consequences on the global, regional, and local scales, as it leads to environmental degradation and pollution.¹ Waste is a global challenge due to the contribution of waste-related emissions to climate change. Still, the extent and nature of the challenges related to waste differ from region to region and from city to city.² However, the widespread adoption of a waste management hierarchy indicates the adverse effects of waste on the environment and human health.³ The waste hierarchy advocates moving away from end-pipe waste management to introducing integrated resource management.⁴ In 2006, 70% of the waste produced globally was landfilled.⁵ Global waste statistics do not reflect the severity of waste challenges due to the failure to link waste streams from extraction, production, and overall consumption, as well as a lack of financial resources and data accessibility in low- and middle-income countries.⁶ The lack of data is due to weak law enforcement, technology, and policy implementation in developing countries.⁷

Africa does not have reliable solid waste data, which affects the ability to develop appropriate programmes that promote effective municipal solid waste management.⁸ The quality of the solid waste data in South Africa is exacerbated by non-compliance of 80% of the country's landfill sites.⁹ This is despite the country's efforts towards more sustainable waste management, including the passing of the *National Environmental Management: Waste Act* 59 of 2008.¹⁰ The zero waste concept was one of the country's efforts to ensure sustainable waste

¹ Bosman *et al* 2018 "Integrated Waste Management" 1055.

² Onyanta 2016 *Geography Compass* 501.

³ Olefetse & Godfrey 2008 *South Africa Journal of Science* 246.

⁴ Wilson 2007 *Waste Management & Research* 200.

⁵ Singh *et al* 2014 *Waste Management & Research* 803.

⁶ Singh *et al* 2014 *Waste Management & Research* 806.

⁷ Agamuthu *et al* 2009 *J Mater Cycles Waste Management* 96.

⁸ Mohee and Simelane Future directions of municipal solid waste management in Africa 1.

⁹ De Klerk 2021 <http://www.afriforum.co.za>.

¹⁰ Adeleke *et al* 2021 *Transactions of the Royal Society of South Africa* 3.

management practices, the zero waste concept entails that products are made to be re-used and recycled into new materials.¹¹ The zero-waste concept requires manufacturers and producers to be mindful when choosing raw materials. The efficiency of these policy documents is impacted by the ability of local governments to enforce and implement them adequately, poor infrastructure, public awareness and lack of incentives to promote compliance.¹²

1.2 Problem Statement

Only 69% of households in South Africa receive formal waste management services.¹³ The remaining 31% of households that do not get waste management services rely on private dumps, open dumps, and open burning.¹⁴ South Africa relies heavily on landfilling as a waste management option, bringing up landfill airspace challenges.¹⁵ In 2017, 65.2% of total waste generated in South Africa was disposed of by landfill.¹⁶ Landfill site audits conducted by AfriForum in 2021 indicated that only 27 of the 153 landfill sites in South Africa meet 80% of the minimum requirements set in the *National Environmental Management: Waste Act* 59 of 2008 (hereafter *Waste Act*).¹⁷ The outcome of the landfill sites audits indicates that waste management in South Africa could have legal implications.

Illegal dumping, landfilling and waste burning are the most preferred waste management methods in South Africa and ten other African countries.¹⁸ Climate change is an emerging and key driver of development in waste management, while public health is still an important driver in developing countries.¹⁹ South Africa's preferred waste management option (landfilling) contributes 2.8% of the country's total carbon footprint and poses health risks to communities living within a 500 m

¹¹ Matete and Trois 2008 *Waste management* 1481.

¹² Worku, Snyman and Muchie 2014 *European Journal of Engineering and Technology* 180.

¹³ Rodseth *et al* 2020 *South African Journal of Science* 2.

¹⁴ Rodseth *et al* 2020 *South African Journal of Science* 2.

¹⁵ Department of Environmental Affairs 2018 <http://sawic.environment.gov.za>.

¹⁶ Department of Environmental Affairs 2018 <http://sawic.environment.gov.za>.

¹⁷ De Klerk 2021 <http://www.afriforum.co.za>.

¹⁸ Dladla *et al* 2016 *African Journal of Science, Technology, Innovation and Development* 478.

¹⁹ Wilson 2007 *Waste Management & Research Journal* 204.

radius of properly managed landfill sites.²⁰ Matters could be worse in communities living within 500 m of an improperly managed landfill site.²¹ Landfill sites produce and emit landfill site gas, which contains volatile organic compounds and semi-volatile organic compounds. Some of these compounds can be mutagenic, carcinogenic and teratogenic.²² Landfill sites emit air pollutants such as hydrogen sulphides that contribute to air pollution and the prevalence of respiratory tract diseases such as asthma.²³

Improper waste management not only affects human health and the environment but has financial consequences as well, especially when it comes to dealing with improper waste management-related outbreaks.²⁴ The 1994 pneumonic and bubonic plague outbreak in Surat, India, was linked to rats breeding on uncollected waste blocking the drains and water channels.²⁵ Human health and the environment are negatively affected by illegal waste dumping and waste burning and the clean-up of the illegally dumped waste and the rehabilitation costs of the environment are imposed on the government.²⁶

South African environmental law puts people at the forefront. This entails that the protection of the environment can be achieved through the protection of fundamental human rights.²⁷ Improper waste management practices pollute water resources, land, and air, affecting the environment negatively.²⁸ This in turn negatively affects human rights as entrenched in Chapter 2 of the *Constitution*. This includes section 27(1)(b), the right to have access to sufficient food and water, and section 24(a) and (b) environmental rights.²⁹ People who live near improperly managed waste sites have been found to suffer from waste-related diseases, such

²⁰ Department of Environmental Affairs 2018 <http://sawic.environment.gov.za>.

²¹ Tomita *et al* 2020 *Lancet Planet Health* e224.

²² Pan *et al* 2023 *Environment International* 1.

²³ Tomita *et al* 2020 *Lancet Planet Health* e224.

²⁴ Dladla *et al* 2016 *African Journal of Science, Technology, Innovation and Development* 476.

²⁵ Wilson 2007 *Waste Management & Research Journal* 202.

²⁶ Adeleke *et al* 2021 *Transactions of the Royal Society of South Africa* 7.

²⁷ Du Plessis *The Fulfilment of South Africa's Constitutional Environmental Rights in the Local Government Sphere* 2.

²⁸ Sam-Uroupa and Ogiebu 2020 *Journal of Applied Science Environmental Management* 393.

²⁹ See section 27 (1)(b) & section 24 (a)(b) of the *Constitution*.

as typhoid, cholera, dysentery, and other water-related vector diseases. Uncollected waste could be the source of methane emissions, bad smells, air pollution, land and water contamination, and serve as breeding spaces for animals that transmit diseases to humans.³⁰

1.3 Motivation

How waste is managed influences the attainment of several Sustainable Development Goals.³¹ Sustainable Development Goal target 11.6 requires cities to reduce their per capita environmental impact and to pay attention to air quality and municipal and other waste management.³² Sustainable Development Goal 6.3 requires member states to improve water quality by reducing pollution and eliminating dumping and releasing hazardous chemicals and materials.³³ The achievement of Sustainable Development Goal target 6.3 is hindered by the illegal dumping of waste, as it is not classified as hazardous or non-hazardous waste.³⁴ Waste management regulation in South Africa cascades from Section 24 of the *Constitution of the Republic of South Africa, 1996* (hereafter the *Constitution*), which promises an “environment that is not harmful to health and well-being and the protection of the environment from pollution and ecological degradation for the enjoyment of present and future generations”.³⁵ To realise the environmental rights, the *National Environmental Management Act 107 of 1998* (hereafter *NEMA*),³⁶ and *Waste Act* were enacted. Furthermore, the municipalities have a legislative duty to pass and enforce waste management by-laws. Waste management by-laws may address different waste management issues specific to that municipality, including collection of waste, types and quantities of waste collected, methods of waste collection, and tariffs.³⁷

³⁰ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 5.

³¹ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 2.

³² Rodick & Wilson 2017 *Sustainability* 2.

³³ Rodick & Wilson 2017 *Sustainability* 2.

³⁴ Dladla *et al* 2016 *African Journal of Science, Technology, Innovation and Development* 476.

³⁵ Section 24 of the *Constitution of the Republic of South Africa, 1996*.

³⁶ Du Plessis 2018 *South African Journal on Human Rights* 192.

³⁷ Alberts & van Rooyen 2021 “Solid Waste Management” 13-28.

Section 2 of the *NEMA* provides for environmental management principles that must be considered when making decisions concerning the environment. These principles state that human needs must be placed at the forefront and that development must be sustainable.³⁸ Section 2(4) of the *NEMA* provides for the principle of sustainable development and the waste management hierarchy. It requires that the destruction of the ecosystem and loss of biological diversity be avoided, minimised or rehabilitated.³⁹ Section 2(4)(p) provides for the polluter pays principle, holding those responsible for environmental pollution accountable.⁴⁰ The *Waste Act* provides for the adoption of a National Waste Management Strategy (hereafter NWMS) to achieve the objectives of the Act and waste management hierarchy.⁴¹ The waste management hierarchy states that waste generation should be avoided, and where it cannot be entirely avoided, it should be reduced, reused, recycled, and disposed of as the least preferred waste management practice.⁴² The NWMS in 2012 had eight goals with targets that had to be realised by 2016. The purpose of the goals was to lay out the direction of waste management in the local sphere of government.⁴³ The 2020 NWMS has three pillars which, like the 2012 goals, indicates the direction waste management needs to take in the country. These pillars are waste minimisation, effective and sustainable waste services, compliance, enforcement and awareness.⁴⁴

An increase in waste generation is linked to population growth and rapid growth in economic activities.⁴⁵ The management of waste in South Africa is the responsibility of local government as per section 156(1)(a) read together with Schedule 5B of the *Constitution*.⁴⁶ The waste management function of local government is challenged by rapid population growth, urbanisation and consumerism, which lead to an

³⁸ Section 2 *NEMA*.

³⁹ See Section 2 (4) of *NEMA*

⁴⁰ Section 2(4)(p) *NEMA* read with sections 28 and 30A.

⁴¹ Oyakale 2018 *Enviro Dev Sustain* 2344.

⁴² *Waste Act* Preamble.

⁴³ Alberts & van Rooyen 2021 "Solid waste management" 13-10.

⁴⁴ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

⁴⁵ Etengeneng *Municipal Solid Waste Management in Grahamstown, Republic of South Africa* 1.

⁴⁶ Section 156(1)(a) & Schedule 5B of the *Constitution of the Republic of South Africa*, 1996.

increase in waste generation.⁴⁷ Rapid population growth and urbanisation lead to informal settlements characterised by overpopulation, overcrowding, and a lack of infrastructure and amenities.⁴⁸ Section 151(3) of the *Constitution* provides for the independence of local governments in governing matters in their area of jurisdiction subject to national and provincial legislation. Section 151 (2) “provides that local government has executive and legislative authority”.⁴⁹ In waste management, local governments act as both regulators and regulated entities. As the regulators they must monitor and regulate waste management activities in their area jurisdiction and as regulated entities, they must comply with waste licence conditions and norms and standards posed to them by the national and provincial sphere of government.⁵⁰ According to Du Plessis’s definition of local environmental governance, improper solid waste management means that the local governments have failed to comply with waste licence conditions and to regulate human activities related to waste management that harm environmental media and human health.⁵¹

Waste management instruments are essential as they help foster environmentally friendly waste treatment options and ensure efficient resource management.⁵² Municipalities may adopt local environmental governance instruments. These instruments can be classified into compliance-based, governance-based, governing-based, fiscal-based and civil-based instruments.⁵³ Compliance-based instruments are instruments that local governments can use to manage their compliance with waste laws, i.e., the waste management licence conditions posed by the national government.⁵⁴ Governance-based instruments are instruments that the municipalities can use to control their activities and processes, such as integrated development plans (hereafter IDPs) and services delivery and budget

⁴⁷ Ngema and Mbanga 2022 *Journal of Public Administration* 195.

⁴⁸ Ngema and Mbanga 2022 *Journal of Public Administration* 196.

⁴⁹ Section 151 (2) & (3) of the *Constitution*.

⁵⁰ Du Plessis *The Fulfilment of South Africa’s Constitutional Environmental Rights in the Local Government Sphere* 143.

⁵¹ See du Plessis’s *The Fulfilment of South Africa’s Constitutional Environmental Rights in the Local Government Sphere* 156.

⁵² Singh *et al* 2014 *Waste Management & Research* 806.

⁵³ Nel *et al* 2021 “Instruments for Local Environmental Governance” 3-9.

⁵⁴ Nel *et al* 2021 “Instruments for Local Environmental Governance” 3-13.

implementation plans.⁵⁵ Governing-based instruments are the instruments that municipalities can use to govern the activities of others in its area of jurisdiction. These include waste management by-laws.⁵⁶ These instruments are vital for the achievement of the waste management hierarchy, the outcomes set in the National Waste Management Strategy 2020, and to ensure environmental protection.

This research study focuses on municipal solid waste management and analyses the consequences of improper municipal solid waste management for human health, well-being, and the environment. In *South African Human Rights Commission v Msunduzi Local Municipality and others*, the court held that the municipality had violated the community's section 24 rights with its landfill site operation.⁵⁷ The Umsuduzi landfill site was found to have an inadequate waste assessment and classification system as containers of hazardous chemical substances were found on the landfill site. The leachate management system was ineffective and leachate was seeping into the environment,⁵⁸ and fire broke out at the landfill site, resulting in air pollution and leading to school closures.⁵⁹ This research study aims to understand the effects of waste on human health and well-being, the impacts of solid waste on different environmental media, and the instruments that local governments can use to ensure proper waste management practices.

1.4 Research Question

To what extent does improper solid waste management affect human health, well-being and the environment in South Africa?

⁵⁵ Nel *et al* 2021 "Instruments for Local Environmental Governance" 3-24.

⁵⁶ Nel *et al* 2021 "Instruments for Local Environmental Governance" 3-33.

⁵⁷ *South African Human Rights Commission v Msunduzi Local Municipality and others* 2021 3 All SA 939 (KZP) Para 101.

⁵⁸ *South African Human Rights Commission v Msunduzi Local Municipality and others* 2021 3 All SA 939 (KZP) Para 34 & 35.

⁵⁹ *South African Human Rights Commission v Msunduzi Local Municipality and others* 2021 3 All SA 939 (KZP) Para 47.

1.5 Research Aim and Objectives

This study aims to investigate the legal implications of improper municipal solid waste management on human health and the environment.

- The objectives of this study are to:
 - determine the effects of improper municipal solid waste management on human health and the environment;
 - determine the legal framework of waste management in South Africa;
 - determine compliance and enforcement instruments of environmental law; and
 - provide recommendations to eradicate improper solid waste management.

1.6 Research Methods

The study relied on qualitative research methods to determine the legal implications of improper waste management for human health, well-being, and the environment. Qualitative research methods are concerned with selecting and weighing materials while observing the hierarchy and authority of sources.⁶⁰ This research study consulted primary and secondary sources of law. Primary sources included international law, the *Constitution*, legislation, and case law. Secondary sources included journal articles, books, book chapters, and internet sources. The PER Referencing Style will be used throughout this research study.

1.7 Framework

Chapter 1: Introduction: This chapter provides an outline of the study, the problem statement, the research question, the aim and objectives of the study, the research methodology and the framework of the study.

Chapter 2: Chapter 2 explores the effects of improper municipal solid waste management on human health and the environment. This chapter

⁶⁰ Dobinson and Johns 2017 "Legal Research as Qualitative Research" 42.

covers the impacts of improper municipal solid waste management on soil, air quality, water quality and human health.

Chapter 3: Chapter 3 evaluates the legal framework of waste management in South Africa. This chapter focuses on the regulation of waste management in South Africa, from the Constitution, National Environmental Management Act 107 of 1998, National Environmental Management: Waste Act 59 of 2008 and other relevant legislation in the local government.

Chapter 4: This chapter probes compliance and enforcement of waste regulations in South Africa. This chapter will explore the compliance and enforcement instruments of waste management as well as the parties responsible for the enforcement of waste management regulations.

Chapter 5: Conclusion and recommendations. This chapter will conclude the study and provide recommendations.

1.8 Relevance for Research Unit

This study aims to determine the consequences of improper waste management for human health, well-being, and the environment. This study links improper waste management to health and environmental problems and helps to advocate for stricter regulations and compliance and to provide measures for those responsible for improper waste management practices to be held accountable. This research study falls under the Law, Justice, and Sustainability Research Unit, specifically in the Environmental Change Research Project of the Faculty of Law of the North-West University.

1.9 Ethics Statement

This research study relied on qualitative research methods. It explored primary and secondary sources of law which are acknowledged by means of references in the

footnotes throughout the study. There were no human interactions such as interviews in which sensitive topics could be discussed and that could be regarded as embarrassing or upsetting. Considering this, an ethics clearance certificate is not required from the Ethics Committee of the Faculty of Law for purposes of this study.

1.10 Summary

Waste generation is linked to urbanisation and population growth. Proper waste management is important to ensure quality of life. Waste has negative effects on the environment and human health. Section 24 of the *Constitution* promises an environment that is not harmful to human health and well-being. Improper waste management threatens the realisation of section 24 rights. With 31% of the South African population lacking access to proper waste management, many resort to improper options such as waste burning and illegal dumping. Improper waste management has consequences for the air quality, water quality, soil quality and fertility of the soil. Strides must be made to move waste management in South Africa up the waste management hierarchy.

1.10 Definitions of key terms

Waste is classified into two groups, hazardous waste and general waste.⁶¹ It is classified further into municipal and industrial waste for disposal at a sanitary landfill site.⁶² Hazardous waste is defined as:

Any waste that contains organic or inorganic elements or compounds that may, due to their inherent physical, chemical, or toxicological characteristics, have a detrimental impact on human health and the environment.⁶³

General waste is defined as:

Waste that does not pose an immediate hazard or threat to human health or the environment and includes domestic waste, building and demolition waste, business waste, inert waste and any other waste not classified as hazardous in terms of Waste Classification Regulations.⁶⁴

⁶¹ Section 1 *National Environmental Management: Waste Act* 59 of 2008 (hereafter Waste Act).

⁶² Bosman *et al* "Integrated Waste Management" 1093.

⁶³ Section 1 *Waste Act*.

⁶⁴ Section 1 *Waste Act*.

Waste can be in solid, liquid, or gaseous form.⁶⁵ Solid waste is defined by the World Health Organization as any garbage, trash, refuse, or discarded material and can be distinguished according to where it was generated, i.e., municipal solid waste, health care solid waste and e-waste.⁶⁶

The next chapter discusses the impacts of improper municipal solid waste management on human health and the environment.

⁶⁵ Bosman *et al*/"Integrated Waste Management" 1055.

⁶⁶ WHO 2021 <http://who.int/tools/compendium-on-health-environment/solid>.

Chapter 2: The effects of improper municipal solid waste management on human health and the environment

2.1 Introduction

South Africa has undergone four legislative stages of waste management, the first stage being the stage that focused on the regulation of waste disposal sites. The second stage was the introduction of recycling, which led to the banning of single-use plastic bags and the Polokwane Declaration. This stage was aimed at diverting waste from landfill sites. The third stage introduced several laws aimed at moving South African waste management up the waste management hierarchy and protecting human health and the environment from the negative impacts of poor waste management.⁶⁷ The flood of legislation era introduced several regulations, including the regulation for classification and management of waste, norms and standards for assessing waste for landfill disposal and extended producer responsibility.⁶⁸ The first two stages are based on command and control and some reliance on economic instruments. In the third stage, we saw the incorporation of civil instruments. The introduction of civil instruments is seen in the strategic thrust of pillar 3 of the National Waste Management Strategy. The level of success of these regulations in ensuring environmental protection is debatable.

Site selection for a landfill site is critical because landfill sites constructed close to residential areas are associated with the accumulation of methane gas and the contamination of water sources.⁶⁹ Landfill by-products are determined by the quantity and quality of waste disposed, the number of years the landfill site has operated, and the area's climatic conditions.⁷⁰ The by-products of a landfill site include the gas emitted, the liquid produced, and the microbial activity at the landfill site.

⁶⁷ Godfrey and Oelofse 2017 *Resources* 7.

⁶⁸ See section 7 of the *Waste Act*.

⁶⁹ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58517.

⁷⁰ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58536.

Waste management measures are implemented to reduce the negative effects of waste on human health and the environment and to recover resources from waste.⁷¹ The risk waste has for human health and the environment can only be determined by properly classifying all substances and wastes.⁷² The production and the type of waste produced depend on changing consumption patterns. Therefore, waste classification and quantification must be continuous.⁷³ Waste generation patterns help to provide an estimation of resources required for waste management and the materials that could be required.⁷⁴ Bosman *et al*⁷⁵ hold that the classification of waste is important to understand management advantages and to legislate waste according to the level of risk it poses to human health and the environment. The complexity of waste produced by households, private and public companies can have both negative and positive consequences for biodiversity.

This chapter discusses the impacts of improper municipal solid waste management on soil, air quality, water and human health.

2.2 Impacts of municipal solid waste on soil

Rodseth *et al*⁷⁶ hold that South Africa has the characteristics of a developed country with high urbanisation, wealth and infrastructure, and these characteristics can be observed from the complexity of the waste stream as well. Waste management is not provided equally in South Africa as low-income areas receive inadequate services as opposed to middle and high-income areas.⁷⁷ It is estimated that only 69% of households in South Africa receive waste management services, with the rest relying on unregulated waste management options, such as illegal dumping, waste burning, and unlicensed landfill sites.⁷⁸ Unregulated waste management options such as illegal dumping result in physiochemical and biological processes in

⁷¹ Bosman *et al* 2018 "Integrated Waste Management" 1064.

⁷² Bosman *et al* 2018 "Integrated Waste Management" 1071.

⁷³ Tshelaza *et al* 2022 *International Journal of Environment and Waste Management* 211.

⁷⁴ Tshelaza *et al* 2022 *International Journal of Environment and Waste Management* 212.

⁷⁵ Bosman *et al* 2018 "Integrated Waste Management" 1072.

⁷⁶ Rodseth *et al* 2020 *South African Journal of Science* 1.

⁷⁷ Fakoya 2014 *Journal of Human Ecology* 119.

⁷⁸ Rodseth *et al* 2020 *South African Journal of Science* 2.

and around the surrounding environment where the waste is accumulated.⁷⁹ Organic waste may be beneficial to soil fertility within limits, but excessive disposal of household waste on soil may lead to changes in the physical and physicochemical properties of soil.⁸⁰ A study conducted by Anikwe and Nwobodo⁸¹ found that the waste disposed in soil altered the physicochemical properties of soil and affected the productivity of the sites to be used for agricultural purposes. Soil is essential for the maintenance of all life forces, as it provides critical nutrients for the growth and development of plants.⁸² Anikwe and Nwobondo⁸³ found that the soil at landfill sites was more fertile but had higher heavy metal levels than the non-dumpsite soil. They held that the decomposing organic municipal waste caused the higher fertility levels. The presence of toxic chemical substances in the soil causes the soil to be less productive,⁸⁴ and the presence of methane in the soil could cause the death of plants.⁸⁵ The inability of the soil to produce edible plants could elevate the level of hunger and malnutrition.

Municipal solid waste consists mainly of organic waste, clothing articles and paper waste, but includes household hazardous waste, automatic batteries, mercury, nickel, or cadmium batteries, and nondegradable shopping bags.⁸⁶ "Cadmium, nickel and mercury are harmful to plants even at low concentrations."⁸⁷ The presence of these heavy metals in the soil is harmful to plants and can also cause the death of important soil organisms that aid in plant growth, drastically affecting the food web.⁸⁸ The consumption of plants directly from soil contaminated with heavy material can result in developmental issues, immune system damage, and hormone

⁷⁹ Sam-Uroupa and Ogbeibu 2020 *Journal of Applied Sciences and Environmental Management* 393.

⁸⁰ Anikwe and Nwobodo 2002 *Bioresource Technology* 241.

⁸¹ Anikwe and Nwobodo 2002 *Bioresource Technology* 249.

⁸² Sam-Uroupa and Ogbeibu 2020 *Journal of Applied Sciences and Environmental Management* 396.

⁸³ Anikwe and Nwobodo 2002 *Bioresource Technology* 248.

⁸⁴ Khumalo *Environmental Impact of Household Solid Waste Disposal Practices on Plant Growth in Rural Areas of KwaZulu-Natal: A Case Study of UThukela District Municipality* 71.

⁸⁵ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58536.

⁸⁶ Sakai *et al* 1996 *Waste Management* 345.

⁸⁷ Khumalo *Environmental Impact of Household Solid Waste Disposal Practices on Plant Growth in Rural Areas of KwaZulu-Natal: A Case Study of UThukela District Municipality* 28.

⁸⁸ Khumalo *Environmental Impact of Household Solid Waste Disposal Practices on Plant Growth in Rural Areas of KwaZulu-Natal: A Case Study of UThukela District Municipality* 28.

interference.⁸⁹ Dladla *et al*⁹⁰ hold that heavy metals gain access to human bodies via the ingestion of leafy vegetables, where they accumulate from contaminated soil. The effects of ingesting vegetables contaminated with heavy metals could be delayed, depending on the consumed concentration. Heavy metals are non-biodegradable and are transformed from one oxidative state to another and this process can make them more soluble in water so that they percolate or runoff into groundwater and surface water sources.⁹¹

2.3 Effect of municipal solid waste on water

South Africa is experiencing water shortages, and many South Africans depend on groundwater for domestic and agricultural use. Groundwater is generally considered safe and of high quality because it is protected from the atmosphere.⁹² Improper solid waste management services threaten the quality of groundwater and surface water sources. Once groundwater sources have become heavily polluted, they cannot be cleaned, as cleaning of groundwater is not feasible. A study conducted in Juba, South Sudan, to determine the impact of a solid waste disposal site near the Nile River, found that the faecal coliform concentration in the river water was above the World Health Organization's (WHO) recommended limit. However, the study noted that the disposal of sewerage into the river could have influenced the results.⁹³ In a study conducted in Umthatha, the researchers found that there were high *E.coli* values in areas where there were large numbers of disposable nappies that were improperly disposed of.⁹⁴ With the increased use of disposable nappies, contamination of water sources with faecal bacteria from improper solid waste disposal cannot be excluded. Water quality is not only compromised by waste directly disposed into water sources. When rain percolates through waste dumped improperly or in an open waste dumpsite, leachate is produced, which poses a threat

⁸⁹ Khumalo *Environmental Impact of Household Solid Waste Disposal Practices on Plant Growth in Rural Areas of KwaZulu-Natal: A Case Study of UThukela District Municipality* 28.

⁹⁰ Dladla *et al* 2016 *African Journal of Science, Technology, Innovation and Development* 476.

⁹¹ Nkqenkqa *Metal and microbial contamination of agricultural soil and the Veldwachtors River, Stellenbosch, South Africa* 12.

⁹² Nyika *et al* 2022 *Materials Today: Proceedings* 1.

⁹³ Loboka *et al* 2013 *International Journal of Environmental Sciences* 1619.

⁹⁴ Bangani *et al* 2023 *Water Practice & Technology* 1019.

to water quality. Leachate is a liquid that is formed by the percolation of precipitation water through an open landfill site.⁹⁵ Leachate is rich in organic, inorganic, and chemical substances. The composition of leachate varies depending on climatic conditions, solid waste composition, precipitation, and landfill site characteristics.⁹⁶ When leachate is not collected or properly managed it can contaminate surrounding areas and seep into groundwater. A study aimed at determining the effect of solid waste disposal facilities on groundwater found that groundwater had high values of total dissolved solids, electrical conductivity and chemical oxygen demand.⁹⁷ High values of total dissolved solids and oxygen demand point to the presence of both organic and inorganic materials in the water,⁹⁸ affecting the salinity of the water.⁹⁹ The concentration of these elements in water alters its taste and smell.

During rainy seasons, improperly disposed waste can block the stormwater drainage system, resulting in localised flooding and inhibiting the natural flow of water and accumulated water, leading to the deterioration of the stormwater drainage infrastructure.¹⁰⁰ Waste dumped on street corners traps rainwater, providing favourable conditions for mosquito breeding, the vectors responsible for the spread of malaria. Mosquitoes, cockroaches, stray dogs and cats can be found throughout the year at dumpsites. South Africa is bordered by malaria-endemic countries and has the malaria vector. Therefore, an increase in mosquito breeding spaces could cause an increase in the malaria cases normally seen in wet summer months in Limpopo, Mpumalanga, and northern KwaZulu-Natal.¹⁰¹ These animals and insects always find their way into households, making them vehicles of infectious disease. Disease-causing microorganisms also jump from landfill sites to human hosts.¹⁰² Improperly stored and disposed refuse provides food, shelter and favourable breeding media for mosquitoes.

⁹⁵ Aziz *et al* 2010 *Journal of Environmental Management* 2608.

⁹⁶ Aziz *et al* 2010 *Journal of Environmental Management* 2613.

⁹⁷ Vasanthi *et al* 2008 *Environmental Monitoring and Assessment* 232.

⁹⁸ Vasanthi *et al* 2008 *Environmental Monitoring and Assessment* 233.

⁹⁹ Mor *et al* 2006 *Environmental Monitoring and Assessment* 7.

¹⁰⁰ Godfrey *et al* 2019 *Regional Development in Africa* 4-5.

¹⁰¹ National Department of Health 2018 <http://www.health.gov.za>.

¹⁰² Onen and Bassey 2017 *IOSR Journal of Humanities and Social Science* 118.

Unsorted household waste can introduce both chemical and microbiological pollutants into surface water. Waste disposed in water sources is responsible for an increase in nutrients, which in turn increases water vegetation growth, causing a decrease in oxygen levels in water.¹⁰³ High levels of nitrates have a negative impact on fish by affecting their growth and reproductive success.¹⁰⁴ A river that runs through an informal settlement was found to have high levels of *E.coli* during dry seasons in a study conducted in Gauteng. The researchers believed that people living in the informal settlement deposit their waste directly into the river due to the lack of infrastructure and waste removal services.¹⁰⁵

2.4 The effects of municipal solid waste on air quality

Informal settlements are the leading cause of illegal dumping. This is because they are dense, with limited road access, poor spatial planning and settlement layout, and illegal land tenure, all of which result in inadequate or completely absent waste removal services.¹⁰⁶ When there are no waste removal services and recycling facilities, households resort to improper waste management practices. Uncontrolled waste burning is one of the most common options.¹⁰⁷ Burning waste produces dioxins, particulate matter, and polycyclic aromatic hydrocarbons.¹⁰⁸ When waste is burned, it produces smoke and ash, compromising air quality. In the Umsuduzi Local Municipality, fires broke out at the waste disposal site, compromising air quality to the extent that schools had to be closed due to health and safety concerns in the community.¹⁰⁹ Another major fire that broke out at the waste disposal site produced so much smoke that it led to the closure of the N3 freeway due to reduced visibility.¹¹⁰ Waste burning emits particulate matter, carbon monoxide, and hydrocarbons,

¹⁰³ Bangani *et al* 2023 *Water Practice & Technology* 1018.

¹⁰⁴ Phaleng *Anthropogenic impacts on the integrity of the Blesbokspruit catchment: A case study of surface water pollution* 134.

¹⁰⁵ Van der Hoven *et al* 2017 *Environmental Nanotechnology, Monitoring & Management* 13.

¹⁰⁶ Rodseth *et al* 2020 *South African Journal of Science* 1.

¹⁰⁷ Rodseth *et al* 2020 *South African Journal of Science* 5.

¹⁰⁸ Sivertsen 2006 *WIT Transactions on Ecology and the Environment* 453.

¹⁰⁹ *Umsuduzi case* 47.

¹¹⁰ *Umsuduzi case* 51.

Sivertsen¹¹¹ contends that burning garden deposits emit three to four times as much carbon monoxides as an idling car.

Waste disposal at landfills releases landfill gas. The composition of landfill gas depends on the pH, moisture content, availability of nutrients and the time of placement.¹¹² The decomposition of organic solid waste under anaerobic conditions in landfill sites produces, among other trace elements, 40% of Carbon dioxide and 60% of methane gas.¹¹³ Landfill gas is generated from the decomposition of organic materials. It continues to be generated until most organic matter has fully decomposed, which takes between 20 and 30 years.¹¹⁴ Methane gas is more potent than carbon dioxide. Methane gas is highly toxic and volatile and contributes to global warming when released into the atmosphere.¹¹⁵ Landfill sites also release hydrogen sulphide, which is an odorous gas. This odorous gas can travel through the air to areas around the landfill sites,¹¹⁶ and inhalation of these gases can irritate the respiratory tract and potentially lead to the development of asthma.¹¹⁷ A positive correlation was established between hydrogen sulphur and mortality for lung cancer and other respiratory tract diseases and hospitalisation for respiratory tract diseases, especially in children.¹¹⁸

Solid waste management activities, from collection, transportation, loading, unloading, disposal, and compaction, all have a negative impact on air quality.¹¹⁹ The effects of solid waste management activities include exhaust emissions from waste trucks, generation of particulate matter (PM 10 AND PM 2.5) from waste landfilling and compaction, and landfill gas from decomposing waste.¹²⁰ These

¹¹¹ Sivertsen 2006 *WIT Transactions on Ecology and the Environment* 452.

¹¹² Sivertsen 2006 *WIT Transactions on Ecology and the Environment* 450.

¹¹³ Raza *et al* 2021 *Processes* 3.

¹¹⁴ Scheutz 2002 *Attenuation of Methane and Other Trace Organics in Landfill Soil Cover* 3.

¹¹⁵ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58536.

¹¹⁶ Sivertsen 2006 *WIT Transactions on Ecology and the Environment* 451.

¹¹⁷ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58536.

¹¹⁸ Mataloni *et al* 2016 *International Journal of Epidemiology* 813.

¹¹⁹ Raza *et al* 2021 *Processes* 7.

¹²⁰ Raza *et al* 2021 *Processes* 5.

emissions compromise air quality, negatively affect human health, and add to climate change.

2.5 The effects of poor municipal solid waste management on human health

Uncontrolled waste burning releases dioxins, PAH, and fine particulate matter (PM 2.5).¹²¹ PM 2.5 has a large surface area because it is a finer particulate matter. It can land deep into the bronchioles when inhaled. The toxicity and carcinogenicity of these particulate matter are not dependent on the type of waste that is being burned.¹²² A study conducted by Tomita *et al*¹²³ found that people living within a 5km radius of landfill sites have an increased risk of asthma, diabetes, and tuberculosis. The prevalence of asthma in people living within a five-kilometre radius of the landfill site can be associated with the inhalation of finer particulate matter (PM 2.5). The links between poor waste management and ill health are unknown as it is difficult to measure exposure time and concentration of the pollutant. It is also difficult to exclude other causes of ill health in people within a five-kilometre radius.¹²⁴ Tomita *et al*¹²⁵ found that people living close to municipal waste landfill sites were at risk of developing respiratory tract diseases. They reported a lack of clinical diagnosis data and self-reporting as a limitation of the study. The Umsunduzi Local Municipality attempted to use this poorly established link between improper waste management and ill health but later abandoned the argument. The municipality contended that pollution could not be considered harmful or at an unacceptable level without any scientific or medical evidence.¹²⁶ This was because other possible sources of exposure could not be ruled out entirely.

¹²¹ Sivertsen 2006 *WIT Transactions on Ecology and the Environment* 453.

¹²² Sivertsen 2006 *WIT Transactions on Ecology and the Environment* 454.

¹²³ Tomita *et al* 2020 *The Lancet Planetary Health* e232.

¹²⁴ Ziraba *et al* 2016 *Archives of Public Health* 6.

¹²⁵ Tomita *et al* 2020 *The Lancet Planetary Health* e232.

¹²⁶ *South African Human Rights Commission v Msunduzi Local Municipality and others* 2021 3 *All SA* 939 (KZP) Para 58.

Decomposing organic waste provides a nutrient-rich medium that cultures the growth of disease-causing microorganisms in humans.¹²⁷ This nutrient-rich medium attracts animals and insects such as flies that act as vectors and transport these disease-causing microorganisms to humans. Spore-forming and non-spore-forming bacteria were isolated from soil samples taken adjacent to the landfill site in Cape Town. The isolated bacteria include *Klebsiella pneumonia*, *Bacillus species*, *Citrobacter*, *Lysinibacillus*. The other bacterial species isolated were presumed to belong to the family of *Enterobacteriaceae*.¹²⁸ However, the presence of these microorganisms at landfill sites differs among different landfill sites because of different waste streams, climatic conditions and other factors.

Bacteria can gain access to human bodies via ingestion, inhalation, and mechanical vectors such as flies, mosquitoes or rodents. In addition to the well-known modes of bacterial transmission, there is a common practice of reusing containers recovered from landfill sites to carry water meant for domestic use. This practice introduces pathogenic bacteria from the landfill site into the most impoverished homes. The consumption of food contaminated with *Bacillus* species can cause food poisoning. *Bacillus* species spores can be carried by contaminated items or by air from landfill sites to homes.¹²⁹

Odum *et al*¹³⁰ believe that bacteria isolated at waste landfill sites could be drug-resistant as these bacteria are exposed to improperly disposed medicines. The isolation of drug-resistant bacteria from landfill sites is a major problem for public health as the antibiotic treatment used to treat bacterial infections will be ineffective and could give rise to new diseases.¹³¹

Rats act as reservoirs of infections and diseases that can be passed on from animals to humans, including the helminth parasites.¹³² The rodent species *R. Rectus* has

¹²⁷ Ziraba *et al* 2016 *Archives of Public Health* 7.

¹²⁸ Nkqenkqa *Metal and microbial contamination of agricultural soil and the Veldwachters River, Stellenbosch, South Africa* 70-71.

¹²⁹ Odum *et al* 2020 *FUDMA Journal of Sciences* 641.

¹³⁰ Odum *et al* 2020 *FUDMA Journal of Sciences* 639.

¹³¹ Odum *et al* 2020 *FUDMA Journal of Sciences* 641.

¹³² Mohd Zain *et al* 2012 *Parasites & Vectors* 18.

been found to harbour more parasites than other rodent species, and this particular species is said to be attracted to refuse dumps and cooked foods.¹³³ In their quest to find cooked food in households, these rats can contaminate homes with their fur and rat fleas, which are known to carry the causative agent of bubonic plague.¹³⁴ They can contaminate food with the parasites they carry. Eight types of parasites were isolated in rat droppings in a study conducted in eThekweni. Isolated parasites included the *Ascaris* species, *Lumbricoides* and other parasites of which rats are not the host.¹³⁵ In humans, helminth infestation has been associated with iron deficiency anaemia¹³⁶ because these worms attach and feed on their host. Infestation with *Trichuris* and *Ascaris Lumbricoids* has been associated with rectal prolapse and obstruction of the bile ducts, respectively.¹³⁷ These worms have also been proven to cause retardation in physical and intellectual growth in children.¹³⁸ Children infected with *Ascaris* develop signs and symptoms of peritonitis,¹³⁹ which is the inflammation of the stomach. The presence of intestinal worms in samples collected at landfill sites indicates the presence of faecal matter, which means that the presence of *E.coli* cannot be excluded.

Waste pickers recovering waste from landfill sites can also carry disease-causing microorganisms to their families since they are exposed to rat infestations at the waste disposal site and illegal dumpsites, which puts them at high risk of contracting helminths and bacterial infections.¹⁴⁰ Several studies have indicated that waste pickers do sometimes erect shelters with no sanitation facilities at the waste disposal sites and they consume foodstuffs they gather from the landfill sites. They are therefore at risk of contracting food poisoning or infections that are transmitted via the faecal-oral route such as Polio and cholera. Groundup on 25 July 2023 reported the death of three children who died mysteriously after playing on a dumpsite. The

¹³³ Mohd Zain *et al* 2012 *Parasites & Vectors* 18.

¹³⁴ Mohd Zain *et al* 2012 *Parasites & Vectors* 2.

¹³⁵ Archer *et al* 2017 *Southern African Journal of Infectious Diseases* 61.

¹³⁶ Lustigman *et al* 2012 *PLoS Neglected Tropical Diseases* 4.

¹³⁷ Lustigman *et al* 2012 *PLoS Neglected Tropical Diseases* 4.

¹³⁸ Bethony *et al* 2006 *The lancet* 1521.

¹³⁹ Bethony *et al* 2006 *The lancet* 1527.

¹⁴⁰ Mangizvo and Wiseman 2012 *Online Journal of Social Sciences Research* 129.

families of the children suspected that the children might have eaten something from the dumpsite.¹⁴¹ Infections transmitted via the faecal-oral route can be passed on from person to person, and when paired with poor hygiene practices, these infections can result in a full-blown outbreak.

2.6 Conclusion

Improper solid waste management affects the soil as the principal receiver, the water sources, and air quality. Uncollected waste changes the physical, chemical and biological properties of the soil. These changes affect the ability of the soil to provide nutrients required for plant growth, affecting the quantity and quality of food produced by the contaminated ground. Depending on the composition of the waste disposed on open land, pollutants can be washed off from the waste into water sources, negatively affecting the quality of water meant for consumption and the aquatic environment. Organic waste can be used as fertilisers when used within limits, but the presence of organic waste in marine environments has dire consequences as it promotes overgrowth of aquatic plants, which leads to the depletion of oxygen in water and resulting in the death of aquatic animals, disrupting the food chain and contributing to poverty. Poor separation of solid waste at source introduces medical waste at municipal landfill sites. Microorganisms develop antibiotic resistance from being exposed to the medical waste and disinfectants from healthcare facilities. Antibiotic-resistant microorganisms pose a huge problem for public health as most diseases cannot no longer be treated effectively with antibiotics. The resistance to antibiotics could mean the introduction of new diseases. Improper waste management provides food, shelter and breeding sites for vectors that transport these microorganisms to humans and cause disease.

Waste burning is a commonly used method of waste management in informal settlements and other areas where waste collection services are not available.¹⁴² Burning waste releases dioxins, particulate matter, GHG and other trace elements. The release of these substances into the atmosphere contributes to air pollution and

¹⁴¹ Phaliso 2023 <http://www.groundup.org.za>.

¹⁴² Nyika *et al* "Waste Management in South Africa" 341.

acid rain.¹⁴³ Poor air quality causes an increase in respiratory tract infections and other health conditions linked to the substances released. Greenhouse gases released by decomposing waste contribute to climate change, which has been linked to several natural disasters such as floods and draughts felt by the entire world. The effect of improper waste management on the environment threatens human life in so many ways as the quality of human life depends on the quality of the environment in which humans live. Closing the gap in waste management practices in South Africa should be prioritised and more effort should be directed at changing people's attitude to proper waste management practices.

The next chapter analyses the legal framework for waste management in South Africa.

¹⁴³ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58524.

Chapter 3: Legal framework for waste management in South Africa

3.1 Introduction

High population growth and increased waste generation are major social and governance challenges.¹⁴⁴ Only 69% of South African households have access to formal waste removal services; the remaining 31% rely on unsustainable waste management practices such as open burning, which pose several challenges, such as resource depletion, environmental pollution, and public health issues.¹⁴⁵ Solid waste management is essential for sustainable development and ensures that several sustainable development goals are achieved.¹⁴⁶ Improper waste management practices, such as waste burning and illegal disposal, affect resource extraction and air quality, pollute surface and groundwater bodies, and pose health challenges.¹⁴⁷ Improper waste management also poses a threat to life underwater.¹⁴⁸ Proper waste management measures are measures that are employed to reduce the effect of waste on health, environment, or aesthetics and to recover resources.¹⁴⁹ Proper solid waste management can be made possible by the implementation of waste mitigation measures that address waste at each level of the waste management hierarchy.¹⁵⁰ Galvovic¹⁵¹ believes that “environmental quality is a desirable objective, and a legal theory is required to accommodate this objective and provide means to secure it”.

This chapter analyses the legislative framework for waste management in South Africa, as well as the role the inclusion of environmental rights in the *Constitution* has played in the development of legislation aimed at environmental protection.

¹⁴⁴ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 1.

¹⁴⁵ Rodseth *et al* 2020 *South African Journal of Science* 2.

¹⁴⁶ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 1.

¹⁴⁷ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 2.

¹⁴⁸ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 6.

¹⁴⁹ Bosman *et al* 2018 “Integrated Waste Management” 1064.

¹⁵⁰ Abubakar *et al* 2022 *International Journal of Environmental Research and Public Health* 8.

¹⁵¹ Glavovic 1988 *Comparative and International Law Journal of Southern Africa* 60.

This chapter also analyses the *NEMA, Waste Act* and other legislation applicable to local environmental governance.

3.2 The Constitution of the Republic of South Africa

The environment was not a priority for the South African government between 1972 and 1992. Environmental protection was reactive, and the reaction was not coordinated because different departments dealt with environmental issues.¹⁵² The development of waste management legislation was uncoordinated, leading to several waste management laws being promulgated. Some focused on institutional arrangements for waste management, some aimed at controlling waste from specific sources, and some were based on their classification.¹⁵³ In the new democratic South Africa with constitutional supremacy, the *Constitution* serves as a framework for environmental legislation.¹⁵⁴ Nel and Du Plessis¹⁵⁵ hold that section 24 provides a principal framework based on which other environmental legislation must be interpreted. Section 24 mandates environmental governance in South Africa.¹⁵⁶ Section 24(a) promises “everyone a right to an environment that is not harmful to health and well-being”, and improper waste management threatens the achievement of this right. In *South African Human Rights Commission v. Umsunduzi Local Municipality and Others* (hereafter *Umsunduzi Case*),¹⁵⁷ the court found that the municipality breached section 24 rights by not adhering to its waste management licence conditions. Du Plessis¹⁵⁸ believes that the quality of human life depends on the quality of the environment. Section 24(b) obligates the state to take reasonable action to ensure environmental protection, even when no statutes force the state to act.¹⁵⁹ Section 7(2) of the *Constitution* requires the state to respect,

¹⁵² Steyn 2001 *Historia* 25.

¹⁵³ Bosman et al 2018 “Integrated Waste Management” 1088.

¹⁵⁴ Nel and du Plessis 2001 *South African Journal of Environmental Law and Policy* 2.

¹⁵⁵ Nel and du Plessis 2001 *South African Journal of Environmental Law and Policy* 2.

¹⁵⁶ Hamann et al 2000 *South African Geographical Journal* 3.

¹⁵⁷ *South African Human Rights Commission v Umsuduzi Local Municipality and others* 2021 3 All SA 939 (KZP) Para.101.

¹⁵⁸ Du Plessis 2018 *South African Journal on Human Rights* 193.

¹⁵⁹ Nel and du Plessis 2001 *South African Journal and Environmental Law* 3.

protect, promote, and fulfil the rights of the Bill of Rights. Du Plessis¹⁶⁰ holds that environmental rights include both a right of action and the right of recipience, with the state expected to take positive action.

Section 40 of the *Constitution* establishes three distinct, interdependent, and interrelated spheres of government: the national, provincial, and local spheres of government. The *Constitution* provides that environmental governance is a shared function of the national and provincial governments.¹⁶¹ Local government is the government structure closest to the people. Section 156 of the *Constitution* entrusts municipalities with functions listed in Schedules 4B and 5B. In Schedules 4 and 5 the environment is not listed as a function of local government, but municipalities have an important role to play in ensuring the protection of the environment.¹⁶² However, local governments cannot be left to their own devices. Section 139 of the *Constitution* provides for provincial governments to intervene in cases where the local government is failing to meet its constitutional obligations.¹⁶³

3.3 National Environmental Management Act 107 of 1998

The *NEMA* was promulgated to realise the constitutional provisions of section 24.¹⁶⁴ It does not regulate waste management directly but aims to regulate cooperative environmental governance by providing principles for environmental management, promoting cooperative environmental governance, and providing functions and processes to ensure coordinated environmental governance.¹⁶⁵ The *NEMA* as a framework of legislation must embrace all fields of environmental concern, including pollution control, waste management, land use, and so on.¹⁶⁶ Section 2 of the *NEMA* provides for environmental management principles that apply to the actions or decisions of the departments and officials of the state concerned with the

¹⁶⁰ Du Plessis *Fulfilment of South Africa's constitutional environmental right in the local government sphere* 27.

¹⁶¹ Nel and du Plessis 2001 *South African Journal and Environmental Law* 2.

¹⁶² Du Plessis 2015 *Potchefstroom Electronic Law Journal* 1859.

¹⁶³ See Section 139 of the *Constitution*.

¹⁶⁴ Komane *Waste reclaimers and South African environmental law* 2.

¹⁶⁵ Du Plessis 2015 *Potchefstroom Electronic Law Journal* 1860.

¹⁶⁶ Mngoma *et al* 2011 *African Journal of Public Affairs* 109.

environment.¹⁶⁷ Oosthuizen *et al*¹⁶⁸ hold that these principles are a fundamental norm within a value system that informs rational or logical reasoning. These principles must be applied when human conduct or actions against the environment are evaluated.¹⁶⁹ The core of section 2 of the *NEMA* is the principle of sustainable development, which includes the waste management hierarchy, the polluter pays principle, and precautionary and public participation principles.¹⁷⁰

The principle of waste management hierarchy is set out in section 2 (4)(iv) of the *NEMA*, which provides that “waste should be avoided, and where it cannot altogether be avoided it should be minimised, reused, or recycled, and otherwise be disposed of sustainably”. Waste avoidance and minimisation measures can be better developed and implemented in the design, composition, and manufacturing of products. The polluter pays principle is provided for in section 2 (4)(p) of the *NEMA*. The aim of the polluter pays principle is to ensure that those who are responsible for polluting or degrading the environment pay the price of remedying the environmental damage or the negative health consequences of the pollution. The precautionary principle provides that a precautionary and risk-averse approach is applied when decisions affecting the environment are taken and that the limits of current knowledge and consequences of decisions and actions are considered.¹⁷¹ The principle of public participation involves the participation of members of the community when developing waste management policies and ensuring that members of the community are educated on the effects of poor waste management on their environment and their health.¹⁷²

Section 28 of the *NEMA* provides a duty of care to prevent and correct significant environmental pollution and specifies on whom section 28(1) imposes the obligation to prevent and correct environmental pollution. This section is not an enforcement tool that can be taken lightly, as it requires the state to take necessary measures to

¹⁶⁷ See section 2 *NEMA*.

¹⁶⁸ Oosthuizen *et al* 2018 “Environmental Management Act 107 of 1998 (*NEMA*)” 134.

¹⁶⁹ Oosthuizen *et al* 2018 “Environmental Management Act 107 of 1998 (*NEMA*)” 135.

¹⁷⁰ Couzens 1999 *SAJELP* 15.

¹⁷¹ Section 2(4)(vii) of *NEMA*.

¹⁷² See section 2 (4)(f) of *NEMA*.

remedy any environmental pollution should the person responsible for such harm fail to take the required measures. The section can only be enforced by the director general or head of the provincial department.¹⁷³ Section 1 of the *NEMA* defines pollution as:

Any change in the environment caused by

- (i) substances;
- (ii) radioactive or other waves; or
- (iii) noise, odours, dust, or heat,

emitted from any activity, including the storage or treatment of waste or substances, construction, and the provision of services, whether carried out by any person or an organ of state, where that change has an adverse effect on human health or well-being or the composition, resilience, and productivity of natural or managed ecosystems, or materials useful to people or will have such an effect in the future.

Waste management undertakings are inherently polluting activities.¹⁷⁴ The *NEMA* was promulgated to regulate all environmental aspects, and the promulgation of the *Waste Act* was necessary due to the fragmentation and coordination challenges in waste management.¹⁷⁵

3.4 National Environmental Management: Waste Act

The *Waste Act* was promulgated and came into effect on 1 July 2009 as one of the sector-specific environmental management acts to give effect to section 24 of the *Constitution*.¹⁷⁶ The introduction of the *Waste Act* changed waste management strategies from a traditional waste disposal-based approach to a waste management hierarchy that promotes waste avoidance and minimisation.¹⁷⁷ Waste minimisation involves several stakeholders, processes, and mechanisms in industries, retailers, and consumers of goods that result in waste production.¹⁷⁸ Section 6 of the *Waste*

¹⁷³ Kidd 2003 *South African Journal of Environmental Law and Policy* 204.

¹⁷⁴ *South African Human Rights Commission v Msunduzi Local Municipality and others 2021 3 All SA 939 (KZP)*

¹⁷⁵ Baloyi and Masinga 2011 *Sustain World* 2.

¹⁷⁶ Baloyi and Masinga 2011 *Sustain World* 2.

¹⁷⁷ Baloyi and Masinga 2011 *Sustain World* 2.

¹⁷⁸ Makgae 2011 *Integrated Waste Management* 76.

Act provides for the establishment of a NWMS. The strategy is intended to give effect to the objects of the *Waste Act* and binds all organs of the state.¹⁷⁹ The NWMS advocates for a shift away from waste disposal to waste avoidance, minimisation, recycling, and reuse, and promotes waste beneficiation as part of the circular economy.¹⁸⁰ The 2020 NWMS prioritises closing the loop in waste management, moving away from the cradle-to-grave-to-cradle-to-cradle approach, by introducing the circular economy concept.¹⁸¹ The circular economy approach is intended to minimise waste generation by promoting the reuse and recycling of materials, reducing the extraction of raw materials from the environment by using waste from one process as raw material in another process, and therefore minimising the need to dispose of waste.¹⁸² Efficient and effective implementation of the 2020 NWMS will ensure that the generation of waste is prevented, where it cannot be prevented it should be diverted from landfills until the zero-waste goal is achieved, communities live in clean environments, and waste services are provided sustainably and foster a culture of compliance and zero tolerance for pollution, littering, and illegal dumping.¹⁸³ The 2020 NWMS acknowledges that command and control measures are necessary but insufficient to ensure a clean and pollution-free environment.¹⁸⁴ The strategy aims to achieve zero waste by employing three pillars, each with a specific focus and key actions that can be used to measure performance.¹⁸⁵ Pillar 1 focuses on waste minimisation with the following strategic thrust:¹⁸⁶

- Minimising the impact of waste on the environment, especially plastic packaging on coastal, rivers, wetlands, and human settlements and diverting waste from landfill sites;
- Increasing re-use, recycling and alternative waste treatment; and

¹⁷⁹ See section 6 of the *Waste Act*.

¹⁸⁰ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸¹ Janse van Rensburg *Waste prevention in South Africa: An evaluation of waste management regulations, policies and plans* 32.

¹⁸² Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸³ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸⁴ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸⁵ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸⁶ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

- Maximising the role of the waste sector in circular economy.

To develop and implement waste management principles and measures that promote waste minimisation, such as extended producer responsibility, circular economy, and waste beneficiation by the private sector, the government needs to partner with the private sector, as most waste prevention measures can be effectively implemented at the manufacturing step.¹⁸⁷ The government has to create an environment that will facilitate innovation and new technology and support small businesses in the waste sector to ensure that waste is reused and recycled.¹⁸⁸ Currently, the definition of waste does not readily allow the re-use, recycling or recovery of some wastes without first applying to the Minister for the approval of the said application.¹⁸⁹ The process of applying and waiting for the approval of the application to divert waste from landfills sees waste ending up in landfills and derailing the achievement of the long-term outcome of zero waste to landfill. The focus area of Pillar 2 is effective and sustainable waste services. It has the following strategic thrust:

- Recognising and addressing the different circumstances and challenges in waste management that exist in various local authorities;
- Developing and implementing flexible approaches to service delivery that incorporate the informal sector while local needs are met;
- Guiding public investment and partnership with the private sector in waste management infrastructure and projects, and
- Ensuring that the delivery of waste services contributes to sustainable development.

The achievement of Pillar 2 outcomes is highly dependent on local government. Local government should cooperate with provincial government planning to ensure that waste management services are adequately budgeted for and to see to the development of policies that incorporate informal waste reclaimers. The 2011 NWMS highlighted the goal of establishing effective compliance and enforcement with the

¹⁸⁷ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸⁸ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁸⁹ See section 1 of the *Waste Act*.

Waste Act. Establishing sound budgeting and financial waste services did not perform as well as other goals of the 2011 NWMS.¹⁹⁰ Pillar 3 of the 2020 NWMS focuses on compliance, enforcement and awareness, with the following strategic thrust:¹⁹¹

- Mitigating and preventing the environmental and social damage caused by waste due to non-compliance;
- Increasing compliance with local, provincial, national, and international legislation and standards;
- Mitigating and preventing pollution, littering, and illegal dumping of waste; and
- Improving the visibility and awareness of the socioeconomic and environmental benefits of compliance, effective waste management, and environmentally compliant infrastructure.

The enforcement of waste management legislation is different depending on whether the offender is an organ of the state or a juristic person. In instances where the organ of state is the non-compliant party, section 41 of The *Constitution* must be invoked, and all remedies explored before courts can be approached. Section 41 of the *Constitution* appears to be underutilised in matters involving noncompliance with waste management facilities owned by local governments, as these non-compliances ended up in court.¹⁹² Alberts and van Rooyen¹⁹³ contend that the inclusion of environmental health practitioners as EMIs at the local level will speed up the enforcement of *Waste Act* provisions.

Disposal by landfill is the most preferred waste management method in South Africa because it is the most affordable waste management method.¹⁹⁴ This method is hampered by major challenges in South Africa, such as the availability of landfill

¹⁹⁰ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁹¹ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>

¹⁹² See the *Kenton-on Sea Ratepayers Association v Ndlambe Local Municipality* 2017 (2) SA 86 (ECG). The court ordered the municipality to provide a report with details on how the municipality is planning to maintain and to ensure the proper functioning of the wastewater treatment plant and the waste disposal facility. In the *Umsunduzi* case the Human Rights Commission had to resort to the courts to get the municipality to comply with its waste management licence provisions.

¹⁹³ Alberts and Van Rooyen "Solid waste management" 41.

¹⁹⁴ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

space, the operation and decommissioning of landfill sites, waste losing its economic value once landfilled, the community resisting the development of new landfill sites and landfill sites producing methane gas and contributing to climate change.¹⁹⁵ The command and control measures in place for waste must efficiently address and differentiate between environmental media into which waste can be disposed of and ensure that different waste management measures mean that waste is adequately accommodated in the environment.¹⁹⁶

Section 7 of the *Waste Act* provides for the gazetting of national norms and standards for the classification of waste, and planning for and providing waste management services, storage, treatment, and disposal of waste. It also provides for the planning and operation of waste treatment facilities and the operation of waste disposal sites.¹⁹⁷ There are different types of waste, with different characteristics and hazards to the environment and human health. Therefore, different disposal facilities are required.¹⁹⁸ Waste classification and management regulations published under the *Waste Act* provide for waste classification and standards for waste assessment for landfill sites.¹⁹⁹ Waste classification is done in terms of SANS 1023.²⁰⁰ It is defined in Regulation 1 of GNR.635 in GG 36784 as:²⁰¹

- a) establishing whether a waste is hazardous based on the nature of its physical, health, and environmental hazardous properties, and
- b) The degree of hazard posed

Before waste can be disposed of by landfill, it must be assessed in terms of Norms and Standards for the assessment of waste for landfill disposal. Section 1 of these Norms and Standards provides that the chemical properties of waste must be identified, and the total concentration and leachable concentrations must be identified by sampling and analysis of the samples.²⁰² Norms and Standards for

¹⁹⁵ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

¹⁹⁶ Bosman "Integrated Waste Management"1061.

¹⁹⁷ Section 7 *Waste Act*.

¹⁹⁸ Bosman C "Integrated Waste Management" 1081.

¹⁹⁹ Bosman C "Integrated Waste Management" 1093.

²⁰⁰ Reg. 4 (1) of GNR. 635 in 36784 of 23 August 2013.

²⁰¹ See Reg. 1 of GNR. 635 in 36784 of 23 August 2013.

²⁰² See Reg. 3(1) of GNR. 635 in 36784 of 23 August 2013.

disposal of waste to landfill provide for landfill classification and containment barrier design.²⁰³ The classification of the landfill and the specific design is important to ensure that the landfill can safely contain the type of waste that will be disposed of.²⁰⁴

These Norms and Standards aim to guide the provision of waste management services²⁰⁵ and may help achieve the goals set in the NWMS.²⁰⁶ Section 9 of the *Waste Act* requires municipalities to adhere to national and provincial standards when conducting waste management activities.²⁰⁷ According to section 19 of the *Waste Act*, the Minister can publish a list of waste management activities that may or are likely to have detrimental effects on the environment. Part 4 of the *Waste Act* provides for waste management activities, provides for the publication of listed waste management activities, and the consequences of listing waste management activities. Section 20 (b) provides that no person may conduct a listed waste management activity that requires a waste management licence without such a licence being issued. Landfill site audits carried out by Afriforum between 2014 and 2022 revealed that less than 20% of the audited landfill sites met the minimum requirements provided for in the *Waste Act*.²⁰⁸ The failure of landfill sites to meet the minimum requirements could mean that municipalities cannot adhere to the waste management licence conditions and /or are undertaking waste management activities without the said waste management licence.²⁰⁹ Section 9(1) of the *Waste Act* provides that municipalities must exercise their executive authority to provide waste management services in a manner that does not conflict with national or provincial legislation.²¹⁰ The findings of the landfill site audits also indicate that municipalities do not exercise their duty of care to prevent or minimise the

²⁰³ See Reg. 4 of GNR. 636 in GG 36784 of 23 August 2024.

²⁰⁴ Bosman *et al* "Integrated waste management" 1084.

²⁰⁵ Malatji *The regulation of domestic solid waste management in local government: perspectives from the Limpopo Province* 6.

²⁰⁶ Claassens *A quality review of waste management measures in EIA reports for developments in protected areas* 18.

²⁰⁷ See section 9 (a) of the *Waste Act*.

²⁰⁸ De Klerk 2021 <http://www.afriforum.co.za>.

²⁰⁹ Bosman "Integrated Waste Management" 1095.

²¹⁰ See section 9(1) of the *Waste Act*.

environmental impacts of their activities, as provided in section 28 of the *NEMA*.²¹¹ In the *Umsunduzi* case, the court found that the municipality was in breach of sections 28(1) and (3) of the *NEMA*.²¹²

Sections 67 and 68 of the *Waste Act* provide offences and penalties respectively for people who violate the provisions of the *Waste Act*.²¹³ Any person who commits offences stipulated in section 67 of the *Waste Act*, will be liable to a fine not exceeding R10 000 000 or ten years of imprisonment, and both such fine and imprisonment in addition to penalties or awards that may be imposed by the *NEMA*.²¹⁴

Section 34D of the *NEMA* provides for the designation of EMIs, who are responsible for enforcing the *NEMA* and other sector-specific environmental management legislation. In the *Umsunduzi* case, the court found that the municipality contravened section 16 of the *Waste Act*.²¹⁵ Section 16(1) of the *Waste Act*²¹⁶ states that a holder of waste must within the holder's power take reasonable measures to:

- a) Avoid the generation of waste where such waste cannot be avoided, to minimise the toxicity and amounts of waste.
- b) Reduce, reuse, recycle, and recover waste
- c) Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally friendly manner.
- d) Manage waste in a manner that does not endanger health or the environment or cause nuisances through noise, odour, or visual impacts.

²¹¹ See section 28 of *NEMA*.

²¹² *South African Human Rights Commission v Msunduzi Local Municipality and others 2021 3 All SA 939 (KZP)* 39.

²¹³ See section 67 of the *Waste Act*.

²¹⁴ Section 68 of the *Waste Act*.

²¹⁵ *South African Human Rights Commission v Msunduzi Local Municipality and others 2021 3 All SA 939 (KZP)* para 90.

²¹⁶ Section 16 (1) of the *Waste Act*.

The enforcement of environmental legislation is entrusted to EMIs in terms of Section 31 L of the *NEMA*. In the *Umsunduzi* case,²¹⁷ the EMI discovered during the site visit that:

- The assessment and classification of waste was inadequate;
- There was no access control;
- Permanent structures are erected on site, and people use contaminated stagnant water on site;
- There are extensive areas of oil-contaminated soil on the site and the contamination reaches the Umsunduzi River by stormwater flow; and
- Leachate from the dysfunctional leachate area seep into the environment.

The transgressions the EMI found in the *Umsunduzi* case have both short-term and long-term effects. Short-term effects include pests, odour, nuisance, and air pollution, and long-term effects include contamination of surface and groundwater sources with leachate.²¹⁸ South Africa is regarded as a water-scarce country with more than two-thirds of the country depending on groundwater. Therefore, water sources must be protected.²¹⁹ The negative consequence of improper waste management activities on water sources has legal implications under the *National Water Act* 36 of 1998. Waste that is improperly disposed on land will ultimately contaminate a water source either through runoff or by percolation of leachate that is produced by decomposing waste. The holder of waste must in terms of section 19(1) of the *National Water Act* 36 of 1998 take reasonable measures to prevent pollution of water sources from occurring, continuing, or recurring. Sections 151(1)(i) and 151 (2) criminalise any act or omission that may result in the pollution of a water resource.²²⁰ Section 1 of the *National Water Act* defines water pollution as “any alteration of the physical, chemical, and biological properties of a water

²¹⁷ *South African Human Rights Commission v Msunduzi Local Municipality and others 2021 3 All SA 939 (KZP)* para 34.

²¹⁸ Bosman *et al*/2018 “Integrated Waste Management” 1059.

²¹⁹ Wepener *et al*/2018 “Water Resources in South Africa” 368.

²²⁰ See section 151(1)(i) and 151 (2) of the *National Water Act*.

source”.²²¹ Dlamini²²² holds “that if a waste disposal site is causing or is likely to cause pollution of a water source, sections 19 and 20 of the *National Water Act* will be invoked against the landowner or the permit holder”. To address the negative consequences of improper waste management on the environment, municipalities are required, in terms of section 12(1)(b)(iii) of the *Waste Act*, “to identify and address the impacts of improper waste management as part of their integrated waste management plan (hereafter IWMP)”.²²³

3.5 Regulation of Waste in Local Government

Section 156 of the *Constitution* entrusts to local government powers and functions listed in Schedules 4B and 5B. Section 155 establishes three categories of municipalities and further provides that national legislation must establish a criterion for when an area should have category A, B, or C. It should establish criteria and procedures for determining boundaries, and provide for division of functions and powers to municipalities of both category B and C, subject to section 229.²²⁴ The *Local Government: The Municipal Structures Act* 117 of 1998 (hereafter the *Municipal Structures Act*) is the national legislation passed to give effect to the provisions of sections 155 (2),(3) and (4) of the *Constitution*.²²⁵ Section 84 of the *Municipal Structures Act* provides for the division of functions and powers between a local municipality and a district municipality. Section 84(1) entrusts district municipalities with the following powers and functions, among others:

- Integrated development planning for the entire district, including the framework for IDPs for all local municipalities in the area of the district municipality.
- Solid waste disposal sites insofar as it relates to:
- Determination of waste disposal strategies;

²²¹ Section 1 of The *National Water Act*.

²²² Dlamini *An environmental liability and risk management approach to landfill groundwater quality monitoring in South Africa* 15.

²²³ Section 12(1)(b)(iii) of the *Waste Act*.

²²⁴ See section 155 of the *Constitution*.

²²⁵ See long title of *Local Government: Municipal Structures Act* 117 of 1998.

- Regulation of waste disposal;
- Establishment, operation and control of waste disposal sites, bulk waste transfer facilities, and waste disposal sites for more than one local municipality in the district; and
- Municipal health services.

Chapter 4 of the *Local Government: The Municipal Systems Act 32 of 2000* provides for an IDP, and section 23 (1) provides that municipalities must undertake developmentally orientated planning to achieve the provisions of section 152 of the *Constitution* to give effect to provisions of section 153 and contribute to the realisation of basic rights, including section 24 rights.²²⁶ An IDP is a principal instrument that assists municipalities in achieving their developmental mandate by guiding and informing all planning, budgeting, management, and decision-making in municipalities.²²⁷ Section 25 (c) provides that an IDP must be part of the policy framework and form part of the general basis on which the annual budget is based.²²⁸

Retief and Cilliers²²⁹ hold that the IDP guide packs formulated by the Department of Cooperative Governance clearly explain how municipalities should conduct their IDPs in more detail than the *Municipal Systems Act* provided. The IDP guide packs are divided into four phases, with Phase 1 focussing on the assessment of the problems communities face and prioritising development issues, Phase 2 focusing on the solutions for the identified problems, Phase 3 is the project phase, which is not considered to have much bearing on environmental issues, and Phase 4 focuses on the IDPs required by legislation. This includes the IWMP as required by the *Waste Act*.²³⁰ Section 9(2) of the *Waste Act* states that municipalities must exercise their executive authority and duty with respect to waste management services by incorporating their waste management plans into their IDPs.²³¹ Knox-Mosdell and

²²⁶ See section 23 of *Local Government: Municipal Systems Act 32 of 2000*.

²²⁷ Retief and Cilliers 2018 "Municipal Integrated Development Planning" 4-10.

²²⁸ See section 25(c) of *Local Government: Municipal Systems Act 32 of 2000*.

²²⁹ Retief and Cilliers 2018 "Municipal Integrated Development Planning" 4-10.

²³⁰ Retief and Cilliers 2018 "Municipal Integrated Development Planning" 4-11.

²³¹ Section 9 (2)(b) of the *Waste Act*.

Kotze²³² hold that incorporating pollution mitigation measures and regulations in the municipalities' IDPs would help highlight the importance of pollution mitigation and regulation. Section 12 of the *Waste Act* provides for the contents of the IWMP, which include:

- a) Situation analysis that includes:
 - i. Description of the population and development profiles of the area to which the plan relates.
 - ii. the assessment of waste quantities and types of waste produced in the area/
 - iii. a description of the services that are provided or that are available for collection, minimisation, reuse, recycling, recovery, treatment and disposal of waste, and
 - iv. the number of people in the area who do not receive waste collection services.²³³

The IWMP provides a mechanism that not only focuses on waste disposal but also considers all aspects of waste management, including factors that influence waste generation, such as population description and development profile of the area to which it relates.²³⁴ Actions, resources, and timeframe needed to manage waste properly must be stipulated in IWMPs.²³⁵ An IWMP is a tool that is meant to assist organs of state and industries to shift away from the historic linear waste management to sustainable waste management to include alternative waste management and circular economy.²³⁶ Pillar 2 of 2020 NWMS focuses on providing effective and sustainable waste services, emphasises the importance of developing IWMP, and approval by the Minister in the Department of Forestry, Fisheries and the Environmental, as well as the annual reporting on IWMPs.²³⁷ Annual reporting on IWMPs will assist provinces and local governments in adjusting their plans and

²³² Knox-Mosdell and Kotze 2021 "The regulation and mitigation of environmental pollution by Local Government" 7-21.

²³³ Section 12 (a) of the *Waste Act*.

²³⁴ Godfrey and Dambuza "Integrated Waste Management Plans—A useful management tool for local government or a bureaucratic burden" 3.

²³⁵ Mautla *Evaluating the monitoring and review of the integrated waste management plans (IWMPs) of the Drakenstein Local Municipality* 12.

²³⁶ Mautla *Evaluating the monitoring and review of the integrated waste management plans (IWMPs) of the Drakenstein Local Municipality* 2.

²³⁷ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

goals based on new information or developments.²³⁸ Section 13(2) of the *Waste Act* provides that reports on IWMPs must include the following information:

- a. The extent to which the plan has been implemented during the period;
- b. Waste management initiatives that have been undertaken during the reporting period;
- c. The delivery of waste management services and measures taken to ensure the efficient delivery of waste management services, if applicable;
- d. The level of compliance with the standards and any applicable waste management standards;
- e. Measures taken to ensure compliance with waste management standards;
- f. Waste management monitoring activities;
- g. The actual budget extended to implement the plan;
- h. Measures that have been taken to make necessary amendments to the plan;
- i. And in the case of provinces, they should also report on the extent to which municipalities comply with the plan and where there is noncompliance, provide reasons for the noncompliance, and any other information that may be requested by the minister.

Section 26 provides that an IDP must reflect the financial plan, which must include a budget projection of at least three years.²³⁹ Waste management services are often under-budgeted because the full cost of waste management services is not fully understood and the cost of waste management services differs from one municipality to another.²⁴⁰ Municipalities must undertake a costing analysis of waste management activities and must include collection, transportation, landfill, street cleaning, collection fees, debt payments, and depreciation.²⁴¹

Municipalities have the power to make and administer by-laws for the effective administration of matters they have the right to administer.²⁴² Section 11(3) of the

²³⁸ Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

²³⁹ Section 26(h) *Municipal Systems Act*.

²⁴⁰ Reg. 3(3.3.2) GN 270 in GG 35206 of 30 March 2012.

²⁴¹ Reg. 3(3.3.2) GN 270 in GG 35206 of 30 March 2012.

²⁴² Section 156(2) of the *Constitution*.

Municipal System Act states that a municipality exercises its legislative or executive authority by:

- a. Developing and adopting policies, plans, strategies, and programmes and setting targets for service delivery;
- b. Promoting and undertaking development;
- c. Establishing and maintaining an administration;
- d. Administering and regulating its internal affairs and the local government affairs of the community;
- e. Implementing applicable national and provincial legislation and its by-laws;
- f. Preparing, approving, and implementing its budgets;
- g. Imposition and recovery of rates, taxes, levies, duties, service fees, and surcharges, including setting and implementing tariffs, rates, and tax and debt collection policies;
- h. Monitoring the impact and effectiveness of any service, programmes, or plans;
- i. Establishing and implementing a performance management system;
- j. Promoting a safe and healthy environment;
- k. Passing by-laws and taking decisions on any of the above-mentioned matters;
- l. Doing anything else within its legislative and executive competence.

Section 9(3) of the *Waste Act* provides that municipalities may:

- a. Set local standards for the separation, compaction, and storage of solid waste that is collected as part of municipal services or that is disposed of at the municipal waste disposal facility;
- b. Local standards for the management of waste disposed of by the municipality or at the waste facility owned by the municipality, including requirements in respect of avoidance and minimisation of the generation and the reuse, recycling, and recovery of solid waste;
- c. Local standards in respect of the directing of solid waste that is collected by the municipality as part of municipal services or that is disposed of at the municipal facility or municipal waste disposal facility to a specific waste treatment and disposal facility; and
- d. Local standards in respect of the control of litter.

Municipalities must, when drafting environmental laws, ensure that they consider the section 24 environmental right, promotion of a safe and healthy environment as

provided for in section 152 (1)(d) of the *Constitution* and consider national and provincial legislation.²⁴³ Municipal by-laws are part of many local environmental governance instruments available to municipalities to regulate waste management in their jurisdiction.²⁴⁴ It is vital that municipalities in their governance and governance functions select and use a combination of different local environmental governance instruments to achieve the NWMS goal of zero waste. Some of these instruments are voluntary, while others are mandated by provincial and national legislation.²⁴⁵ In addition to command-and-control instruments, municipalities may employ fiscal, agreement-based and civil-based instruments to regulate solid waste management in their area of jurisdiction.²⁴⁶ Fuo²⁴⁷ holds that the provisions of section 11(3) of the *Municipal Systems Act* show that there are many governance instruments that municipalities can use. A suite of these instruments can be used to create a redundancy effect. The effect provides better chances of success, checks and balances, and alternative solutions when one instrument fails.²⁴⁸ Municipalities may use command and control, which is a system that follows the strict enforcement of law; economic instruments, which follow a system that forces individuals to act out of economic self-interest; self-regulation instruments, which involve individuals monitoring their process with regular reporting to authorities;²⁴⁹ or civil base instruments, which follow a system of empowering civil societies by informing and educating.²⁵⁰ Adopting these instruments can assist municipalities in carrying out their constitutional mandate of ensuring a healthy and safe environment. Command and control instruments include waste management by-laws, policies, setting of standards, and enforcement of inspections and issuing directives. Incentive and disincentive instruments aim to change behaviour by adding incentives such as tax rebates to encourage good behaviour and disincentives such as penalties to change

²⁴³ Nel *et al* 2018 "Instruments for Local Environmental Governance" 3-34.

²⁴⁴ Nel *et al* 2018 "Key Elements of Municipal Action" 2-6.

²⁴⁵ Nel *et al* 2018 "Key Elements of Municipal Action" 2-39.

²⁴⁶ Nel *et al* 2018 "Key Elements of Municipal Action" 2-38.

²⁴⁷ Fuo 2019 *African Journal of Democracy and Governance* 128.

²⁴⁸ Mukwevho, Retief and Burger 2022 *Clean Air Journal* 8.

²⁴⁹ Kidd 2018 "Administrative law and implementation of environmental law" 235.

²⁵⁰ Mukwevho *et al* 2022 *Clean Air Journal* 5.

bad behaviour.²⁵¹ However, the introduction of the plastic levy to discourage the use of single-use plastic bags did not yield the desired results as consumers got used to paying the levy. These instruments must be coupled with command-and-control instruments and civil-based instruments. Civil-based instruments promote the inclusion of the public in the law and policy-making processes of the government.²⁵²

The Integrated Waste Management By-law of 2009 of the City of Cape Town provides a perfect example of how the suite of local environmental governance instruments can be used to achieve the objectives of the *Waste Act* and the NWMS. Section 4(1) of the by-law provides for the obligations of waste generators. Section 4(3) read together with (13) requires a waste generator to submit a waste management plan upon request by the waste management officer. Section 4(9) provides that the waste generator must submit a report of the waste disposed to the waste management officer, and section (20) provides that the waste generator or the property owner on which waste is generated, or who stores or deposits waste on the property of the City, may be fined for failure to have or produce a permit for disposal or storage.²⁵³ The enforcement of the *Integrated Waste Management By-law* of the City of Cape proved to be successful in generating funds for the city from October to December 2023. It was reported that the city generated an amount of R1 257 000 from waste management offences.²⁵⁴ Economic instruments are said to be more flexible than command and control instruments, yet a combination of instruments tends to yield high compliance rates with policy objectives.²⁵⁵

3.6 Conclusion

The inclusion of environmental rights in the *Constitution* has formed a foundation for legislation aimed at environmental protection and ensuring quality of life. Section

²⁵¹ Nel *et al* 2018 "Instruments for Local Environmental Governance" (3) 41.

²⁵² Nel *et al* 2018 "Instruments for Local Environmental Governance" (3) 47.

²⁵³ City of Cape Town <https://www.resource.capetown.gov.za>.

²⁵⁴ News24 2024 <http://www.news24.com>.

²⁵⁵ Van der Merwe *An in-depth investigation into the relationship between municipal solid waste generation and economic growth in the City of Cape Town* 21.

24 of the Constitution has led to the promulgation of the *NEMA*, which served as a framework for environmental legislation in South Africa. The *NEMA* cemented the principle of cooperative governance between the spheres of government in dealing with matters concerning the protection of the environment. The *Waste Act* places a duty on the government to employ measures that ensure that waste management adheres to the waste management hierarchy. To this end, the *Waste Act* provides for the implementation of NWMS. The 2020 NWMS aims to change the linear form of waste management to a circular form of waste management. Closing the loop of waste management will ensure that waste production is avoided, where it cannot be avoided it should be reduced by establishing industrial symbiosis. The 2020 NWMS highlighted the goal of establishing effective compliance with and enforcement of the *Waste Act* and the goal of ensuring sound budgeting and financial services for waste services did not perform as well as the other 2011 NWMS goals.

The *Constitution* entrusts waste management to local government. The *Municipal Structures Act* provides a criterion for the establishment of categories of local government and also provides for functions and powers of different categories of local government. The *Municipal Structures Act* provides that district municipalities must develop an IDP that includes all local municipalities that form part of the district. The IDP is a powerful tool at the disposal of local government. The plan must incorporate sector plans such as an IWMP. The IDP also informs the municipal budgets and projects that municipalities plan to undertake. Municipalities have the power to administer waste management by-laws with penalties. The enforcement of these by-laws could help municipalities reduce the amount of waste that is disposed of, burned, or illegally dumped and also raise funds from noncompliant parties. Municipalities have a range of local government instruments they can use to ensure that they meet the targets and goals of the 2020 NWMS.

The next chapter analyses compliance and the enforcement of waste regulations in South Africa.

Chapter 4: Compliance and the enforcement of waste regulations in South Africa

4.1 Introduction

Improper waste management threatens the livelihoods of all South Africans, but the poor are more burdened by the consequences of improper waste management.²⁵⁶ This unequal distribution of the consequences of improper waste management results from the spatial planning policies of the apartheid government. The majority of South Africans lived in the urban outskirts and near factories and waste disposal sites. Rectifying this environmental injustice has proven to be impossible.²⁵⁷ However, South Africa is a constitutional state; any act or conduct inconsistent with the *Constitution* is invalid, and any obligations by the *Constitution* must be fulfilled.²⁵⁸

The promise of an environment that is not harmful to health and well-being and the protection of the environment for present and future generations in section 24 of the *Constitution must be achieved by the state*.²⁵⁹ The rate of urbanisation, population growth, and commercial development make it difficult for the state to achieve the provisions of section 24, as these processes result in major waste generation and the development of informal settlements. Informal settlements are said to be the leading cause of improper waste management. The state is further tasked with developing legislative and other measures to ensure environmental protection.²⁶⁰ The *NEMA*, the *Waste Act* and other specific environmental management acts were promulgated to give effect to the environmental rights in section 24 of the *Constitution*.

South African environmental legal framework is comprehensive. However, without compliance and effective enforcement, this comprehensive legal framework is

²⁵⁶ Feris 2010 *Potchefstroom Electronic Law Journal* 76.

²⁵⁷ Tomita *et al* 2020 *The Lancet Planetary Health* e224.

²⁵⁸ Section 2 of the *Constitution*.

²⁵⁹ Section 24 of the *Constitution*.

²⁶⁰ Section 24 (b) of the *Constitution*.

useless.²⁶¹ This chapter focuses on the enforcement of waste regulations in South Africa.

4.2 Enforcement of Waste Regulations

The *Constitution* entrusts the executive branch of the government with the responsibility of promulgating legislation to protect human health and the environment. "The conservation role of the executive branch of government is to provide administrative protection of the environment".²⁶² Environmental protection is the sole purpose of environmental legislation. Before South Africa became a constitutional state, environmental legislation aimed to facilitate resource allocation and exploitation.²⁶³ Legislation sets standard limits and measures to be employed when standards are not met. Environmental legislation is an empowering legal instrument that must be available for the administrators to exercise a particular power. ²⁶⁴The most powerful legal instrument for environmental protection is the *NEMA*,²⁶⁵ and the Department of Forestry, Fisheries, and Environment is responsible for implementing and enforcing it. Compliance promotion must follow the acceptance of the legal prescripts to ensure voluntary compliance. Compliance promotion includes education and awareness of the regulated community on the legal requirements and what is expected of them.²⁶⁶ Compliance promotion can be conducted by holding workshops, roadshows, and written publications. Enforcement is the last step in a regulatory cycle. It focuses on punishing violators.²⁶⁷ Compliance and enforcement are essential parts of effective environmental governance.²⁶⁸ Chapter 7 of the *NEMA* provides for enforcement and compliance.

Section 31B (1) and (2) of the *NEMA* provides that a Minister may designate as an EMI any:

²⁶¹ Bosman *et al* "Integrated Waste Management" 1096.

²⁶² Glavovic 1988 *Comparative and International Law Journal of Southern Africa* 61.

²⁶³ Nel and du Plessis 2001 *South African Journal of Environmental Law and Policy* 2.

²⁶⁴ Kidd "Administrative law and implementation of environmental law" 212.

²⁶⁵ Kidd "Administrative law and implementation of environmental law" 212.

²⁶⁶ Nel and Alberts "Environmental management and environmental law in SA" 35.

²⁶⁷ Nel and Alberts "Environmental management and environmental law in SA" 37.

²⁶⁸ Kotzé "Environmental Governance" 109.

- I. Staff member of the department;
- II. Any other organ of state that executes a regulatory function and the Minister can at any time withdraw any such designation.

(2) The designation of an organ of state as an environmental management inspector can only happen if there is an agreement between the Minister and the relevant organ of state.²⁶⁹

EMIs are appointed to enforce the provisions of the *NEMA*, specific environmental management acts, and provincial legislation relating to environmental management.²⁷⁰ There are many ways in which the designated EMIs can ensure compliance with the provisions of the *NEMA*. For instance, a combination of command-and-control, economic, civil, and self-regulation instruments can be used. Furthermore, section 28(1) of the *NEMA* poses a duty on a person who causes, has caused or may cause significant harm to the environment, to prevent, cease, minimise and rectify the harm. The wording of this section implies that self-regulation is required. Section 28(4) introduces a command-and-control instrument where self-regulation has failed. This can take the form of a directive to cease any activity, operation or undertaking from the Director General, a provincial head of department, or a municipal manager. Sections 28(7)(8) and (9) provide for economic instruments by providing that the state may take any reasonable measure to remedy the environmental pollution and recover the costs from the person responsible for the pollution.

When administrative controls fail to achieve compliance with legislation, criminal sanctions are imposed.²⁷¹ Criminal sanctions elicit criticism for being ineffective in ensuring environmental protection as the penalties are not enough to deter polluters.²⁷² Penalties imposed in criminal sanctions must be substantive and proportional to the environmental harm caused. Repeat offenders must face both imprisonment and a fine. This can make criminal sanctions effective in enforcing environmental laws. Enforcement by either administrative tools or criminal

²⁶⁹ Section 31 B (1) and (2) of *NEMA*.

²⁷⁰ Section 34 D of *NEMA*.

²⁷¹ Kidd "Administrative Law and Implementation of Environmental Law" 234.

²⁷² Feris 2006 *Potchefstroom Electronic Law Journal* 1.

sanctions only occurs when there is no compliance with the prescribed standard. Hall²⁷³ contends that enforcement will not make a meaningful contribution to environmental protection when there is a substantive vacuum of legal requirements. There must be provisions in the legislation for measures that can be taken against municipalities failing to provide waste management services and failing to adhere to their waste management licence conditions. The need for municipalities to act in an exemplary manner in complying with constitutional obligations has been over-emphasised by courts.²⁷⁴ The legislature must consider making the application of section 2 of the *NEMA* principles compulsory in matters that may have a detrimental effect on the environment. The provisions of cooperative governance must be revised to allow for government departments to act against each other where there has been non-compliance with environmental laws. The court in the *Umsunduzi* case held that the provincial government as a regulator might have been held back from acting against the municipality by the principle of cooperative governance.²⁷⁵

4.2.1 *The Role of Environmental Management Inspectors*

EMIs must use checking tools to ensure that municipalities or private industries engaged in listed waste activities adhere to their licence conditions.²⁷⁶ Checking tools include environmental monitoring, inspections, records keeping and environmental auditing.²⁷⁷ These tools are used to check compliance with legal standards. The actual monitoring of the quality of the environmental media is environmental monitoring. EMIs may conduct routine or mandatory environmental monitoring where compliance with environmental authorisation conditions is monitored.²⁷⁸ Compliance monitoring, administrative enforcement, and criminal enforcement are

²⁷³ Hall 2021 *Journal of South African Law* 636.

²⁷⁴ *South African Human Rights Commission v Msunduzi Local Municipality 2021 3 All SA 939 (KZP)* (hereafter *Umsunduzi case*) para 95.

²⁷⁵ *Umsunduzi Case* para 96.

²⁷⁶ Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of 'new' environmental governance instruments" 271.

²⁷⁷ Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of 'new' environmental governance instruments" 260.

²⁷⁸ Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of 'new' environmental governance instruments" 271.

environmental management tools meant to assist the government in its effort to ensure compliance with and enforcement of waste regulations.²⁷⁹ Environmental inspections are carried out to verify compliance with authorisation conditions.²⁸⁰

In terms of section 31G(a) of the *NEMA* an EMI must monitor and enforce compliance with the law.

Section 31 G (b) states that an environmental management inspector may investigate any act, or omission when there is reasonable suspicion that it may constitute an offence in terms of the law, it may be a breach of the law or a breach of permit or authorisation conditions or any other instrument issued in terms of the law.²⁸¹

EMIs' administrative functions are provided for in section 28 and section 31L. Section 28(4) provides for the director general or a provincial head of department to issue a directive when necessary to ensure environmental protection. Section 28(7) provides that when there is a failure or inadequate compliance with the directive, reasonable measures should be taken to remediate the pollution or the courts should be approached for a remedy.²⁸² The provisions of section 28(7) could be difficult to enforce as they place a financial burden on the state and court proceedings are lengthy, this may not achieve environmental protection. Section 31L provides the power to issue compliance notices to EMIs when there are reasonable grounds to believe that a person has contravened the provisions of the law or permit or authorisation conditions. EMIs in terms of Section 31H(2) have the powers of a peace officer or a police officer who is not commissioned, as per the provisions of the *Criminal Procedures Act* 51 of 1977.²⁸³ These powers ensure that EMIs can conduct investigations, open dockets and assist the National Prosecuting Authority with evidence in environmental crimes.

²⁷⁹ Hall 2021 *Journal of South African Law* 632.

²⁸⁰ Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of 'new' environmental governance instruments" 272.

²⁸¹ Section 31(G) of *NEMA*.

²⁸² Section 28 of *NEMA*.

²⁸³ See Section 31 H (5) of *NEMA*.

Directives and compliance notices are administrative enforcement instruments and therefore EMIs must ensure that they adhere to the provisions of section 33 of the *Constitution*, which provides that:

1. Everyone has a right to administrative action that is lawful and procedurally fair.
2. Everyone whose rights have been adversely affected by an administrative action has the right to be given written reasons.²⁸⁴

Adherence to section 33 of the *Constitution* would ensure that the administrative enforcement instruments pass the legality and reasonable man test. These tests would prevent EMIs from over-exercising their powers and assist the National Prosecuting Authority to prosecute effectively should EMIs decide to approach the courts for relief.

4.2.2 *Administrative enforcement of waste regulations*

The NWMS of 2020 highlighted that enforcement and compliance (Goal 8) of the NWMS 2011 did not perform well. Goal 8 aimed to ensure systematic compliance monitoring with *Waste Act* provisions and extend EMI's capacity to enforce environmental laws effectively.²⁸⁵ Extending capacity would benefit environmental protection as confident, knowledgeable and skilled EMIs would not be hesitant to act against polluters. Most provisions in environmental law or any other law are discretionary, which renders them ineffective until an EMI exercises those discretionary powers.²⁸⁶ For instance, section 31 provides that an EMI may issue a compliance notice if there are reasons to believe that a person has not complied.²⁸⁷ An EMI may be reluctant to issue a compliance notice to the polluter if they are uncertain about the prescribed procedure to follow. Autonomous and well-trained EMIs have a significant role in enforcing and ensuring compliance with environmental law.²⁸⁸ However, only Grade 1 EMIs have the power to issue a

²⁸⁴ Section 33 of the *Constitution*.

²⁸⁵ Alberts and Van-Rooyen "Solid Waste Management" 13-39.

²⁸⁶ Kidd "Administrative Law and Implementation of Environmental Law" 234.

²⁸⁷ Section 31 *NEMA*.

²⁸⁸ Du Plessis "Understanding the legal concepts" 37.

compliance notice and exercise all powers assigned to EMIs in terms of the *NEMA*.²⁸⁹ Section 31 G (1) of the *NEMA* provides that:

1. An environmental management inspector within his or her mandate
 - a. Must monitor and enforce compliance with a law for which he or she has been designated
 - b. May investigate any act or omission in respect of which there is a reasonable suspicion that it might constitute:
 - i. an offence in terms of law
 - ii. a breach of law
 - iii. a breach of a term or condition of a permit, authorisation or other instruments issued in terms of law.

Regulations relating to qualification criteria, training and identification of and forms to be used by EMIs read together with Annexure 1, provide that Grade 1 EMIs exercise the full powers conferred to EMIs by the provisions of the *NEMA*.²⁹⁰ Grade 2 EMIs can exercise all powers conferred to EMIs except for powers to issue compliance notices.²⁹¹ This hierarchy of power among EMIs can cause a delay in compliance notices being served. Grade 1 EMIs could receive a recommendation from other grades of EMIs to issue a compliance notice and opt not to issue it, as the exercise of the power is discretionary. Feris²⁹² contends that another hindrance in exercising powers provided for in section 31L of the *NEMA* could be that senior officials are far removed from day-to-day practicalities. Of all the EMIs in South Africa, only 7% are Grade 1 EMIs, which could lead to a backlog of compliance notices.²⁹³ To eliminate the backlogs in issuing compliance notices, the hierarchy of power in EMIs must be put to an end. The authority of Grade 1 EMI functions should be expanded to all grades of EMIs, and comprehensive training should be provided to ensure effective functioning across all grades of EMIs.

²⁸⁹ Annex. 1 of GN R. 494 in GG 28869 of 2 June 2006.

²⁹⁰ See reg. 3 of GN R. 494 in GG 28869 of 2 June 2006.

²⁹¹ See reg. 3 of GN R. 494 in GG 28869 of 2 June 2006.

²⁹² Feris 2006 *Potchefstroom Electronic Law Journal* 10.

²⁹³ DFFE 2023 <http://www.dffe.gov.za>.

EMIs, before they could issue a compliance notice must first issue a pre-compliance notice stating the intention to issue a compliance notice. The pre-compliance notice is issued to give the affected person reasonable time to make written presentations to the EMI.²⁹⁴ The minister or the head of the provincial government has broader powers and can modify or withdraw the compliance notice.

EMIs appointed in the local sphere of government also have powers to enforce the provisions of the *NEMA*, the *Waste Act* and municipal by-laws. With the wall-to-wall demarcation of municipalities, environmental crimes are taking place within a municipal jurisdiction. It is therefore important that there are EMIs appointed at municipalities with the power to issue compliance notices. However, municipalities may have difficulties in enforcing environmental due to a lack of human and financial resources.²⁹⁵ The compliance and enforcement report of 2023 highlights that there are 3 215 EMIs in the country and only 385 are appointed at the local sphere of government.²⁹⁶ This number of EMIs at the local government level could be increased with the inclusion of environmental health practitioners in the environmental management inspectorate.²⁹⁷ The inclusion of environmental health practitioners could be beneficial to local governments and could ease the financial burden of employing new staff. One of the roles of environmental health practitioners is waste management.²⁹⁸ All districts and metropolitan municipalities already have environmental health practitioners in their staff complement. The Professional Board for Environmental Health Practitioners reported that there were 4 313 active environmental health practitioners in the country in 2024, excluding assistant environmental health practitioners and community service environmental practitioners.²⁹⁹ Environmental health practitioners appointed as health officers in terms of section 80 of the *National Health Act* 61 of 2003 have powers of peace officers as defined in section 1 of the *Criminal Procedures Act*.

²⁹⁴ Oosthuizen *et al* "Environmental Management Act 107 of 1998 (NEMA)"188.

²⁹⁵ Snijman and Petterson "Environmental Law Compliance and Enforcement" 9(7).

²⁹⁶ DFFE 2023 <http://www.dffe.gov.za>.

²⁹⁷ Alberts and van Rooyen "Solid Waste Management" 13(41).

²⁹⁸ See GN R.391 in GG 35354 of 15 May 2012.

²⁹⁹ HPCSA 2024 <http://www.hpcsa.co.za>.

4.2.3 Environmental cooperative governance

The option for EMIs to approach the courts for relief is the last option in instances where an organ of state is the non-compliant party. Section 41(1)(h) of the *Constitution* provides that all spheres of government and organs of state must cooperate with one another in mutual trust and good faith by:

- I. By fostering friendly relations;
- II. Assisting and supporting one another;
- III. Informing one another of, and consulting one another on, matters of common interest;
- IV. Coordinating their actions and legislation with one another;
- V. Adhering to their agreed procedures; and
- VI. Avoiding legal proceedings against one another.

Section 16(3)(c) of the *NEMA* provides for measures that can be taken should an organ of state fail to comply with the notice requirements. The matter must be dealt with according to the provisions of Chapter 4 of the *NEMA*. The principle of cooperative governance could be seen as a principle that enables local governments to contravene their waste management licence conditions and neglect their constitutional mandate concerning solid waste management services and environmental protection duties. However, if section 41 of the *Constitution* is read together with section 139 of the *Constitution*, it could be argued that Section 139 prevents the abuse of the principle of cooperative governance. Section 139(1) provides that when a municipality cannot or does not fulfil its executive obligation in terms of the *Constitution* or any legislation, the provincial executive may intervene by taking appropriate steps to ensure the fulfilment of that obligation.³⁰⁰ The KwaZulu-Natal provincial executive did not invoke the provisions of section 139 when the Umsuduzi Local Municipality failed its constitutional obligation to protect and promote a safe and healthy environment by failing to comply with the series of non-compliance notices issued by the EMI. Instead, the provincial cabinet

³⁰⁰ Section 139 of the *Constitution*.

considered pursuing an interdict against the municipality, but the option could not be pursued after the provincial government was made aware of the provisions of section 139 (1)(b) of the *Constitution*,³⁰¹ and still, section 139 (1)(b) was not invoked by the provincial government.

In terms of section 28 (12) of the *NEMA*, the public has a role to play in ensuring that those responsible for environmental degradation or pollution are held accountable. Section 28(12) states that:

any person can after giving the director general or the head of the department 30 days' notice, apply to a competent court for an order directing the director general or the provincial head of the department to take any reasonable steps to direct the person responsible for environmental degradation or pollution to cease any activity, operation or undertaking; investigate, evaluate and assess the impact of the specific activity and report thereon; commence taking specific measures before the given date; diligently continue with those measures and complete those measures before the reasonable specified period.³⁰²

Section 28(12) is not the only provision that empowers members of the public to take a stand to ensure the protection of the environment. Section 32(1) of the *NEMA* provides for legal standing to enforce environmental laws, it provides that:

Any person or a group of persons may seek relief in respect of any breach or threatened breach of any provisions of *NEMA*, including the principles contained in Chapter 1 or provisions of any specific environmental management acts or any statutory provisions that have anything to do with environmental protection or the use of natural resources. A person may act in their interest or the interest of a group; in the interest or on behalf of a person who is unable to institute proceedings; in the interest of or on behalf of a group or a class of persons whose interests are affected; in the public interest or in the interest of saving the environment.³⁰³

The provision for *locus standi* in section 32 of the *NEMA* mirrors the provision of section 38 of the *Constitution*. The *NEMA* has extended the legal stand to include anyone acting on behalf of the environment. Section 32 of the *NEMA* and section 38 of the *Constitution* can be effectively employed in ensuring environmental protection. Furthermore, members of the public must be educated on how these sections can be used to ensure the protection of their environmental rights. In the

³⁰¹ *Umsunduzi case* Para. 49.

³⁰² See section 28 (12) of *NEMA*.

³⁰³ Section 32(1) of *NEMA*.

Umsunduzi case, the public voiced their concerns about the municipality's landfill site operation using the media and petitions.³⁰⁴ The efforts of the citizens went unheard by the municipality until the Human Rights Commission received a petition signed by citizens and consulted with them, and eventually, the matter was taken before the court.³⁰⁵ The citizens of the municipality had to live in an environment that was not conducive to their health and well-being for more than 15 years.³⁰⁶ One could wonder if the citizens had employed the instruments provided for by the *NEMA*, whether the matter would have been solved earlier and the impact minimised.

4.2.4 Local government: enforcement and compliance instruments

Du Plessis³⁰⁷ holds that the constitutional provisions of section 152(2) are as essential as they can be a hindrance to enforcement of the obligations that could strengthen environmental law. It can be argued that in terms of the provisions of section 152 (2) of the *Constitution*, municipalities may not for instance ensure the waste management services are provided to communities in a sustainable manner if they do not have financial and administrative capacity to do so. Matjhabeng Local Municipality in its IDP notes that waste removal services are not extended to informal settlements and farms due to the inability to move waste collection trucks and the cost-benefit analysis.³⁰⁸ In the *Umsunduzi* case,³⁰⁹ the court rejected the municipality's financial and procurement constraints complaints for the continued non-compliance with waste management licence conditions "as just not good enough", despite the provisions of section 152(2) of the *Constitution*. The word "strive" in section 152(2) of the *Constitution* can be argued to mean that all the municipalities must do is "try" and that would be enough even if the desired goal of environmental protection is not achieved.

³⁰⁴ *Umsunduzi case* Para. 14.

³⁰⁵ See *Umsunduzi case* para 14.

³⁰⁶ See *Umsunduzi case* para 93.

³⁰⁷ Du Plessis "Environmental compliance and enforcement measures: Opportunities and challenges of local authorities in South Africa" 384.

³⁰⁸ Matjhabeng Local Municipality 2023 www.matjhabeng.fs.gov.za.

³⁰⁹ *Umsunduzi case* para 93.

Local governments have the tools provided in the *Systems Act*. These tools include developing and adopting an IDP in terms of Chapter 5 of the *Systems Act*.³¹⁰ A waste management plan must form part of the IDP as per the provisions of the *Waste Act*.³¹¹ The two plans, when properly drafted and implemented, can help local governments to plan how they can ensure compliance with national and provincial legislation. Chapter 6 of the *Systems Act* provides for a performance management system that will ensure that local governments measure their performance in terms of achieving the objectives set in the IDP, including targets set in the waste management plan.³¹²

A performance management system serves as a platform to translate plans into a set of measurable performance measures and targets, indicating how the local authority plans to improve the state of the environment.³¹³ These instruments allow the local government to assess its environmental conditions, plan the best form of action, budget for it and then identify any personnel needs to see to the implementation of the plan.

Section 10 (3) of the *Waste Act* provides for the designation of a waste management officer in the local government. The City of Cape Town's integrated waste management by-law lists the duties of a waste management officer as including regulating, controlling, managing and enforcing the integrated waste management by-laws, and provincial and national legislation relating to waste management.³¹⁴ The integrated waste management by-law of the City of Cape Town has used provisions of section 28 of the *Waste Act* and brought in fiscal, civil and voluntary compliance measures.³¹⁵ Industries in the City of Cape Town must prepare a waste management plan. The plan must include measures to be taken to ensure separation at source, set targets for waste minimisation, and provide for education

³¹⁰ See Chapter 5 of the *Local Government: Municipal Systems Act* 32 of 2000.

³¹¹ Section 9(2)(b) of the *Waste Act*.

³¹² Section 38 of the *Local Government: Municipal Systems Act* 32 of 2000.

³¹³ Du Plessis "Environmental compliance and enforcement measures: Opportunities and challenges of local authorities in South Africa" 386.

³¹⁴ Section 25 of the City of Cape Town: Integrated Waste Management By-law.

³¹⁵ Section 28 of the *Waste Act* provides for the preparation of industrial waste management plans.

and other measures to influence the behaviour of the consumers towards recycling.³¹⁶ In section 23 of the City of Cape Town Integrated Waste Management By-law any person who fails to comply with the requirement of submitting the IWMP is guilty of an offence. If a person is found guilty of an offence is liable to a fine of R500 but not exceeding R10 000 or imprisonment of six months but not exceeding two years, or both such fine and imprisonment.³¹⁷ Municipalities are not hopeless when it comes to enforcing environmental laws as they have the power to pass and enforce environmental by-laws.

4.2.5 Criminal sanctions in enforcing environmental law

Non-compliance with legal provisions in the South African environmental law is criminalised. Preston³¹⁸ contends that criminal sanctions are not the most important enforcement tools, and further holds that determining an appropriate punishment for criminal conduct is difficult, but it is an important task. Determining the correct punishment is especially difficult for offences that result in environmental degradation. Feris³¹⁹ holds that criminal sanctions have lost the ability to deter polluters, as their environmental penalties are not severe enough, and sometimes the offender gets a substantial financial advantage from committing an environmental crime.³²⁰ The low penalties for environmental crimes can often encourage polluters to continue polluting and factor in the penalties as operating costs. Relevant authorities should establish and enforce measures aimed at deterring the commission of environmental crimes or discouraging polluters from continuing to commit environmental offences. These measures include enforcing stricter regulations, increased surveillance and monitoring, and criminalising environmental crimes.

³¹⁶ See section 10 of the City of Cape Town: Integrated waste management by-law.

³¹⁷ Section 23 (5) of the City of Cape Town: Integrated Waste Management By-law.

³¹⁸ Preston "Principled sentencing for environmental offences" 313.

³¹⁹ Feris 2006 *Potchefstroom Electronic Law Journal* 1.

³²⁰ Craigie *et al* "Dissecting environmental compliance and enforcement" 53.

Criminal law requires onus of proof, and intent needs to be established.³²¹ This could be a problem in instances of illegal dumping as there is no way of connecting illegally dumped waste to the polluter. The inability to connect an illegally dumped waste to the polluter results in a lack of inadmissible proof and without proof, prosecutors fail to prosecute. Prosecutors in some cases enter plea deals or plea bargains where the sentence or part of a sentence is suspended subject to certain conditions determined by the prosecutors and legal representation of the accused.³²² This occurred in the case of *S v Matjhabeng Local Municipality*,³²³ where healthcare risk waste was found in a municipal landfill site. The municipality was sentenced to a fine of R 1 000 000, which was suspended for five years on condition that the landfill site be brought into compliance with waste management licence conditions.³²⁴ Murombo and Munyuki³²⁵ hold that plea bargains and sentence agreements are better suited to achieve the environmental protection goal. This is because the affected person enters a plea bargain to avoid carrying out the sentence and the purpose of environmental law enforcement is not to heavily punish but to ensure environmental protection.

Criminal law is reactive, crime must be committed for criminal sanctions to be instituted.³²⁶ Remediation of environmental pollution is delayed under criminal law, as it takes time for the trial to be concluded. Polluters must be caught to be prosecuted, but the weakness is not limited to criminal law. In criminal law, for a person to be held criminally liable for a crime, he or she must be proven guilty beyond reasonable doubt that he or she has committed the crime with a guilty state of mind.³²⁷ This means that if a person commits an environmental crime without knowing that the act is criminal, that person cannot be charged in criminal law. When criminal charges are brought, enforcement officials must be present in court

³²¹ Kidd "Administrative Law and Implementation of Environmental Law" 237.

³²² Murombo and Munyuki 2019 *Potchefstroom Electronic Law Journal* 12.

³²³ *S v Matjhabeng Local Municipality (represented by Zingisa Khutaza Tindleni)*. See page 78 of National Environmental Compliance and Enforcement Report 2022/23 <http://www.dffe.gov.za>

³²⁴ DFFE 2023 <http://www.dffe.gov.za>.

³²⁵ Murombo and Munyuki 2019 *Potchefstroom Electronic Law Journal* 6.

³²⁶ Kidd "Administrative Law and Implementation of Environmental Law" 237.

³²⁷ Davids *Compliance and Enforcement: The Legal Suitability of the Utilisation of Criminal Sanctions in South African Environmental Law* 31.

to give evidence and take them away from other important duties.³²⁸ Taking a stand could cause enforcement officers to shy away from pressing charges. Criminal law is, however, still the most used method of changing people's attitudes towards environmental degradation because it is embedded in our environmental laws. Environmental protection requires proactive measures.³²⁹ Criminal sanctions should be strengthened to ensure that they can achieve the primary objective of environmental law. Penalties issued must be substantive and imprisonment must be made compulsory for repeat offenders and licence holders that violated licence conditions. Kidd³³⁰ holds that "criminal sanctions should be reserved for more egregious contraventions of environmental law". Some provisions in environmental legislation should be clarified or amended; for instance, section 28(1) of the *NEMA* provides that every person who causes or may cause significant pollution or degradation must take necessary measures.³³¹ However, it is not specified as to what constitutes "significant". Clarifying such provisions would help to ensure that most of the environmental offenders are prosecuted and not thrown out of court. Environmental crime is a specialised field. Therefore, members of the South African Police Service, prosecutors and courts must be trained, and environmental courts be established.³³²

4.3 Alternative Environmental Law Enforcement Instruments

Command and control enforcement methods require much action from the state, which is costly and time-consuming.³³³ To ease the burden of policing, investigating, and writing notices, the adoption and implementation of alternative enforcement methods are required. The alternative instruments include market-based, voluntary, and civil-based instruments.³³⁴ These instruments are said to be alternative. However, they are built in the command-and-control instruments. The effectiveness

³²⁸ Kidd "Administrative Law and Implementation of Environmental Law" 238.

³²⁹ Davids *Compliance and enforcement: The legal suitability of the utilisation of criminal sanctions in South African environmental law* 67.

³³⁰ Kidd 2002 *South African Journal of Environmental Law and Policy* 50.

³³¹ Section 28 (1) of *NEMA*.

³³² Kidd "Administrative Law and Implementation of Environmental Law" 239.

³³³ Kidd 2002 *South African Journal of Environmental Law and Policy* 28.

³³⁴ Kidd 2002 *South African Journal of Environmental Law and Policy* 26.

of these instruments relies on a strong command-and-control foundation. The use of alternative instruments together with the command-and-control instruments will be an improvement on the current command-and-control approach.³³⁵

Market-based instruments encourage individuals to act beyond compliance requirements,³³⁶ acting in financial interest. Market-based instruments can be used by local governments to get industries and households to reduce waste production, separate waste at source, and recycle waste. The polluter pays principle ensures waste producers, including households, are responsible for the costs associated with the waste they produce.³³⁷ These incentives could be implemented positively or negatively. Positive incentives come in the form of tax rebates, subsidies and deposit refunds and negative incentives come in the form of charges and taxes.³³⁸ Local governments may also introduce quantity-based collection fees to encourage households and businesses to take measures to divert their waste from the landfill site.³³⁹ The introduction of quantity-based collection and disposal fees comes with a risk of increased illegal dumping and would require policing on the side of local government.³⁴⁰ In a study conducted by Nahman and Godfrey,³⁴¹ it was found that landfill charges are set exceptionally low, which encourages industries to opt for waste disposal if alternatives such as recycling or using waste as raw material are costly.

Implementing the extended producer responsibility could encourage waste producers to use fewer toxic materials as they would be responsible for remediating their material's impact on the environment.³⁴² However, the introduction of taxes and charges on the general public will be challenging as most South African households cannot afford to pay more taxes and charges. The economic instruments could see much waste diverted from the landfill site. Product tax and deposit refunds

³³⁵ Kidd 2002 *South African Journal of Environmental Law and Policy* 30.

³³⁶ Kidd 2002 *South African Journal of Environmental Law and Policy* 29.

³³⁷ Nahman and Godfrey 2010 *Resources, Conservation and Recycling* 5.

³³⁸ Kidd "Administrative Law and Implementation of Environmental Law" 250-251.

³³⁹ Nahman and Godfrey 2010 *Resources, Conservation and Recycling* 6.

³⁴⁰ Nahman and Godfrey 2010 *Resources, Conservation and Recycling* 12.

³⁴¹ Nahman and Godfrey 2010 *Resources, Conservation and Recycling* 12.

³⁴² Department of Environmental Affairs 2021 <http://sawic.environment.gov.za>.

should be prioritised over quantity-based collection and disposal fees.³⁴³ This can be observed from the amount of waste that is being diverted from the landfill sites through the activities of the informal waste pickers.

Voluntary enforcement instruments are often not required in any legislation. Most of the time industries adopt voluntary instruments to gain a competitive advantage.³⁴⁴ The voluntary instrument most companies adopt to gain a competitive advantage is ISO 14001, an environmental management system.³⁴⁵ ISO 14001 requires that an organisation considers legal requirements when setting objectives, targets and management plans.³⁴⁶ The organisation is free to choose how it plans to achieve the set objectives and targets, how to monitor progress and how to remedy any deviation from legal requirements. The ability of industries to monitor their compliance requirements reduces the cost of monitoring and enforcement by local authorities. Organisations that have chosen to implement ISO 14001 are not obligated by any legal provision to report their non-compliance to the public.³⁴⁷

Organisations are not forced by any legal provision to report their non-compliance to the public. However, they must provide the information when requested to do so to ensure the protection of environmental rights.³⁴⁸ The provisions of Section 32 of the *Constitution*, the right to access to information, together with the extended legal standing provided in section 32 of the *NEMA*, could see many organisations having to disclose their non-compliance. With access to information and legal standing, anyone can approach a court and seek relief. Civil measures such as interdicts are frequently employed to ensure the protection of the environment. In the *Umsunduzi* and *Kenton*³⁴⁹ cases, the court issued a structural interdict against the municipalities. The *Umsunduzi* case was brought to the court by the Human Rights Commission, which is established in terms of section 181 of the *Constitution*, with the sole

³⁴³ Nahman and Godfrey 2010 *Resources, Conservation and Recycling* 20.

³⁴⁴ Nel and Wessels 2010 *Potchefstroom Electronic Law Journal* 51.

³⁴⁵ Du Plessis 2015 *South African Journal of Science* 6.

³⁴⁶ Nel and Wessels 2010 *Potchefstroom Electronic Law Journal* 60.

³⁴⁷ Nel and Wessels 2010 *Potchefstroom Electronic Law Journal* 60.

³⁴⁸ See Section 32 (1)(b) of the *Constitution*.

³⁴⁹ *Kenton-on Sea Ratepayers Association v Ndlambe Local Municipality* 2017 2 SA 86 (ECG)

purpose of protection of human rights giving the commission a legal standing to take the municipality to court.³⁵⁰ The *Kenton* case was brought to court by a ratepayer association, which is a community group that was directly affected by the consequences of the failures of the waste management facility of the municipality. Civil society has a huge role in protecting the environment. However, this role could be hampered by a lack of knowledge on how to approach courts.

In *Kenton-on Sea Ratepayers Association v Ndlambe Local Municipality* 2017 2 SA 86 (ECG),³⁵¹ the court relied mostly on constitutional provisions for its judgement on the issue of the waste disposal site. The court held that the municipality had failed to carry out its statutory and constitutional duties.³⁵² The case dealt with issues including the improper management of the waste dumpsite, the use of the waste dumpsite past its lifespan, the burning of waste on the dumpsite and failure to establish a timeframe for the decommissioning of the dumpsite.³⁵³ In this case, the municipality failed to exercise its duty of care in terms of section 28 of the *NEMA* and to exercise the general duty in respect of waste management in terms of section 16 of the *Waste Act*.³⁵⁴

4.4 Conclusion

South Africa has made considerable progress in the development of environmental law. The success of these environmental laws relies on civil society, corporations and all spheres of government working together. Compliance with legal provisions requires that the regulated community be well informed of the legal rules and have a clear understanding of its role and responsibilities and enforcement by the state when there is non-compliance. There is a strong reliance on command-and-control enforcement mechanisms, such as criminal sanctions and administrative notices. Command-and-control enforcement mechanisms are said to be rigid, costly, and

³⁵⁰ See sections 181 and 184 of the *Constitution*.

³⁵¹ *Kenton-on-Sea Ratepayers Association v Ndlambe Local Municipality* 2017 2 SA 86 (ECG) para 93.

³⁵² *Kenton-on-Sea Ratepayers Association v Ndlambe Local Municipality* 2017 2 SA 86 (ECG) (hereafter *Kenton Case*) para 93.

³⁵³ *Kenton case* para 82.

³⁵⁴ See section 28 (1) of *NEMA* and section 16 of the *Waste Act*.

time-consuming.³⁵⁵ Criminal sanctions are reactive. Environmental protection requires measures that encourage voluntary compliance with legal prescripts.

EMIs are tasked with enforcing the *NEMA* and other sector-specific environmental management acts. The functions of EMIs include monitoring compliance, investigating non-compliances, issuing directives, compliance notices and instituting criminal charges against polluters, where necessary.³⁵⁶ Compliance notices can only be issued by Grade 1 EMIs, which could delay environmental protection measures. There are fewer Grade 1 EMIs and even fewer EMIs in the waste management discipline. This makes the implementation of alternative enforcement measures such as voluntary compliance instruments, market-based instruments and civil-based instruments more appealing. The implementation of alternative enforcement measures requires careful consideration. Economic instruments such as quantity-based collection and disposal fees could have both positive and negative effects.³⁵⁷ It could encourage waste generators to divert waste from landfill sites and it could also lead to increased illegal dumping.

Compliance enforcement when an organ of state is involved is much more complex. The principle of cooperative governance requires that organs of state avoid legal proceedings against one another, all measures must be exhausted before legal proceedings can be considered.³⁵⁸ Municipalities must be supported and provided with the necessary tools to assist them in exercising the discretionary powers for environmental protection.

The next chapter conclude the mini-dissertation and offers various recommendations.

³⁵⁵ Kleynhans and Kotze 2008 *SALJEP* 264.

³⁵⁶ Kabai *The Search and Seizure Powers of Environmental Management Inspectors* 5.

³⁵⁷ Nahman and Godfrey 2010 *Resources, Conservation and Recycling* 7.

³⁵⁸ Nel and Alberts "Environmental management and environmental law in SA" 47.

Chapter 5: Conclusion and recommendations

5.1 Conclusion

Man's effect on the environment can either be direct and intentional or indirect and unintentional.³⁵⁹ The direct or deliberate consequences of human activity are pre-planned and premeditated because man is conscious of the positive and negative effects of any programme initiated to alter or modify the natural environment for the region's economic development.³⁶⁰ Improper waste management has negative effects on the soil as the principal receiver, leading to the contamination of edible plants.³⁶¹ Waste disposed on land can be washed into surface water sources and negatively affect the water quality and the aquatic environment.³⁶² Nutrients in the waste lead to eutrophication, resulting in oxygen depletion and death of aquatic animals.³⁶³ Poor segregation of waste at source leads to the co-disposal of general waste with healthcare risk waste, which leads to microorganisms developing antibiotic resistance.³⁶⁴

Waste burning is a commonly used waste management option in informal settlements and other areas where waste collection services are unavailable.³⁶⁵ Burning waste releases dioxins, particulate matter, GHG and other trace elements.³⁶⁶ Releasing these substances into the atmosphere contributes to air pollution and acid rain.³⁶⁷ Poor air quality causes an increase in respiratory tract infections and other health conditions linked to the substances released.³⁶⁸ Greenhouse gases released by decomposing waste contribute to climate change, linked to several natural disasters such as floods and droughts that affect the global community.³⁶⁹ Even

³⁵⁹ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58521.

³⁶⁰ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58521.

³⁶¹ See Chapter 2.2.

³⁶² See Chapter 2.3.

³⁶³ See Chapter 2.3.

³⁶⁴ Chapter 2.5.

³⁶⁵ Nyika *et al* "Waste Management in South Africa" 341.

³⁶⁶ See Chapter 2.4.

³⁶⁷ Siddiqua *et al* 2022 *Environmental Science and Pollution Research* 58524.

³⁶⁸ See Chapter 2.4.

³⁶⁹ See Chapter 3.

though there is no medical or scientific evidence to link improper waste management to ill health, the court in the Umsuduzi case held that such evidence is irrelevant.³⁷⁰ Parasites and microorganisms of public health importance have been isolated from landfill site samples and in vectors found in both landfill sites and homes.³⁷¹

Section 24 of the *Constitution* is the foundation for environmental protection legislation.³⁷² The *NEMA* is the framework for environmental legislation. In section 2 it provides for environmental management principles. The *NEMA* provides for cooperative environmental governance between the spheres of government in matters concerning the environment.³⁷³ The *Waste Act* implores the government to implement the waste management hierarchy, and to achieve this goal the *Waste Act* provides for the implementation of the NWMS.³⁷⁴ The strategy aims to divert waste from landfill sites and introduce a circular economy.³⁷⁵ The *Structures Act* provides for the development of an IDP; the plan must include an IWMP.³⁷⁶ The IDP informs the municipal budget and projects of the concerned local government.³⁷⁷ The *Constitution* empowers municipalities to develop, implement and enforce by-laws.

The *NEMA* and the *Waste Act* were promulgated to give effect to section 24 rights. However, the evaluation of the NWMS of 2011 indicates that the enforcement of these pieces of legislation is poor.³⁷⁸ This fact was noted in the *uMsunduzi case*, whereby the municipality did not comply with the administrative notices issued by

³⁷⁰ *South African Human Rights Commission v Msunduzi Local Municipality and others 2021 3 All SA 939 (KZP)* Para 97.

³⁷¹ See Chapter 3.

³⁷² See Chapter 3.2.

³⁷³ See Chapter 3.3.

³⁷⁴ See Chapter 3.4.

³⁷⁵ See Chapter 3.4.

³⁷⁶ Chapter 3.5.

³⁷⁷ Chapter 3.5.

³⁷⁸ Chapter 4.2.2.

the EMI.³⁷⁹ The court held that “the municipality’s continued failure to comply with compliance notices issued has rendered the invoking of section 31 L futile”.³⁸⁰

Du Plessis³⁸¹ holds that “the realisation of a better living environment will not be through more litigation and stricter legislation”. Environmental compliance and enforcement instruments encounter hindrances. The criminal penalties set out in environmental legislation are not enough to deter environmental offenders.³⁸² Implementation of market-based compliance instruments needs careful consideration as they have both negative and positive outcomes, while compliance with voluntary instruments cannot be verified due to self-monitoring.³⁸³ Implementation of alternative compliance measures relies on sound command-and-control instruments.³⁸⁴ Compliance monitoring is hindered by the number of available EMIs.³⁸⁵ Compliance and the enforcement of environmental law require an increase in the number of EMIs, training of the members of South African Police Service, the National Prosecuting Authority and the members of the judiciary and the establishment of environmental courts.³⁸⁶ Education of the regulated community on the legal standards applicable to their industries and social sectors is vital to ensure voluntary compliance and environmental protection. ³⁸⁷Environmental protection requires proactive measures.

5.2 Recommendations

Based on the above information, the following recommendations flow from this study:

³⁷⁹ Chapter 4.2.3.

³⁸⁰ *South African Human Rights Commission v Msunduzi Local Municipality and others 2021 3 All SA 939 (KZP)* Para 90.

³⁸¹ Du Plessis 2015 *Potchefstroom Electronic Law Journal* 1866.

³⁸² Chapter 4.2.5.

³⁸³ Chapter 4.3.

³⁸⁴ See Chapter 4.3.

³⁸⁵ Chapter 4.2.2.

³⁸⁶ Chapter 4.2.1.

³⁸⁷ Stahl "Doing what's important: setting priorities for environmental compliance and enforcement programs" 159.

5.2.1 Strengthening environmental corporative governance structures, procedures and reporting

Structural cooperative instruments: Intergovernmental relation forums must be established as provided for in the *Intergovernmental Relations Framework Act 13* of 2005. These forums provide a platform where non-compliance with waste management licence conditions can be discussed and interventions can be identified. The training and support non-compliant municipalities need can be identified. The provision of section 11(8) of the *NEMA* must be amended to be compulsory, not discretionary. Section 11(8) should be amended to give a clear mandate to the minister to issue guidelines for drafting environmental implementation plans and environmental management plans, and to include municipalities. Guidelines for drafting environmental implementation plans and environmental management plans will assist municipalities in managing activities that may have negative environmental impacts. District waste management forums must be formed to provide a platform for local municipalities to raise any waste management needs and to ask for any support they require to ensure proper management of waste disposal sites.

Procedural cooperative governance: The minister in the Department of Forestry, Fisheries and the Environment must make provisions for dealing with non-compliant organs of state, as the only provision in the act for non-compliance is criminal measures. Such measures cannot be used against other organs of state as per the provisions of section 40 of the *Constitution*. Provisions of measures to deal with non-compliant organs of state will strengthen environmental compliance and enforcement measures. Measures could include holding officials responsible for waste management, holding municipal managers and majors in local governments personally liable for non-compliance with waste legislation and waste management licence conditions.

Strengthening cooperative governance monitoring and reporting instruments: Section 35 of the *NEMA* must be extended to include municipalities. The extension will ensure that municipalities have plans with measurable targets and timeframes

in place to improve compliance with set standards for the protection of the environment. These plans make provision for periodic monitoring and reporting against set targets. Periodic monitoring of municipal waste management activities by the provincial or national department will ensure early detection of non-compliance with waste norms and standards and waste management licence conditions.

5.2.2 Strengthening environmental compliance and enforcement instruments

Command-and-control instruments must be implemented together with market-based, civil and voluntary compliance instruments. Command-and-control instruments such as criminal penalties must be hefty enough to deter polluters. Imprisonment must be compulsory for repeat offenders.

5.2.2.1 Market-based compliance instruments

Incentives and disincentive policies must be drafted to encourage waste minimisation strategies. Quantity-based disposal fees must be implemented together with hefty fines for illegal dumping. This will help ensure that waste is segregated from source and illegal dumping is discouraged. A national rating system must be introduced for municipalities. The rating system can be based on compliance with norms and standards and waste management licence conditions and the overall cleanliness of the towns in that local government. To encourage municipalities, a form of remuneration must be attached to the national rating system.³⁸⁸

5.2.2.2 Civil instruments

There must be improved waste management education and awareness for industries and community members. There are many waste management regulations that are aimed at driving waste up the waste management hierarchy. These regulations are updated frequently to keep up with international standards

³⁸⁸ Bosman and Boyd "Compliance and enforcement in a co-operative governance structure—challenges and some solutions for the South African situation" 498.

and changing waste streams. Industries are struggling to remain competitive internationally and locally.³⁸⁹ Education and awareness will help industries remain compliant with waste regulations by ensuring that industries know the legislative requirements, how they apply to them, and what they must do to remain compliant with waste management legislation. Compliance education and awareness can be achieved by holding workshops with the regulated community, pamphlet distributions and road shows.

5.2.2.3 Environmental education and awareness

Environmental education and awareness must be provided to community members and must be incorporated into the school curriculum. Communities must be made aware of the consequences of improper waste management on their health and environment and must be encouraged to take part in waste management policy development. This can be achieved by adding waste management in health and hygiene awareness campaigns conducted by environmental health practitioners. Awareness can be raised during community meetings called by ward councillors. The circular economy must be promoted during these awareness campaigns and meetings to encourage community members to see value in waste.

5.2.3 Increasing the number of environmental management inspectors and eliminating the environmental management inspectors hierarchy

The number of EMIs in municipalities must be increased to improve enforcement activities at the local level. Environmental health practitioners already perform similar activities as EMIs, such as inspections, issuing administrative notices and admonition of guilt fines. Environmental health practitioners undergo environmental management inspectorate basic training,³⁹⁰ and must be designated as EMIs at the local government level. There should be capacity building of EMIs from Grades 2 to 5 to ensure that they can perform duties and functions assigned to Grade 1 EMIs. The duties and functions of Grade 1 EMIs must be cascaded down to other grades

³⁸⁹ Nyika *et al* "Waste Management in South Africa" 336.

³⁹⁰ DFFE <http://www.dffe.gov.za>.

of EMIs. On-the-job monitoring can be provided to assess the ability of other EMI grades and refresher training could be provided where necessary.

5.2.4 Training of other role players in the enforcement of environmental law

5.2.4.1 Training for the South African Police Service

Members of the South African Police Services have all the powers of EMIs in terms of section 31O of the *NEMA* with respect to an environmental offence, except issuing and enforcing compliance notice.³⁹¹ To effectively exercise these powers, police officers must be trained on what constitutes an environmental offence and the type of evidence to gather.

5.2.4.2 Training for the National Prosecuting Authority and the Judiciary

The National Prosecution Authority must be trained in environmental law to ensure that environmental cases are prosecuted. Members of the judiciary who are used to presiding over atrocious criminal cases with identifiable victim/s are reluctant to impose high penalties for environmental crimes. They must be trained on environmental laws to ensure that they are alert to the importance of environmental protection.

5.2.5 Establishment of environmental courts

Criminal prosecution of environmental crimes is slow because the criminal justice system is already overburdened. The establishment of environmental courts will ease the burden of the criminal justice system and ensure speedy prosecution of environmental crimes and remediation of the affected environment.

5.2.6 Waste collection and disposal

Local government must communicate the waste collection schedule with community members and when collection will be late, community members must be notified. Local governments must in their waste management by-laws make provision for

³⁹¹ See section 31O of *NEMA*.

waste collection by private companies. This will help ensure that waste is collected even in areas that do not receive waste removal services. Local government can enter into partnership with private waste recycling companies to collect recyclable waste on waste collection days. This will reduce the amount of waste going to landfill sites. Municipalities must employ properly skilled staff as landfill site attendants to ensure that waste is properly weighed and records kept. Landfill site attendants can also ensure that waste is covered and compacted at the end of the day to prevent fires.

5.2.7 Waste minimisation strategies

5.2.7.1 Waste recycling and buy-back centres

Municipalities must establish waste recycling or buy-back centres to divert waste from landfill sites. They can adapt their vehicles to collect both unrecyclable and recyclable waste or form partnerships with private recyclers. The establishment of buy-back centres in townships will provide an incentive for community members to separate their waste at source.

5.2.7.2 Establishment of industrial symbiosis

Municipalities must identify companies that produce waste that can be used as raw materials and connect that industry to the industry that needs that waste. For instance, tyres from car maintenance companies and businesses that dispose of pallets can be linked to small business enterprises that make outdoor furniture from tyres and pallets, or restaurants can be linked to pig farmers to divert food waste from landfill sites.

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