

The legal framework for regulating food waste in South African cities

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ABSTRACT

Food waste is an aspect of the time in which we live. It is estimated that approximately one-third of the food that is produced for human consumption around the world ends up being wasted. South Africa produces 31 million tonnes of food annually for human consumption, one-third of which is wasted. The majority of food is wasted or lost during the initial phases of the food supply chain and continues through to the post-consumer stage. The post-consumer stage accounts for a large proportion of what goes into household bins and has a significant impact on urban landfills, putting more pressure on already burdened urban landfill sites. Overall, food waste has an unfavourable impact on the environment and various socio-economic implications.

In the South African context, waste management is in large part assigned to local government. Part B of Schedules 4 and 5 of the *Constitution of the Republic of South Africa, 1996*, contains the functions of local government that inform the duty to deliver basic municipal services. Municipal waste services are listed as a function of local government in Part B of Schedule 5. Municipal services such as waste collection, waste dumps and solid waste disposal fall under this function. South African law affords local government control and governing authority over waste management as well as other activities related to waste. At the national level, South Africa has laws and regulations that indirectly address food waste. However, this study shows that municipalities can and should contribute more pertinently to proper food waste regulation and management using a mix of existing and potential national and local law and governance instruments.

The main research question explored is the extent to which South African law regulates food waste in cities. The methodology of this study comprises a literature review in combination of a legal analysis of the *status quo* in the metropolitan municipalities of eThekweni, Johannesburg, and Mangaung.

Keywords:

Cities; food waste; food loss; food waste regulation and management; waste law; local government law; eThekweni Metropolitan Municipality; Johannesburg Metropolitan Municipality; Mangaung Metropolitan Municipality; South Africa

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This study reflects the legal position in South Africa at this time.

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LIST OF ABBREVIATIONS

AJAE	American Journal of Agricultural Economics
AJBER	African Journal of Business and Economic Research
BCLR	Butterworths Constitutional Law Reports
BPEO	Best Practical Environmental Option
CC	Constitutional Court
CEC	Commission for Environmental Cooperation
CGCSA	Consumer Goods Council of South Africa
CLES	South African Research Chair in Cities, Law and Environmental Sustainability
CSIR	Centre for Scientific and Industrial Research
CWS	Cleansing and Solid Waste Unit
DEA	Department of Environmental Affairs
DEFF	Department of Forestry and Fisheries
DTI	Department of Trade and Industry
ECG	Eastern Cape Division, Grahamstown
EU	European Union
FAO	Food and Agriculture Organisation
FASA	Franchise Association of South Africa
GDP	Gross Domestic Product
GG	Government Gazette

GHGs	Greenhouse Gases
IDP	Integrated Development Plan
ILO	International Labour Organization
LLM	Master of Laws
MEC	Member of the Executive Council
NEMA	National Environmental Management Act 107 of 1998
NEMWA	National Environmental Management: Waste Act 59 of 2008
NEMWAA	National Environmental Management: Waste Amendment Act 26 of 2014
NHA	National Health Act 61 of 2003
NWMS	National Waste Management Strategy
OECD	Organisation for Economic Co-operation and Development
PER/PELJ	Potchefstroom Electronic Law Journal
PPP	Public-private partnership
SACN	South African Cities Network
SDGs	United Nations Sustainable Development Goals
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
US	United States of America

WCMS	Waste Classification and Management System
WML	Waste Management Licence
WMP	Waste Management Plan
WWF	Worldwide Fund for Nature
ZAKZPHC	South Africa: Kwazulu-Natal High Court, Pietermaritzburg
ZASCA	South Africa: Supreme Court of Appeal

Chapter 1 Introduction

1.1 Background

Waste is a significant problem worldwide.¹ It is estimated that "around 2 billion tonnes of municipal solid waste are generated each year".² Projections indicate that waste generation will increase to three billion tonnes by 2050.³ According to estimates, "South Africa generated approximately 55.6 million tonnes of waste in 2017".⁴ Municipal solid waste is one of the overall sources of waste generation, making up a significant portion of the total amount of general waste produced.⁵ Food waste is a major component of municipal solid waste.⁶ Municipal solid waste, often referred to as solid waste, excludes hazardous waste that originates in buildings used entirely or primarily for residential, educational, healthcare, sports, or recreational purposes.⁷ According to the Food and Agriculture Organisation (FAO), "one-third of the food produced for human consumption is wasted worldwide, amounting to approximately 1.3 billion tonnes of food that is never consumed".⁸ Studies on food waste in South Africa have suggested that about 10 million tonnes of food are generated annually.⁹ In addition, approximately 90% of South African waste is disposed of in landfills,¹⁰ which means that this food waste is not managed in an environmentally friendly manner.¹¹ Large amounts of waste

¹ Kaza, Bhad-Tata and Van Woerden 2018 *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050* ix.

² World Bank 2022 <https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management>.

³ World Bank 2022 <https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management>.

⁴ DEA "South African State of Waste: A Report on the State of the Environment" 19.

⁵ DEA "South African State of Waste: A Report on the State of the Environment" 22.

⁶ DEFF "2020 National Waste Management Strategy" 12.

⁷ Section 1 of the *National Environmental Management: Waste Act* 59 of 2008.

⁸ Bellamare *et al* 2017 *American Journal of Agricultural Economics* 1148.

⁹ Oelofse "Food Waste in South Africa" 64; WWF 2023 https://www.wwf.org.za/our_research/publications/?42562/food-loss-and-waste-on-farms 7.

¹⁰ Franchise Association of South Africa 2019 <https://www.fasa.co.za/tackling-south-africas-food-waste-problem/#more-4522>; WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report.

¹¹ World Bank 2018 https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html.

are not properly treated or collected through formal waste collection systems, which leads to unsustainable waste disposal.¹²

The primary factors contributing to municipal solid waste generation include population growth, urbanisation, and economic growth.¹³ Municipal solid waste is often viewed as an urban issue because waste generation rates tend to be significantly higher in urban areas.¹⁴ For example, in cities, there has been an increase in consumption, and consequently, a greater amount of waste has been generated because of growing populations and rapid urbanisation.¹⁵ With increasing urbanisation and waste as a by-product, cities are experiencing mounting pressure to provide adequate waste removal services.¹⁶ However, waste removal is often challenging because of uncoordinated and poorly managed waste removal systems and governance deficiencies.¹⁷

According to the *Constitution of the Republic of South Africa, 1996* (hereafter *Constitution*), municipalities are responsible for waste collection, waste dumps, and solid waste disposal.¹⁸ However, municipalities also face certain challenges.¹⁹ These are linked to financial constraints and planning, management, and administrative demands.²⁰ Financial constraints include limited waste management budgets.²¹ Planning and management challenges include the inability to manage landfill sites

¹² Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 5.

¹³ DEA "South African State of Waste: A Report on the State of the Environment" 11.

¹⁴ DEA "South African State of Waste: A Report on the State of the Environment" 11.

¹⁵ DEA "South African State of Waste: A Report on the State of the Environment" 2.

¹⁶ Jain "Global Food Waste Management: an Implementation Guide for Cities" 1.

¹⁷ Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 18.

¹⁸ Section 156(1)(a) of the *Constitution of the Republic of South Africa, 1996*; Schedule 5 Part B of the *Constitution* provides a list of services which municipalities should execute. These services, among others, include providing waste removal, waste dumps and solid waste disposal services.

¹⁹ Alberts and Van Rooyen "Solid Waste Management" 13-4; Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 5; the *National Waste Management Strategy* (2020) gave prominence to ten challenges it deems as priorities and intends to address through various plans, targets and measures.

²⁰ Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 18.

²¹ Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 18.

and effectively render waste management services.²² Administrative challenges include a lack of or inadequate enforcement of waste laws and policies and long waiting periods when applying for waste licences.²³ In addition, municipalities are generally expected to have the internal capacity to provide waste management services.²⁴ However, some municipalities outsource this function.²⁵

Food waste in the global food supply chain is gaining international attention owing to its environmental, social, and economic impacts.²⁶ Food waste is associated with three major global problems.²⁷ First, it negatively impacts food security. Second, it affects the economy. Finally, it also affects the environment.²⁸ Food waste occurs in different stages of the food supply chain.²⁹ These stages include the production and pre-harvest, harvest, post-harvest, storage, processing, distribution, retail, and consumption stages.³⁰

The causes and drivers of food waste at each stage are diverse and depend on products and local situations.³¹ Some causes of food waste include weather damage, pest damage, spillage, and food grade.³² Products that do not meet consumer expectations in that they are blemished or oddly shaped are also a cause of food waste.³³ Improper handling or storage, food safety regulations that deem food inedible to humans, and confusion about expiration dates are recognised as some

²² Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 18.

²³ Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 18.

²⁴ Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 5.

²⁵ Oelofse, Polasi and Matinise "South African Municipal Waste Management: Challenges and Solutions" 5.

²⁶ Papargyropoulou *et al* 2014 *Journal of Cleaner Production* 106.

²⁷ Oelofse and Nahman 2013 *Waste Management and Research* 80.

²⁸ Oelofse and Nahman 2013 *Waste Management and Research* 80;

²⁹ High-Level Panel of Experts 2014 <https://www.fao.org/3/i3901e/i3901e.pdf> 39.

³⁰ High-Level Panel of Experts 2014 <https://www.fao.org/3/i3901e/i3901e.pdf> 39.

³¹ High-Level Panel of Experts 2014 <https://www.fao.org/3/i3901e/i3901e.pdf> 39.

³² Harduth "Legislation Discussion Paper: Food Donations as a Mechanism to Limit Food Waste, Food Insecurity and Malnutrition" 11-12.

³³ Harduth "Legislation Discussion Paper: Food Donations as a Mechanism to Limit Food Waste, Food Insecurity and Malnutrition" 11-12.

of the causes of food waste.³⁴ Most of the approximately 10 million tonnes of food waste generated annually in South Africa occur during the pre-consumer stage.³⁵ Only 4% of total food waste is generated in the post-consumer stage.³⁶

The World Wide Fund for Nature (WWF) estimates that South Africa produces 31 million tonnes of food for human consumption annually.³⁷ One-third of the produced food is wasted or lost.³⁸ This explains why food waste exacerbates food insecurity by raising the price of food, as the expenses associated with food waste are factored into the price of food, making it unaffordable.³⁹ Food waste not only threatens food security but also negatively impacts the economy, as more resources are required for food production to compensate for wasted food.⁴⁰ In addition to food security and economic concerns, food waste is also a factor in contributing to climate change by releasing greenhouse gases into the atmosphere.⁴¹

Although research on food waste has been conducted from international and national perspectives,⁴² most studies have focused on specific aspects of the food supply chain⁴³ and have not provided information on the management and

³⁴ Harduth "Legislation Discussion Paper: Food Donations as a Mechanism to Limit Food Waste, Food Insecurity and Malnutrition" 11-12.

³⁵ Oelofse and Nahman 2013 *Waste Management and Research* 83; Oelofse "Food Waste in South Africa" 64; Council for Scientific and Industrial Research 2021 <https://www.csir.co.za/food-supply-south-africa-wasted-shows-new-csir-study>; WWF 2023 https://www.wwf.org.za/our_research/publications/?42562/food-loss-and-waste-on-farms 7.

³⁶ Oelofse and Nahman 2013 *Waste Management and Research* 83.

³⁷ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report WWF 2017 8.

³⁸ Oelofse "Food Waste in South Africa" 64.

³⁹ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2.

⁴⁰ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2.

⁴¹ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2.

⁴² After the FAO had stated that about one-third of food goes to waste each year, most countries around the world started to direct their attention to the issue of food waste and some started financing projects dedicated to addressing the issue, for example, the FUSIONS project of the European Union between 2013 and 2016 provided a comprehensive attempt of harmonised methodology that the European Commission Delegated Decision primarily integrated in 2019. In South Africa, the Council for Scientific and Industrial Science undertook research into quantifying the amount of wasted food per year.

⁴³ Most research and quantification studies conducted in South Africa have focused on household and retail food waste. Some research has also been done on the opportunities and alternatives for food waste management in South Africa; see for example, Cronjé, Van der Merwe and Muller 2018 *Journal of Consumer Science* 1.

regulation of food waste. Accordingly, there is a gap in the knowledge regarding food waste streams and how they are managed and regulated. For instance, no legislation explicitly regulates food waste in South Africa.⁴⁴ Food waste management follows general patterns of waste management governed by general waste legislation, such as the *National Environmental Management: Waste Act* 59 of 2008 (hereafter *NEMWA*). In the *National Waste Management Strategy* (2020) (hereafter *NWMS*),⁴⁵ the government started to acknowledge that South Africa faces challenges in managing food waste because it is not recognised, accounted for, or recorded in the general waste classification.⁴⁶ The national government recently published a *Draft Strategy for Reducing Food Losses and Waste* (2023) for public comment.⁴⁷ This Draft Strategy marks a significant milestone as it endeavours to develop a national action or policy instrument that specifically addresses food loss and waste as key interventions following the *NWMS*.⁴⁸

As mentioned above, despite no legislation expressly providing for food waste regulation, food waste is indirectly and partially addressed by the existing legislative framework for waste management. This includes a range of waste and local laws and policies that may be relevant to food waste regulation, such as waste management bylaws, Integrated Waste Management Plans (IWMPs), and regulations along the lines of the waste hierarchy.⁴⁹ This hierarchy is a set of guidelines for managing waste throughout its lifecycle, with the goal of reducing the amount of waste sent to landfills.⁵⁰ These options include waste avoidance and reduction, reuse and recycling, and recovery, treatment, and disposal of waste as a

⁴⁴ Melikoglu, Webb and Lin 2013 *Central European Journal of Engineering* 159.

⁴⁵ The *NWMS* is a revision and updated version of the Strategy originally mandated by chapter 2, Part 1 of the *National Environmental Management: Waste Amendment Act* 26 of 2014.

⁴⁶ DEFF "2020 National Waste Management Strategy" 14.

⁴⁷ *Consultation on the Draft Strategy for Reducing Food Losses and Waste in Terms of Section 72 and 73 of the National Environment Management: Waste Act, 2008 (Act 59 of 2008)* published in GN 3888 in GG 49321 of 19 September 2023 (*Draft Strategy on Reduction of Food Losses and Waste*).

⁴⁸ *Draft Strategy on Reduction of Food Losses and Waste* 8.

⁴⁹ See DEFF "2020 National Waste Management Strategy" 14; chaps 3 and 4 below.

⁵⁰ Alberts and Van Rooyen "Solid Waste Management" 13-9.

last resort.⁵¹ Many countries have used the so-called waste hierarchy to manage waste and reduce its environmental impact over the years.⁵²

Food waste is not (yet) classified, recorded, or accounted for separately in the general classification of waste, which presents difficulties in estimating the amount of food waste delivered to landfill sites.⁵³ Thus, it is becoming increasingly important to consider a legal reform process that could lead to improved information on and subsequent improved regulation towards food waste management.

For purposes of this research, three metropolitan municipalities, namely eThekweni metropolitan municipality, the city of Johannesburg and Mangaung metropolitan municipality have been selected as illustrative examples to enhance a greater comprehension of food waste regulations in cities. These three metropolitan municipalities are used to better understand the stream, characterisation, and identification of food waste and what could be reasonably expected in relation to food waste regulation. This study examined cities (metropolitan areas) because waste is identified as the third-largest contributor to emissions in cities, following buildings and transport.⁵⁴ As mentioned previously, urban waste generation is growing rapidly.⁵⁵ Thus, cities and urban areas have become hotspots for food waste.⁵⁶ However, cities are perceived as important partners in concerted management and promotion of sustainability.⁵⁷ This underscores the relevance of regulating food waste in cities and having them directly involved in the process. In fact, cities can serve as innovation hubs to address food waste challenges.⁵⁸ One

⁵¹ Alberts and Van Rooyen "Solid Waste Management" 13-9.

⁵² Melikoglu, Webb and Lin 2013 *Central European Journal of Engineering* 159.

⁵³ DEFF "2020 National Waste Management Strategy" 14.

⁵⁴ C40 Cities Climate Leadership Group and C40 Knowledge Hub 2022 https://www.c40knowledgehub.org/s/article/Why-cities-need-to-advance-towards-zero-waste?language=en_US
https://www.c40knowledgehub.org/s/article/Why-cities-need-to-advance-towards-zero-waste?language=en_US.

⁵⁵ C40 Cities Climate Leadership Group and C40 Knowledge Hub 2022 https://www.c40knowledgehub.org/s/article/Why-cities-need-to-advance-towards-zero-waste?language=en_US
https://www.c40knowledgehub.org/s/article/Why-cities-need-to-advance-towards-zero-waste?language=en_US.

⁵⁶ Bolwig *et al Reducing Consumer Food Waste Using Green and Digital Technologies* 65.

⁵⁷ Aust and Du Plessis *The Globalisation of Urban Governance* 3.

⁵⁸ Bolwig *et al Reducing Consumer Food Waste Using Green and Digital Technologies* 15.

reason is that cities have local governance instruments at their disposal that they can employ to regulate food waste. Against this background, this study explores South African law and policy frameworks to determine how food waste is currently regulated at the city level.

1.2 *Research question*

The central question that this study aims to answer is: To what extent does South African law regulate food waste in cities?

1.3 *Research objectives*

The primary aim of this study is to examine the extent to which South African law regulates food waste in cities.

Additional objectives include to:

- Review the interpretations of food waste available in the relevant literature.
- Examine national laws relevant to food waste regulation in South Africa.
- Examine the bylaws and municipal policy frameworks of three selected metropolitan municipalities in South Africa that are applicable to food waste regulation.
- Make recommendations on how to integrate food waste formally into the waste management system created in terms of South African law.

1.4 *Research methodology*

This study was conducted through doctrinal legal analysis. It evaluates and studies laws and policies relevant to food waste regulation at national and local government levels to determine how food waste is regulated at the city level. These laws and policies include the *Constitution*, the *National Environmental Management Act 107 of 1998 (NEMA)*, *NEMWA*, the *National Health Act 61 of 2003 (hereafter NHA)*, and the *Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972 (hereafter Foodstuffs Act)*. Local government legislation such as the *Local Government: Municipal Systems*

*Act 32 of 2000 (hereafter *Municipal Systems Act*) and *Local Government: Municipal Structures Act 117 of 1998 (hereafter *Municipal Structures Act*)* were examined. The *NWMS*, the recently published *Draft Strategy for Reducing Food Losses and Waste*, provincial laws, policies and regulations (particularly from the Western Cape) were also explored.*

Johannesburg, eThekweni, and Mangaung are used as case examples in this study. The rationale for conducting a case study analysis is to establish how the identified municipalities regulate and manage food waste in their respective jurisdictions and the extent to which their bylaws regulate food waste. These municipalities were selected based on the following criteria: first, each municipality has a different food waste stream; second, the three municipalities have been empowered with both executive and legislative authority to effectively manage affairs relevant to regulating and managing food waste; and third, studies on food waste have revealed that there is a need for cities to adopt and implement waste bylaws that deal with the prevailing issue of large amounts of food waste which are not being disposed of in an environmentally sustainable and safe manner. The study also briefly considers the provincial law and policy of the Western Cape in chapter 3 with the aim of examining the extent to which the relevant laws and policies seek to address the issue of food waste. A city in the Western Cape was excluded as a case study in this research due to study limitations.⁵⁹ Nonetheless, it is essential to highlight that the Western Cape was deliberately selected because its progressive legislative framework plays a significant role in waste management practices, distinguishing it from the provinces where the case study cities are situated.

Accordingly, an enquiry into the selected municipalities facilitates a better understanding of the nexus between local laws, policies, and food waste streams in South Africa. Local waste bylaws, plans, and policies are considered in combination with the national waste law framework to estimate how food waste is regulated at the local government level. To understand and contextualise food waste regulation

⁵⁹ See para 5.2 below.

in South African cities, this study is further complemented by disciplines other than law, such as food-related studies, urban development, waste management science, and local government studies.

1.5 Framework

This study comprises of five chapters. Chapter 2 lays out the theoretical and conceptual background on the topic of food waste and its generation. This section defines the concepts of waste, food waste, and food loss. Chapter 3 explores South African laws and analyses the legal framework for managing food waste in South African cities by considering the regulatory tools or instruments provided by law. This includes waste, environmental health, and local government laws. Furthermore, chapter 3 offers an analysis of the *NWMS*, the recently published Draft Strategy for Reducing Food Losses and Waste, and the Western Cape Provincial Law and Policy Framework to determine the extent to which they apply and relate to food waste management. Chapter 4 evaluates municipal bylaws and policies related to waste through a study of the cities of eThekweni, Johannesburg, and Mangaung. This chapter considers waste management, waste removal, environmental health, informal trading, street trading, fresh produce markets, and municipal public health bylaws, which are relevant for regulating and managing food waste.⁶⁰ Finally, the conclusions and recommendations are presented in chapter 5.

⁶⁰ See chapter 4 above.

Chapter 2 Theoretical perspectives on food waste

2.1 *Introduction*

Food waste has become a topic of interest worldwide owing to its consequences.⁶¹ As explained earlier,⁶² food waste affects the environment, society, and the economy.⁶³ These impacts cannot be overlooked, given that the world is working towards becoming more sustainable as it hopes to address the global environmental crisis.⁶⁴ Currently, food waste is defined and interpreted differently, making it difficult to fully comprehend it as a concept.⁶⁵

This chapter aims to provide the theoretical basis for this study. This is done by exploring perspectives and views on food waste in the policy and literature. The rationale is to provide a clearer picture of food waste by unpacking definitions and identifying the causes, consequences, and management of food waste. This chapter is organised into five sections. The first offers a broad overview and clarification of the concept of food waste. This includes the definitions of waste, food waste, and food loss. The second section critically discusses the causes of food waste. The third section discusses the consequences associated with food waste. The fourth examines the position and shortcomings of food waste management in South Africa. The fifth section provides concluding remarks.

2.2 *Defining food waste*

Before exploring the magnitude and meaning of food waste, it is imperative to define waste. The rationale is to provide a context and a broader understanding of the concept. The *National Environmental Management: Waste Amendment Act 26 of 2014* (hereafter *NEMWAA*) legally defines waste as:

⁶¹ Ghinea and Gavrilescu 2015 *Journal of Faculty of Food Engineering* 340.

⁶² See para 2.4 above.

⁶³ De Lange and Nahman 2015 *Waste Management* 167.

⁶⁴ Feng, Marek and Tosun 2022 *Journal of Consumer Policy* 458.

⁶⁵ United Nations Environment Programme 2021 <https://www.unep.org/resources/report/unep-food-waste-index-report-2021> 20.

Any substance, material, or object that is unwanted, rejected, abandoned, discarded, or disposed of, or that is intended or required to be discarded or disposed of by the holder of that substance, material, or object, whether or not such substance, material, or object can be reused, recycled, or recovered, and includes all wastes defined in Schedule 3 of this Act; or any other substance, material, or object that is not contained in Schedule 3, which may be defined as waste by the Minister by notice in the Gazette.⁶⁶

The preceding definition includes various forms of waste, such as general, solid, and hazardous waste.⁶⁷ This definition excludes certain types of waste.⁶⁸ Food waste forms a part of those types excluded from the general classification of waste, which makes defining food waste difficult.⁶⁹ Thus, there is no legal definition of food waste as such in the current national legal framework.⁷⁰ Food waste is distinctively defined by different institutions, countries, and organisations.⁷¹ However, efforts have been made to standardise the global definition of food waste.⁷²

For example, the *FUSIONS Definitional Framework for Food Waste Report* defines food waste as:

Any food and inedible part of food removed from the food supply chain to be recovered and disposed of (including composted food crops ploughed in and not harvested, anaerobic digestion, bioenergy production, co-generation, incineration, disposal to sewer, landfill, or discarded to sea).⁷³

⁶⁶ Section 1(i)(a) of the *NEMWAA*; it is worth noting that in terms of other laws waste may be defined differently. For example, the *National Water Act* 36 of 1998 (*National Water Act*) defines waste as solid material suspended, dissolved, or transported in water, which is spilled or deposited to pollute water resources. However, for the purposes of this study, waste is defined as per section 1(i)(a) of the *NEMWAA*.

⁶⁷ See for example Schedule 3 of *NEMWAA* which provides for those defined wastes.

⁶⁸ Alberts and Van Rooyen "Solid Waste Management" 13-7. Schedule 3 of *NEMWAA* provides a list of types of waste, from which food waste is not included.

⁶⁹ DEFF "2020 National Waste Management Strategy" 14.

⁷⁰ Mammburu *Exploring Alternatives to Divert Food Waste from Landfill Disposal in Rustenburg, North-West* 10.

⁷¹ Institute of Food Science and Technology 2020 <https://www.ifst.org/resources/information-statements/food-waste>; Ishangulyyev, Kim and Lee 2019 *Foods* 3; WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 7; Mammburu *Exploring Alternatives to Divert Food Waste from Landfill Disposal in Rustenburg, North-West* 10.

⁷² Hoehn *et al* 2022 *Resources, Conservation and Recycling* 2; Mammburu *Exploring Alternatives to Divert Food Waste from Landfill Disposal in Rustenburg, North-West* 10.

⁷³ Östergren *et al* "FUSIONS Definitional Framework for Food Waste - Full Report" 6.

This definition encompasses both edible and inedible components of the waste stream, such as peels and bones.⁷⁴ Based on this definition, food waste can be considered avoidable or unavoidable.⁷⁵ For example, avoidable or edible food waste refers to foods that are discarded because they are no longer desirable, such as edible slices of bread, apples, and meat.⁷⁶ Unavoidable or inedible food waste refers to waste generated from food preparations that are not edible under normal conditions, such as bones, eggshells, or pineapple skin.⁷⁷

The United Nations FAO⁷⁸ defines food waste as follows:

Food loss refers to the discarding or alternative (non-food) use of safe and nutritious food for human consumption along the entire food supply chain, from primary production to the household consumer stage.

Most recently, in South Africa's *Draft Strategy for Reducing Food Losses and Waste*, food waste is defined as "food appropriate for human consumption being discarded, whether after it is kept beyond its best before, sold by, used by, or left to spoil because of behavioural issues".⁷⁹ This study draws on a combination of the foregoing definitions of food waste. It defines it as an act of discarding or finding alternative uses for food that is still fit for human consumption, as well as food that is deemed unfit or inedible. This includes food lost in the supply chain between producers and consumers.⁸⁰ This definition emphasises the inclusion of both foods that are still fit for consumption and those that are deemed unfit and inedible. The definition of food waste adopted in this study encompasses both edible and inedible

⁷⁴ Nahman and de Lange 2013 *Waste Management* 2493.

⁷⁵ Bagherzadeh, Inamura and Jeong 2014 *OECD Food, Agriculture and Fisheries Papers* 9.

⁷⁶ Bagherzadeh, Inamura and Jeong 2014 *OECD Food, Agriculture and Fisheries Papers* 9.

⁷⁷ Bagherzadeh, Inamura and Jeong 2014 *OECD Food, Agriculture and Fisheries Papers* 9.

⁷⁸ Bellamare *et al* 2017 *American Journal of Agricultural Economics* 1151.

⁷⁹ *Draft Strategy on Reduction of Food Loss and Waste* 3; the *Draft Strategy on Reduction of Food Losses and Waste* adopted a definition of food waste which was developed at the launch of the South African Food Loss and Waste Voluntary Agreement by the Consumer Goods Council of South Africa in Partnership with the National Department of Trade, Industry and Competition on the 29th of September 2020.

⁸⁰ Lai 2021 <https://earth.org/what-is-food-waste/>.

parts of food, as the researcher highlights that both parts of food waste impact how policies and regulations should be shaped and how food waste should be quantified.

2.3 Causes of food waste

As previously mentioned, the issue of food waste is multi-causal and arises at various phases throughout the supply chain.⁸¹ The food supply chain is comprised of five key phases: agricultural production, storage, processing, distribution, and consumption.⁸² The causes of food waste are diverse and depend on the specific product and circumstances at various phases of the supply chain.⁸³ For instance, perishable items such as soft and leafy fruits and vegetables are more prone to wastage compared to sturdier roots and tubers, which are less likely to be damaged during handling and transportation.⁸⁴ The subsequent sections elaborate on some primary causes of food waste.

2.3.1 Agricultural production

Food waste in the agricultural production phase occurs immediately after or during farm harvest.⁸⁵ For example, instances of fruit damage occur during picking or threshing, crops undergo post-harvesting sorting due to failure to meet quality standards, and fields are sometimes left with unharvested crops owing to inadequate mechanical harvesting.⁸⁶ Food waste occurs during the agricultural production phase because of many different factors, some of which are under the control of the farmer and others are not.⁸⁷ For example, poor weather conditions,

⁸¹ FAO 2022 <https://www.fao.org/3/cc2278en/cc2278en.pdf> 2.

⁸² Ozbuk and Coskun 2019 *Journal of Cleaner Production* 3.

⁸³ Mammburu *Exploring Alternatives to Divert Food Waste from Landfill Disposal in Rustenburg, North-West* 15; DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 4.

⁸⁴ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 4.

⁸⁵ Bagherzaden, Inamura and Jeong 2014 <http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

⁸⁶ Bagherzaden, Inamura and Jeong 2014 <http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

⁸⁷ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 6.

grading errors, and uncoordinated production are, *inter alia*, reasons for food waste in this phase.

2.3.2 Storage and handling

The storage phase refers to the phase after harvesting the product, during which it undergoes necessary preparation.⁸⁸ For example, certain products, such as potatoes, require washing before being packed for transportation, whereas others can be packed immediately into bags.⁸⁹ Food waste in this phase is exacerbated by logistical issues owing to inadequate infrastructure, including refrigerated storage facilities, vehicles, and good roads.⁹⁰ For example, inadequate infrastructure eventually leads to inefficiencies or interruptions in the cold chains.⁹¹ Product damage or spillage during transportation, often due to improper handling, leads to waste as a result of activities such as vehicle loading, unloading, and cross-docking.⁹² The lack of optimal storage and cooling facilities, improper choice of storage facilities, and improper handling of items are some of the leading causes of food waste in this phase.⁹³

2.3.3 Processing and packaging

The processing phase refers to "all processes designed to convert raw food components into products fit for consumption, cooking, or sale".⁹⁴ Food processors receive commodities from farms or markets for processing.⁹⁵ For example, fruits are

⁸⁸ Bagherzaden, Inamura and Jeong 2014 <http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8; Georgiev 2023 <https://www.bluecart.com/blog/what-is-the-food-supply-chain>.

⁸⁹ Bagherzaden, Inamura and Jeong 2014 <http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8; Georgiev 2023 <https://www.bluecart.com/blog/what-is-the-food-supply-chain>.

⁹⁰ Viscardi, Colicchia and Creazza 2022 *International Journal of Logistics Research and Applications* 12.

⁹¹ Viscardi, Colicchia and Creazza 2022 *International Journal of Logistics Research and Applications* 12.

⁹² Viscardi, Colicchia and Creazza 2022 *International Journal of Logistics Research and Applications* 12.

⁹³ Too Good To Go 2020 <https://toogoodtogo.com/en-us/movement/knowledge/handling-storage>.

⁹⁴ Commission for Environmental Cooperation *Why and How to Measure Food Loss and Waste: A Practical Guide* 32.

⁹⁵ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 8.

commonly preserved through canning or processed into juices.⁹⁶ Vegetables, fish, and meat undergo processing to create frozen, canned, or bottled products or are transformed into convenience food, such as pre-prepared meals, minimising the additional preparation required by consumers.⁹⁷ During this phase, food waste occurs in the industrial and domestic processing and packaging of food.⁹⁸ For example, fruits and grains that are edible but unsuitable for processing, milk spilt during pasteurisation and processing, and trimming from livestock during slaughtering and industrial processing can be categorised as food waste in this phase.⁹⁹ It follows that products rejected for not meeting quality specifications, over-demanding quality specifications, and accidental spillage lead to waste during this phase.

2.3.4 Distribution

The distribution phase involves the wholesale markets, supermarkets, and retailers.¹⁰⁰ Food waste in this phase occurs during distribution to markets, including losses in wholesale and retail markets.¹⁰¹ This phase involves sorting edible produce based on quality, ensuring that expired products are not purchased, and addressing spills or damage to the market.¹⁰² The causes of food waste in the distribution phase of the supply chain are primarily related to retail store management and customer behaviour.¹⁰³ It has been found that "waste generated during the distribution phase

⁹⁶ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 8.

⁹⁷ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 8.

⁹⁸ Bagherzaden, Inamura and Jeong 2014
<http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

⁹⁹ Bagherzaden, Inamura and Jeong 2014
<http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

¹⁰⁰ Bagherzaden, Inamura and Jeong 2014
<http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 9.

¹⁰¹ Bagherzaden, Inamura and Jeong 2014
<http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

¹⁰² Bagherzaden, Inamura and Jeong 2014
<http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

¹⁰³ Jere *et al* 2021 *AJBER* 97.

is caused by external factors such as road conditions, accessibility and proximity to markets".¹⁰⁴ Inadequate road conditions lead to bruising, while long-distance travel diminishes the shelf-life of commodities.¹⁰⁵

Food waste is also a consequence of retailers establishing internal product quality standards for their suppliers.¹⁰⁶ As a result, rejections occur for products that fall short of these standards, even in cases where specific criteria have no impact on their fundamental quality or safety.¹⁰⁷ Pre-packaging products may lead retailers to purchase more than the required quantity, potentially causing overstocking.¹⁰⁸ A lack of clarity in terminology, such as selling by, best before, freezing by, and expiry date, causes significant confusion among consumers.¹⁰⁹ Customers often struggle to differentiate between quality and safety date labels, leading them to assume that a product is unsafe for consumption if it reaches its sell-by date.¹¹⁰ Promotions, particularly 'buy-one-get-one-free' specials, have been found to lead to food waste, as customers often purchase more than they need.¹¹¹

2.3.5 Consumption

The consumption phase of the supply chain refers to 'the consumption of food at the household level and in the hospitality sector, where food is prepared and served outside the home'.¹¹² Food waste in this phase stems from losses in the consumer's home or business, including restaurants and caterers, which include edible products sorted based on quality, food bought but never eaten, and cooked but not consumed.¹¹³ Household food waste is usually associated with customer behaviour

¹⁰⁴ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 4.

¹⁰⁵ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 4.

¹⁰⁶ Jere *et al* 2021 *AJBER* 97.

¹⁰⁷ Jere *et al* 2021 *AJBER* 97.

¹⁰⁸ Jere *et al* 2021 *AJBER* 98.

¹⁰⁹ Jere *et al* 2021 *AJBER* 98; see also para 1.1 above and 2.3.5 below.

¹¹⁰ Jere *et al* 2021 *AJBER* 98; see para 2.3.5 below.

¹¹¹ Jere *et al* 2021 *AJBER* 98.

¹¹² DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 11.

¹¹³ Bagherzaden, Inamura and Jeong 2014
<http://leadershipbt.com/gpp2018/images/MaisGPP/Iniciativas/CNCDA/OCDEFoodWasteFoodChain2014.pdf> 8.

when providing, handling, preparing, and eating food.¹¹⁴ During this phase, food waste is often the result of daily household activities related to food.¹¹⁵ Lack of planning that results in excessive buying, preparation of excessive food, impulse buying,¹¹⁶ cultural practices, dietary habits, and socio-economic factors, including household size, household income and frequency of dining out,¹¹⁷ accidental spillages, confusion of sell by, use by, best before, and expiry dates, not knowing how to or having the means to store fresh produce appropriately, and load shedding interrupting the cold chain, are some of the reasons for food waste in the consumption phase of the supply chain.¹¹⁸

2.3.6 *Summation*

The preceding discussion highlights the varied nature of food waste across the entire food supply chain. Thyberg and Tonjes¹¹⁹ note that the causes of food waste are influenced by industrialisation, economic growth, urbanisation, and globalisation. The industrialisation of food systems, leading to a shift in food production and preparation, has an impact on the foods people eat, their types, and, ultimately, the amount of food waste.¹²⁰ A higher income is generally linked to a more diverse diet consumption.¹²¹ People are likely to waste food as their income increases because they can easily afford to buy a large portion of food that they do not immediately require.¹²² Urbanisation causes dietary diversification and disconnection from food sources, which may increase food consumption in the long run.¹²³ Globalisation has been linked to a decrease in the consumption of locally produced plant foods and

¹¹⁴ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 11.

¹¹⁵ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 11.

¹¹⁶ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 12.

¹¹⁷ Oelofse and Nahman 2013 *Waste Management and Research* 81.

¹¹⁸ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 12.

¹¹⁹ Thyberg and Tonjes 2016 *Resources Conservation and Recycling* 115.

¹²⁰ Thyberg and Tonjes 2016 *Resources Conservation and Recycling* 115.

¹²¹ Thyberg and Tonjes 2016 *Resources Conservation and Recycling* 116.

¹²² Thyberg and Tonjes 2016 *Resources Conservation and Recycling* 116.

¹²³ Thyberg and Tonjes 2016 *Resources Conservation and Recycling* 116.

an increase in the consumption of imported and processed foods.¹²⁴ Dietary changes caused by globalisation have an impact on the type of food discarded.

To sum up, the causes of food waste are diverse and contingent on specific contexts. However, the exact cause cannot always be predicted. Nonetheless, the recognition of food waste as a pivotal issue aligns with the broader goals of environmental, societal, and economic sustainability, the essence of which is detailed in the following paragraphs.

2.4 Consequences of food waste

Food waste has been recognised as a major contributor to food insecurity and to several economic and environmental challenges.¹²⁵ The impact of food waste can be categorically divided into three specific areas: environmental, economic, and social. These are discussed below as they assist in pointing out the aspects to which a regulatory regime in terms of law may have to cater.

2.4.1 Environmental impact of food waste

The production of unconsumed food has a significant impact on the environment.¹²⁶ Food waste is a waste of resources that contributes to environmental degradation and the unsustainable use of natural resources.¹²⁷ The environmental impact of food waste is generally assessed using three footprint-related indicators: carbon, water, and land.¹²⁸

2.4.1.1 Carbon footprint

The carbon footprint of food refers to the total quantity of greenhouse gases (GHGs) emitted during the food life cycle, which is represented by carbon dioxide and other

¹²⁴ Thyberg and Tonjes 2016 *Resources Conservation and Recycling* 116.

¹²⁵ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2.

¹²⁶ Seberini "Economic, Social and Environmental World Impacts of Food Waste on Society and Zero Waste as a Global Approach to their Elimination" 12.

¹²⁷ FAO "Food Loss Analysis: Causes and Solutions Case studies in the Small-scale Agriculture and Fisheries Subsectors" 1.

¹²⁸ FAO 2013 <https://www.fao.org/3/i3347e/i3347e.pdf>10.

equivalent gases.¹²⁹ According to the FAO,¹³⁰ "(t)his total quantity covers all GHGs emitted during manufacturing, transportation, processing, distribution, and consumption, as well as waste disposal emissions". Regarding the carbon footprint, food waste contributes to GHGs being emitted into the atmosphere as a result of the disposal of food at landfill sites.¹³¹ Research suggests that approximately 90% of food waste is disposed of at landfill sites in developed and developing countries.¹³² Landfills are filled quickly, and the decomposition of waste at the sites produces GHG emissions.¹³³ The production, harvesting, transporting, and packaging of millions of tonnes of food waste generates millions of tonnes of GHGs.¹³⁴ For example, the equivalent of 4.5 tonnes of carbon dioxide is released into the atmosphere for every tonne of food waste.¹³⁵ 10% of the global greenhouse gas emissions are caused by food waste.¹³⁶ Furthermore, food waste produces methane, a greenhouse gas that is 20-25 times more potent than carbon dioxide in terms of the warming effect, making it the third-largest contributor to global warming.¹³⁷ GHG emissions represent significant environmental costs of food waste as they add to the ongoing climate crisis.¹³⁸

2.4.1.2 *Water footprint*

The water footprint refers to the total amount of freshwater used in the production and distribution of food products throughout the entire supply chain.¹³⁹ The water

¹²⁹ FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91.

¹³⁰ FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91.

¹³¹ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report WWF 2017 8.

¹³² Spang *et al* 2019 *Annual Review of Environment and Resources* 135.

¹³³ Harduth "Legislation Discussion Paper: Food Donations as a Mechanism to Limit Food Waste, Food Insecurity and Malnutrition" 13.

¹³⁴ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 8.

¹³⁵ Harduth "Legislation Discussion Paper: Food Donations as a Mechanism to Limit Food Waste, Food Insecurity and Malnutrition" 13.

¹³⁶ Spang *et al* 2019 *Annual Review of Environment and Resources* 135.

¹³⁷ Harduth "Legislation Discussion Paper: Food Donations as a Mechanism to Limit Food Waste, Food Insecurity and Malnutrition" 13.

¹³⁸ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 11.

¹³⁹ FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91

footprint comprises three distinct components that effectively capture various types of water.¹⁴⁰ Blue water refers to groundwater or surface water.¹⁴¹ Green water refers to rainwater.¹⁴² Third, grey water refers to the water utilised to reduce pollution levels to acceptable levels.¹⁴³ The water footprint is "a specific indicator that measures the total volume of freshwater used directly or indirectly to produce a food product".¹⁴⁴ Water is used at every stage of the food production process, with agricultural production being responsible for 70% of the global freshwater intake and is the largest consumer of water resources.¹⁴⁵ The water footprint is also connected with the concept of virtual water, which is the water utilised during the processing, production, and consumption phases.¹⁴⁶

2.4.1.3 Land footprint

It has been established that the land footprint refers to the "measurement of the total ecologically productive area of land, including cropland, grazing land, forest land, and built-up land, which are necessary for resource regeneration and waste absorption".¹⁴⁷ Food waste comprises 23–24% of the total use of cropland and fertilisers in food production.¹⁴⁸ Therefore, food waste also leads to changes in land use.¹⁴⁹

2.4.2 Social impact of food waste

The social impact of food waste can be understood from the perspective of food security and access to food.¹⁵⁰ The widely accepted definition of food security, as

¹⁴⁰ FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91.

¹⁴¹ FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91.

¹⁴² FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91.

¹⁴³ FAO *Moving Forward on Food Loss and Waste Reduction: The State of Food and Agriculture* 91.

¹⁴⁴ Gibin *et al* 2022 *Environmental Impact Assessment Review* 4.

¹⁴⁵ Bilka *et al* 2020 *Environmental Protection and Natural Resources* 25.

¹⁴⁶ Bilka *et al* 2020 *Environmental Protection and Natural Resources* 25.

¹⁴⁷ Gibin *et al* 2022 *Environmental Impact Assessment Review* 3.

¹⁴⁸ Tonini, Albizzati and Astrup 2018 *Waste Management* 745.

¹⁴⁹ Tonini, Albizzati and Astrup 2018 *Waste Management* 744.

¹⁵⁰ Segre *et al* 2014 *Background Paper on the Economics of Food Loss and Waste* 14.

established during the World Food Summit in 1996, characterises it as a state in which:

All people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for a healthy and active life.¹⁵¹

While a million tonnes of food waste is being disposed of, many people worldwide continue to lack adequate food.¹⁵² Despite sufficient food being produced, it is projected that 3.1 billion people worldwide suffer from hunger and malnutrition.¹⁵³ Meanwhile, 1.3 billion tonnes of food go to waste or are lost each year.¹⁵⁴ According to the estimates by the FAO,¹⁵⁵ "food that is lost or wasted could feed 1.2 billion hungry people every year". Food waste increases food prices and exacerbates food insecurity in many individuals.¹⁵⁶ Therefore, food produced but not consumed, despite being suitable for human consumption, wastes resources during production and worsens the issue of food insecurity. Although reducing food waste will not alleviate hunger worldwide *per se*, significant amounts of food nutrients are wasted annually.¹⁵⁷

2.4.3 *Economic impact of food waste*

Food waste results in a relative financial loss, not just for the nation or food business but also for individual households.¹⁵⁸ The economic costs of food waste are twofold and vary among the actors in the food supply chain.¹⁵⁹ For example, food waste can

¹⁵¹ FAO 2006
https://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf.

¹⁵² Spang *et al* 2019 *Annual Review of Environment and Resources* 136.

¹⁵³ United Nations Environment Programme 2022 <https://www.unep.org/news-and-stories/press-release/tackling-food-loss-and-waste-triple-win-opportunity-fao-unep>.

¹⁵⁴ See para 1.1 above.

¹⁵⁵ United Nations Environment Programme 2022 <https://www.unep.org/news-and-stories/press-release/tackling-food-loss-and-waste-triple-win-opportunity-fao-unep>; United Nations Environment Programme 2022 <https://www.unep.org/news-and-stories/press-release/tackling-food-loss-and-waste-triple-win-opportunity-fao-unep>.

¹⁵⁶ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2.

¹⁵⁷ Spang *et al* 2019 *Annual Review of Environment and Resources* 136.

¹⁵⁸ Spang *et al* 2019 *Annual Review of Environment and Resources* 134.

¹⁵⁹ Spang *et al* 2019 *Annual Review of Environment and Resources* 134.

result in a loss of profit for producers of unsold food or consumer expenditure on food that is never consumed.¹⁶⁰ Considering the above, food waste is often measured by the costs of producing, delivering, and disposing of unconsumed food or the retail value of lost or wasted food products.¹⁶¹ Therefore, the value of food waste at each stage of the supply chain must be considered. For example, applying retail value to a lost product early in the supply chain could overstate its economic value.¹⁶² Wasted food is a waste of money used throughout the life cycle of food.¹⁶³ Moreover, it is not only money from the pockets that is wasted.¹⁶⁴ Considerable resources go into food production, processing, subsidising farms, manufacturing, and supporting people affected by the negative consequences of food waste.¹⁶⁵ This is lost when the food is wasted.¹⁶⁶ However, it is difficult to measure and quantify the economic impact of food waste precisely.¹⁶⁷

2.5 Food waste management

This section describes waste management and the link between waste and food waste management. This section is grounded in the concept of waste hierarchy, which is later defined in the discussion¹⁶⁸ as a recognised fundamental waste management principle in South Africa.¹⁶⁹

2.5.1 Meaning of waste management

In the present context, "waste management encompasses various management activities such as collection, handling, transportation, transfer, treatment, and disposal of waste".¹⁷⁰ South Africa is facing numerous wide-ranging challenges

¹⁶⁰ Spang *et al* 2019 *Annual Review of Environment and Resources* 134.

¹⁶¹ Spang *et al* 2019 *Annual Review of Environment and Resources* 134.

¹⁶² Spang *et al* 2019 *Annual Review of Environment and Resources* 134.

¹⁶³ Foodhero 2020 <https://foodhero.com/blogs/economic-impact-of-food-waste>.

¹⁶⁴ Foodhero 2020 <https://foodhero.com/blogs/economic-impact-of-food-waste>.

¹⁶⁵ Foodhero 2020 <https://foodhero.com/blogs/economic-impact-of-food-waste>.

¹⁶⁶ Foodhero 2020 <https://foodhero.com/blogs/economic-impact-of-food-waste>.

¹⁶⁷ Foodhero 2020 <https://foodhero.com/blogs/economic-impact-of-food-waste>.

¹⁶⁸ See para 2.5.2 below.

¹⁶⁹ DEFF "2020 National Waste Management Strategy" 14; Alberts and Van Rooyen "Solid Waste Management" 13-9.

¹⁷⁰ Alberts and Van Rooyen "Solid Waste Management" 13-6.

related to waste management.¹⁷¹ According to Garcia-Garcia *et al*,¹⁷² it is important to define what constitutes food waste to deal with the high volume of food waste generation. Defining food waste could provide a basis for adequately regulating food waste, identifying the risks associated with food waste, and selecting waste management options to control the potential risks of food waste to the environment, economy, and food security.¹⁷³

2.5.2 *The basics of the waste management hierarchy*

A cornerstone of South Africa's integrated waste management system is the *NEMWA*, an environmental management act specifically dedicated to waste management.¹⁷⁴ The *NWMS* was enacted in 2012 to support the achievement of *NEMWA* objectives and consists of essential goals and targets that must be met within predetermined timeframes.¹⁷⁵ These goals and targets enhance waste data quantification, reporting, and diversion from landfills for reduction, repurposing, recycling, and recovery.¹⁷⁶ The *NWMS* prescribes waste hierarchy as a tool to enhance waste management practices.¹⁷⁷ The waste hierarchy plays a crucial role in guiding the policy direction of waste management.¹⁷⁸ Throughout the years, many countries have utilised the waste hierarchy to manage waste and mitigate its environmental impact.¹⁷⁹ The *NWMS* promotes the adherence of waste management solutions to the hierarchy's priority phases.¹⁸⁰ The waste hierarchy aims to identify the most environmentally sustainable option.¹⁸¹ The hierarchy of waste management places source avoidance and reduction first, followed by reuse,

¹⁷¹ See para 1.1 above.

¹⁷² Garcia-Garcia, Woolley and Rahimifard 2015 *International Journal of Food Engineering* 71.

¹⁷³ Garcia-Garcia, Woolley and Rahimifard 2015 *International Journal of Food Engineering* 71.

¹⁷⁴ DEFF "2020 National Waste Management Strategy" 9.

¹⁷⁵ DEFF "2020 National Waste Management Strategy" 9.

¹⁷⁶ DEFF "2020 National Waste Management Strategy" 9.

¹⁷⁷ DEFF "2020 National Waste Management Strategy" 9.

¹⁷⁸ The waste hierarchy typically consists of three main tiers, which are reduce, reuse and recycle. The highest and most preferred tier involves strategies to minimise the generation of waste at the source. The second tier encourages the reuse of products and materials to extend their lifespan. The third tier involves the recycling of materials to convert waste into new products.

¹⁷⁹ Melikoglu, Webb and Lin 2013 *Central European Journal of Engineering* 159.

¹⁸⁰ DEFF "2020 National Waste Management Strategy" 9.

¹⁸¹ Papargyropoulou *et al* 2014 *Journal of Cleaner Production* 11.

recovery, and disposal as a last resort.¹⁸² Therefore, the most favourable option in the hierarchy is avoidance, and the least favourable option is disposal. The primary emphasis of the waste hierarchy framework is on providing the most environmentally sound options.¹⁸³

The waste hierarchy should be used to prioritise options for handling food waste. Specifically, in the context of food waste, the focus should be on avoiding and reducing food waste generation and volume, whereas the reuse tier should focus on donating food waste to feed animals.¹⁸⁴ Recycling should be linked to compost production; within the waste hierarchy, the recovery tier would encourage the utilisation of food waste for industrial purposes, such as energy recovery.¹⁸⁵ The final option for managing food waste is landfill disposal.¹⁸⁶ Food waste contains high moisture, organic, and oil content, resulting in the production of leachate and methane after landfilling, which has environmental repercussions.¹⁸⁷ Additionally, there is inadequate space for landfills in South Africa.¹⁸⁸

2.5.3 *Meaning of food waste management*

As stated previously,¹⁸⁹ there is no universally accepted definition of food waste. Similarly, there is no defined description of food waste management. In this study, food waste management is regarded as the process of recovering or reusing food and agricultural products for consumption by people, animal feed, industrial use, or environmental benefits.¹⁹⁰ According to Tiwari, " (f)ood waste management involves

¹⁸² Alberts and Van Rooyen "Solid Waste Management" 13-9.

¹⁸³ Papargyropoulou *et al* 2014 *Journal of Cleaner Production* 11.

¹⁸⁴ Papargyropoulou *et al* 2014 *Journal of Cleaner Production* 19.

¹⁸⁵ Papargyropoulou *et al* 2014 *Journal of Cleaner Production* 19.

¹⁸⁶ Papargyropoulou *et al* 2014 *Journal of Cleaner Production* 19.

¹⁸⁷ Mammburu *Exploring Alternatives to Divert Food Waste from Landfill Disposal in Rustenburg, North-West* 20.

¹⁸⁸ Mammburu *Exploring Alternatives to Divert Food Waste from Landfill Disposal in Rustenburg, North-West* 20.

¹⁸⁹ See para 2.2 above.

¹⁹⁰ Tiwari 2022 <https://zipinventory.com/en/food-waste-management.html>.

the collection of edible scraps and other food-related waste from homes, restaurants, and institutions".¹⁹¹

2.5.4 Food waste management and regulation in South Africa

In South Africa, 24.5% of the national population, equivalent to 12 million people, experiences hunger daily.¹⁹² Paradoxically, reports indicate that South Africa has the highest proportion of food waste in Africa.¹⁹³ South Africa produces 31 million tonnes of food for human consumption annually, one-third of which is either wasted or lost.¹⁹⁴ It has been stated that "(t)he majority of food losses and waste in South Africa (approximately 68%) occur in the early phase of production, with 19% occurring during post-harvest handling and storage, 49% during processing and packaging, and 18% in the consumption phase".¹⁹⁵

To tackle the problem of food waste, the Council for Scientific and Industrial Research (CSIR) undertook research between 2010 and 2015 aimed at addressing the issue of food waste in South Africa.¹⁹⁶ The focus of the study was to understand the causes of food waste and its impact on the South African economy.¹⁹⁷ This was the first time such research had been undertaken in the country.¹⁹⁸ This study aimed to obtain an initial estimate of the magnitude of food waste in the country.¹⁹⁹ The CSIR estimated that by 2013, food loss and waste accounted for 2.1% of GDP,

¹⁹¹ Tiwari 2022 <https://zipinventory.com/en/food-waste-management.html>.

¹⁹² Oelofse, Muswema and Ramukhwatho 2018 *South African Journal of Science* 1.

¹⁹³ Oelofse, Muswema and Ramukhwatho 2018 *South African Journal of Science* 1.

¹⁹⁴ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 8.

¹⁹⁵ Council for Scientific and Industrial Research 2021 <https://www.csir.co.za/food-supply-south-africa-wasted-shows-new-csir-study>.

¹⁹⁶ Olivera Engineering News <https://www.engineeringnews.co.za/article/food-waste-costs-sa-r615-billion-a-year-2013-08-23>. This research marked the inaugural investigation with a specific emphasis on food waste in South Africa.

¹⁹⁷ Olivera Engineering News <https://www.engineeringnews.co.za/article/food-waste-costs-sa-r615-billion-a-year-2013-08-23>.

¹⁹⁸ Olivera Engineering News <https://www.engineeringnews.co.za/article/food-waste-costs-sa-r615-billion-a-year-2013-08-23>.

¹⁹⁹ Olivera Engineering News <https://www.engineeringnews.co.za/article/food-waste-costs-sa-r615-billion-a-year-2013-08-23>.

resulting in a financial burden of R61.5 billion.²⁰⁰ Following research by CSIR, several studies on food waste in certain metropolitan municipalities have been conducted. It was found that on a weekly basis, households in the municipalities of Ekurhuleni and Johannesburg dispose of 0.48 kg and 0.69 kg of food waste, including inedible parts, into the municipal bin, respectively.²⁰¹ Research conducted in the Tshwane Metropolitan Municipality indicated that 6 kg of food is wasted per household per week.²⁰² Another study conducted in Cape Town estimated that 158,957 tonnes of food waste were sent to municipal landfills in 2020, or over 800 tonnes per day.²⁰³

South Africa, as a member of the United Nations (hereafter UN), has participated in the development of Sustainable Development Goals (SDGs).²⁰⁴ The UN launched a sustainable development agenda in September 2015, which adopted 17 interrelated goals, which are the primary tools for directing global development, comprising 169 targets to be achieved by 2030.²⁰⁵ In relation to food waste, "SDG 12 aims for sustainable consumption and production, with Target SDG 12.3 aiming for a 50% reduction in global food waste and food losses at the retail and consumer levels".²⁰⁶ A group called Champions 12.3, consisting of various global food waste stakeholders, was established to achieve SDG Target 12.3.²⁰⁷ As outlined in the report from the United Nations Development Programme (UNDP), the "Champions 12.3 aims to achieve Target 12.3 through specific targeted approaches, including

²⁰⁰ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 9.

²⁰¹ Oelofse, Muswema and Ramukhwatho 2018 *South African Journal of Science* 5.

²⁰² Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 15.

²⁰³ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 37.

²⁰⁴ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report *Waste* 4. "The South African government, represented by the Department of Agriculture, Forestry and Fisheries, has made a global commitment to halve food waste by 2030 and is now obligated to create a political and social environment conducive to adopting the available ideas".

²⁰⁵ United Nations Development Programme 2022 <https://www.undp.org/sustainable-development-goals#responsible-consumption-and-production>.

²⁰⁶ United Nations Development Programme 2022 <https://www.undp.org/sustainable-development-goals#responsible-consumption-and-production>.

²⁰⁷ Champions 12.3 2023 <https://champions123.org/about-champions-123>; Champions 12.3 2023 <https://champions123.org/about-champions-123>.

implementation and measurement".²⁰⁸ Alongside SDG 12, SDG 11 aspires to make cities safe, resilient and sustainable.²⁰⁹ Target 11.6 within SDG 11 sets the objective of reducing the adverse per capita environmental impact of cities by 2030, placing specific emphasis on aspects such as air quality and municipal waste management.²¹⁰ It can be inferred that this target encourages a comprehensive approach that could also encompass the reduction of environmental impact specifically related to food waste in cities. As a result, as a UN member state, South Africa is expected to take action and concrete steps to meet UN SDGs, which sets a target to halve food waste and decrease the adverse per capita environmental impact of cities by 2030.²¹¹

2.6 Concluding remarks

This chapter reflected on the concept of food waste. It began by defining waste to determine whether food waste fits the definition of waste. It was mentioned in this chapter that food waste is excluded from the general definition of waste. Based on the discussion in this chapter, it can be deduced that various organisations and countries define food waste differently. However, as indicated in section 2.2, steps are taken to standardise the concept of food waste. As the discussions in this chapter have shown, food waste has several causes. Causes vary depending on the product, local conditions, and the phase of the food supply chain.

The discussion underscores the repercussions of food waste, revealing that its effect extends beyond environmental concerns to encompass socio-economic implications, with far-reaching impacts on food security, natural resources and climate change.

²⁰⁸ United Nations Development Programme 2022 <https://www.undp.org/sustainable-development-goals#responsible-consumption-and-production>.

²⁰⁹ United Nations unknown Goal 11 | Department of Economic and Social Affairs (un.org).

²¹⁰ United Nations unknown Goal 11 | Department of Economic and Social Affairs (un.org).

²¹¹ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 17.

This chapter explored perspectives on food waste, shedding light on its shortcomings within the legal framework.²¹² Based on the above discussion, it has been established that South Africa should play a role in addressing food waste. In section 2.5.4, it is stated that South Africa, as a UN member state, has committed, as a response to Target 12.3, to halving global food waste per capita at retail and consumer levels and reducing food losses along the production of the supply chain by 2030. In doing so, South Africa committed to addressing the pressing challenge of food waste.

Given the various aspects interlaced with food waste, it is reasonable to expect food waste to be well-regulated in terms of South African legislation. However, the existing legal framework does not explicitly address food waste.²¹³ The food regulations under the *Foodstuffs Act* seem to regulate aspects of food waste management (more than the umbrella *NEMWA* referred to above).²¹⁴ A few other Acts also seem to address aspects of food waste.²¹⁵ For instance, the *NHA* has regulations related to hygienic control or handling of food and inspection of food premises by the local authorities.²¹⁶ South Africa's legislative framework is detailed in chapter 3 of this thesis. Consequently, it is meaningful to identify, evaluate, and examine in the next chapter how national law and policy instruments seek to regulate food waste. For this purpose, the next chapter considers the country's law and policy framework relevant to food waste management.

²¹² See chapter 3 below exploring South Africa's legislative framework relevant to food waste management.

²¹³ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 15.

²¹⁴ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 15.

²¹⁵ WWF 2017 https://www.wwf.org.za/our_research/publications/?21641/Food-Loss-and-Waste-Facts-and-Futures-Report 15.

²¹⁶ See para 3.3 below.

Chapter 3 South Africa's legislative framework on food waste management

3.1 *Introduction*

As mentioned earlier,²¹⁷ there seems to be a need for the introduction of regulations addressing food waste in South Africa.²¹⁸ Regulations for food waste can help to address some of the adverse effects linked to the wastage of food.²¹⁹ As the country's supreme law, the *Constitution* serves as the foundation for governing the country. For this reason, every organ of state and every law must adhere to and align with the *Constitution*. Therefore, the *Constitution* provides an overarching legal framework.²²⁰ Waste law in South Africa is continually evolving to develop and sustain a regulatory regime that addresses the causes, impacts, and overall management of various types of waste.²²¹ This regulatory regime encompasses various stakeholders, including public authorities, private actors, and the three spheres of government.²²² Local government has a clear legal obligation to collaborate with national and provincial governments to preserve the country's cleanliness and effectively manage waste to maintain a healthy environment.²²³

This chapter explores the extent to which South African national law regulates food waste. This was performed in six steps. First, it examines the constitutional law framework. Considering the focus of this thesis, this section also explores local governments' powers to determine the scope of control that municipalities have over food waste regulation. The second section offers an overview of the legislative framework that addresses waste, which can govern food waste. Considering that South Africa's legislative framework is extensive, this chapter focuses on the

²¹⁷ See para 2.6 above.

²¹⁸ Jain "Global Food Waste Management: an Implementation Guide for Cities" 2.

²¹⁹ Jain "Global Food Waste Management: an Implementation Guide for Cities" 2; also see para 2.5 above.

²²⁰ For example, s 24 of the *Constitution* entrenches the environmental right.

²²¹ Alberts and Van Rooyen "Solid Waste Management" 13-2.

²²² Alberts and Van Rooyen "Solid Waste Management" 13-2.

²²³ Alberts and Van Rooyen "Solid Waste Management" 13-3.

following legislation: *NEMA*, *NEMWA*, *NHA*, and *the Foodstuff Act* (including regulations published under the respective Acts). Local government legislation, such as the *Municipal Systems Act* and *Municipal Structures Act*, were also examined. The third section considers the national policy framework with specific reference to the *NWMS 2020* and the *2023 Draft Strategy for Reducing Food Losses and Waste*. The fourth section explores provincial law, policies, and regulations with a specific focus on the province of Western Cape.²²⁴ The fifth section identifies the tools or instruments provided in law that should inform the regulation of food waste.

3.2 The Constitution

The *Constitution* contains rights to which everyone are entitled.²²⁵ The rights enshrined in chapter 2 of the *Constitution* profoundly influence how the entire government and ordinary citizens have to conduct themselves.²²⁶ It upholds democratic values and principles, including the principles of human dignity, legality, equality, and the cooperative government principle.²²⁷ The *Constitution* recognises everyone's right to basic goods and services that are necessary for a dignified life.²²⁸

As outlined in section 24 of the *Constitution*, every individual in South Africa has the right to an environment that does not pose harm to his or her health and well-being.²²⁹ This provision further specifies that the "environment must be protected for the benefit of the present and future generations through legislation and other measures, including preventing pollution and environmental degradation".²³⁰ While the environment is listed as a concurrent function under both national and provincial

²²⁴ See para 1.4 above; This study looks at the Western Cape province as an example because of it having publications speaking to waste that might serve as a guide or lay the basis for how food waste could be dealt with by public authorities and other role players. Furthermore, this Province has a food security strategy which deals with issues related to food security and that could serve as a model for dealing with food waste.

²²⁵ Chapter 2 of the *Constitution*.

²²⁶ Feris and Fuo "Environmental Rights Protected in the Constitution of the Republic of South Africa" 6-3.

²²⁷ Section 7(1) read with chapter 3 of the *Constitution*.

²²⁸ Chapter 2 of the *Constitution*.

²²⁹ Section 24(a) of the *Constitution*.

²³⁰ Section 24(a)(i) of the *Constitution*.

competence in Schedule 4 Part A of the *Constitution*,²³¹ local government, as an independent sphere, is not exempt from the obligation as outlined in section 24 of the *Constitution*.²³² Du Plessis²³³ observes that local government shares responsibility with the national and provincial governments in realising environmental rights. Consequently, local government has an environmental duty to fulfil, as expressed in sections 7(2) and 24 of the *Constitution*, in conjunction with the objectives specified in section 152(1), (b), and (d).²³⁴ Municipalities are expected to play a role in maintaining cleanliness and ensuring effective waste management in the country.²³⁵

The court confirmed the local government's position in realising section 24 of the *Constitution* as far as it relates to the proper control and management of waste in the case of the *South African Human Rights Commission v Msunduzi Local Government and others (Msunduzi case)*.²³⁶ In the *Msunduzi case*, the Msunduzi Local Municipality (the Municipality) had a record of failing to meet its obligations under the *NEMA*, *National Water Act*, and *NEMWA*, as well as the conditions of its waste management licence (WML).²³⁷ The Department of Forestry, Fisheries, and the Environment (the Department)²³⁸ carried out a detailed audit of the municipality's operation of its landfill site to improve its operation.²³⁹ Upon completion of the audit, the Department issued compliance notices in line with section 31 L of *NEMA* for environmental non-compliance, drawing the Municipality's attention to the areas of non-compliance identified in the audit report.²⁴⁰ The

²³¹ Schedule 4 Part A of the *Constitution*.

²³² Feris and Fuo "Environmental Rights Protected in the Constitution of the Republic of South Africa" 6-4.

²³³ Du Plessis 2015 *PER/PELJ* 1856.

²³⁴ Section 152(1)(b) and (d) of the *Constitution* outlines the objectives of local government, emphasising the provision of services to communities in a sustainable manner and the promotion of a safe and healthy environment.

²³⁵ Alberts and Van Rooyen "Solid Waste Management" 13-3.

²³⁶ *South African Human Rights Commission v Msunduzi Local Municipality* [2021] ZAKZPHC 35 (hereafter *Msunduzi*).

²³⁷ *Msunduzi* para 32.

²³⁸ The then Department of Environmental Affairs.

²³⁹ *Msunduzi* para 39.

²⁴⁰ *Msunduzi* para 42.

Municipality failed to respond to the compliance notices.²⁴¹ The Municipality eventually responded to the compliance notice with an action plan.²⁴² However, the Municipality did not implement the action plan effectively, leading to fires at landfill sites.²⁴³ As a result, the Municipality was taken to court, and the applicant argued that the landfill site was operated and managed in a manner that contravened section 24 of the *Constitution* and the related provisions of the *NEMA*, *NEMWA*, and the *National Water Act*.

The court held that the operation and management of landfill sites were evidently subject to stringent regulations.²⁴⁴ Furthermore, the court held that legislative provisions were intended to prevent such activities from harming the environment, thereby safeguarding the health and welfare of ordinary citizens.²⁴⁵ Throughout its operation at the landfill site, the Municipality was obliged to comply with the *NEMWA* and other legislative provisions.²⁴⁶ Subsequently, the court found that the Msunduzi Local Municipality had breached section 24 of the *Constitution* and related legislative provisions.

The precedent set in the *Msunduzi case* demonstrates that the Municipality's inability to operate the landfill site in compliance with environmental laws and regulations may violate section 24. This precedent confirms the importance of sustainable and safe waste management. Thus, municipalities have a duty to ensure that when carrying out their environmental mandates, they do so in compliance with the provisions of section 24 of the *Constitution*. This finding holds significance in the context of food waste as a waste stream since the improper management of food waste has been proven to affect not only the environment but also the economy and food security.²⁴⁷

²⁴¹ *Msunduzi* para 44.

²⁴² *Msunduzi* para 45.

²⁴³ *Msunduzi* para 45.

²⁴⁴ *Msunduzi* para 73.

²⁴⁵ *Msunduzi* para 85.

²⁴⁶ *Msunduzi* para 86.

²⁴⁷ See para 2.4 above on consequences of food waste.

In addition to environmental rights, section 27 of the *Constitution* guarantees the right to have access to sufficient food for everyone. This section states that "everyone has the right to have access to sufficient food".²⁴⁸ The right to access sufficient food is expressed using socio-economic rights terminology.²⁴⁹ This constitutional provision emphasises the significance of food security and acknowledges that access to appropriate nutrition is essential for the overall well-being of individuals and society. When read in conjunction with section 7(2) of the *Constitution*, section 27(2) imposes an affirmative obligation on the state to adopt reasonable legislative and other measures, considering its accessible resources, for progressive fulfilment of the right to access sufficient food. Concerning food waste, section 27 implies a responsibility to address and reduce food waste and guarantee the efficient utilisation of food resources.²⁵⁰

Municipalities possess the authority to govern their own initiatives without interference from other spheres of government.²⁵¹ As a result, municipalities are entrusted with the responsibility to govern their affairs; thus, they must do so by exercising power and carrying out duties without compromise or hindrance from national and provincial governments.²⁵² The exercise of power encompasses the prerogative to create and enforce bylaws for the effective administration of matters falling within municipalities' inherent powers and functions.²⁵³ Section 156 of the *Constitution* explicitly grants municipalities the right to administer matters listed in Part B of Schedules 4 and 5.²⁵⁴ The local government functions vital for delivering services are outlined in Part B of Schedules 4 and 5 of the *Constitution*.²⁵⁵ Notably, Schedule 5, Part B of the *Constitution* specifies municipal waste services as one of

²⁴⁸ Section 27(1)(b) of the *Constitution*. The extent of this right expands to the right to have access to sufficient food and water. However, for the purposes of this study, the focus is limited to the right to access to sufficient food.

²⁴⁹ Feris and Fuo "Environmental Rights Protected in the Constitution of the Republic of South Africa"6-12.

²⁵⁰ See para 2.4.2 above on social impact of food waste.

²⁵¹ Section 151(3) of the *Constitution*.

²⁵² Section 151(4) of the *Constitution*.

²⁵³ Section 156(2) of the *Constitution*.

²⁵⁴ Section 156 (1)(a) of the *Constitution*.

²⁵⁵ Schedules 4 and 5 of the *Constitution*.

the functions within the purview of the local government.²⁵⁶ These include waste removal, dumping, and solid waste disposal.²⁵⁷ Waste removal, the management of waste dumps, and the proper disposal of solid waste are essential municipal services.²⁵⁸ The *Constitution* binds local governments to provide basic municipal services to everyone, including waste services.²⁵⁹ In *Joseph v City of Johannesburg*,²⁶⁰ the Constitutional Court supported the notion that local governments provide basic municipal services to everyone by stating that "the provision of basic municipal services is a cardinal function, if not the most important function, of every municipal government".²⁶¹

Section 156, read with the functions listed in Schedule 5 Part B of the *Constitution*, indicates that food waste as an indirectly waste stream contained in municipal solid waste falls within the legislative and executive competence of municipalities. Therefore, the power of municipalities to regulate food waste stems from the *Constitution*. Municipalities possess inherent powers in relation to the functions outlined in Part B of Schedules 4 and 5 of the *Constitution*.²⁶² Similarly, municipalities have the authority to enact bylaws addressing issues pertaining to the efficient regulation of food waste.

Section 156 must be interpreted in conjunction with chapter 3 of the *Constitution*, where the principles of cooperative governance are outlined. These principles necessitate that all spheres of government act in good faith with one another while executing their respective functions.²⁶³ According to section 154(1) of the *Constitution*, national and provincial governments are required to support and

²⁵⁶ Schedule 5 of the *Constitution*.

²⁵⁷ Schedule 5 of the *Constitution*.

²⁵⁸ *Kenton on Sea Ratepayers Association v Ndlambe Local Municipality* 2017 2 SA 86 (ECG) (hereafter *Kenton on Sea Ratepayers Association*) para 2.

²⁵⁹ Section 152(1)(b) read with s 156(1)(a) of the *Constitution*. In *Joseph v City of Johannesburg* 2010 3 BCLR 212 (CC) (hereafter *Joseph v City of Johannesburg*), the Constitutional Court held that the obligations borne by local government to provide municipal services are sourced in both the *Constitution* and legislation.

²⁶⁰ *Joseph v City of Johannesburg*.

²⁶¹ *Joseph v City of Johannesburg* para 34.

²⁶² Section 156(1) of the *Constitution*.

²⁶³ Section 40(2) read with s 41 of the *Constitution*.

enhance the capacity of municipalities to manage their affairs, exercise their powers and perform their function through legislative and other measures. The autonomy granted to each sphere of government does not preclude them from coordinating and aligning their objectives to safeguard the well-being of the people of the Republic.²⁶⁴ Although solid waste management functions fall within the complete purview of the local government, their autonomy is limited because their functions and powers are subject to section 151(3) of the *Constitution*. In the context of food waste, provincial and national authorities may collaborate and integrate with local government to address food waste. However, it is important to highlight that although the national and provincial spheres may not directly regulate food waste, as food waste indirectly falls under solid waste, which is a municipal function, these spheres may adopt guidelines to help municipalities regulate food waste.²⁶⁵ The discussion that follows focuses on how selected national acts that directly and indirectly regulate waste and general waste management apply to food waste and explores how these instruments may specifically apply to food waste.

3.3 The national legislative framework

Different laws, policies, regulations, and legal instruments are integral to the regulatory framework relevant to food waste and its regulations. Food waste is indirectly governed by other legislative instruments, as discussed in this chapter.

3.3.1 National Environmental Management Act

NEMA was enacted to give effect to the constitutional environmental right, as set out in section 24 of the *Constitution*.²⁶⁶ The position was recently recognised by Petse DJ in *ArcelorMittal South Africa*,²⁶⁷ where he held that *NEMA* and *NEMWA* are two legislative measures contemplated by section 24 of the *Constitution*. Section 2 of *NEMA* outlines the environmental management principles that apply to all actions

²⁶⁴ Section 41(1)(b) of the *Constitution*.

²⁶⁵ DEFF "2020 National Waste Management Strategy" 51-53.

²⁶⁶ Section 24(b) of the *Constitution*.

²⁶⁷ *Minister of Environmental Affairs v ArcelorMittal South Africa Limited* [2020] ZASCA 40 (hereafter *ArcelorMittal South Africa*) para 4.

of the organs of the state, which must be considered when making decisions that are likely to have an impact on the environment.²⁶⁸ Section 2(4)(a)(iv) of *NEMA* provides principles related to waste, noting that "waste should be avoided or where it cannot be avoided, minimised, reused, or recycled wherever possible".²⁶⁹ Section 2(4)(a)(i) provides legislative guidelines for decisions pertaining to the regulation of prevailing environmental issues such as food waste. Section 2(1) of the *NEMA* typically applies to how municipalities should approach food waste when dealing with solid waste management. The Act "places sustainable development at the centre of every development process that has the potential to have social, economic, and environmental impacts".²⁷⁰ To guarantee that development benefits both the present and future generations, it is imperative to incorporate social, economic and environmental factors in the planning, implementation, and evaluation of decisions.²⁷¹

Section 28 of the Act also finds application in the present context. This section describes the obligation for the care and rectification of environmental damage.²⁷² According to section 28(1), individuals who have caused or might cause substantial pollution or degradation of the environment must take reasonable steps to prevent, cease, or address such pollution or degradation.²⁷³ In cases where harm to the environment is authorised by law, unavoidable or difficult to stop, the individual must minimise and rectify the environmental pollution or degradation to the extent permitted by law.²⁷⁴

Section 28 is understood to impose a legal duty on every person to refrain from acts or omissions that could harm the environment.²⁷⁵ This duty of care entails adopting

²⁶⁸ Section 2(1)(a) of *NEMA*.

²⁶⁹ Section 2(4)(iv) of *NEMA*.

²⁷⁰ Section 2(3)-(4) of *NEMA*.

²⁷¹ Section 2(3)-(4) of *NEMA*.

²⁷² Section 28 of *NEMA*.

²⁷³ Section 28(1) of *NEMA*.

²⁷⁴ Section 28(1) of *NEMA*.

²⁷⁵ Chauke *Critical Analysis of the Law on Duty of Care to the Environment in South Africa: Challenges and Prospects* 20.

reasonable measures to prevent, cease, or address pollution or degradation, except when such harm is authorised by law and cannot reasonably be avoided or stopped, in which case the responsibility is to minimise and rectify the environmental impacts.²⁷⁶ This section is applicable to food waste regulation because it places any person under a positive obligation to take measures to prevent degradation and environmental harm, including dealing with food waste. Municipalities, as the main sphere of the government assigned to waste management, have a duty of care and must ensure that food waste is handled in an environmentally safe manner. Section 28(3) of the *NEMA* provides for precautionary measures. In line with taking precautionary measures to avoid causing environmental harm, the duty of care places an obligation on municipalities to implement measures that seek to deal with food waste effectively and, in so doing, guard against environmental damage.

3.3.2 National Environmental Management: Waste Act

NEMWA aims in the broad sense to protect human health and the environment.²⁷⁷ This aim is to be realised through implementing measures that encompass the uniform application of strategies across the Republic, along with the establishment of norms and standards designed to promote the adoption of the best waste practices. Section 3 of *NEMWA* states that as a way of fulfilling constitutional environmental rights, the state, through the relevant organ of the state, must put in place "measures that seek to reduce the amount of waste that is generated and where it is generated to ensure that waste is reused, recycled, and recovered in an environmentally sound manner before being safely treated and disposed of." This general duty of care typically applies to the local government's approach to food waste regulation. This section places a specific emphasis on the role of local governments. Section 3 of *NEMWA* arguably finds application to food waste in that it imposes a positive duty on local governments to implement measures to deal with food waste effectively. Therefore, section 3 of *NEMWA* mandates local governments to adopt strategies, plans, and programs to reduce the amount of food waste

²⁷⁶ Section 28(1) of *NEMA*.

²⁷⁷ Section 2 read with the preamble of *NEMWA*.

generated in the country. *NEMWA* also introduced producer responsibility.²⁷⁸ This section is related to the duty of care contained in section 2 of *NEMA* and indirectly to section 3 of *NEMWA*, as it places the producer under a duty to ensure that the waste in his or her possession is managed in an environmentally sound manner.

Section 16(1) provides general duties related to waste management. This section stipulates that the waste holder should adhere to the waste hierarchy.²⁷⁹ Section 16(1) applies to food waste because it informs municipalities as local waste regulators to adhere to the waste hierarchy when dealing with food waste. Moreover, this section suggests that each municipality must adopt measures for implementing the waste hierarchy and adhering to the general duty outlined in section 16 concerning its own activities and the regulation of food waste within its jurisdiction. Consequently, section 16 bestows upon local government a general responsibility to establish measures aimed at minimising food waste generation and ensuring its safe disposal without causing harm to the environment.

The *NEMWA* further provides for the formulation of legal instruments relevant to food waste regulations, such as IWMPs.²⁸⁰ These instruments aim to give effect to the section 2 *NEMA* principles as well as section 28 of the Act and the *NEMWA* provisions. For the purpose of this discussion, the researcher has focused on IWMPs as included in the IDP. IWMPs function as tools through which a municipality identifies and establishes priorities and objectives related to waste management.²⁸¹ Additionally, IWMPs offer an analysis of the assessment concerning the quantities and types of waste generated.²⁸² The plans further provide steps for the implementation of waste minimisation, reuse, recycling, and recovery targets and

²⁷⁸ Section 16(1) of *NEMWA*.

²⁷⁹ Section 16(1)(a) to (d) of *NEMWA*; see para 2.5.2 above.

²⁸⁰ Section 11(1) of *NEMWA*; this section provides for the establishment of IWMPs.

²⁸¹ Section 12(1)(d) of *NEMWA*.

²⁸² Section 12(1)(a)(ii) of *NEMWA*.

initiatives.²⁸³ Additionally, IWMPs identify and address "the negative impacts of poor waste management practices on health and the environment".²⁸⁴

The Minister is required under section 69(1) of *NEMWA* to make regulations pertaining to waste in general.²⁸⁵ To give effect to section 69(1), the minister issued the *Waste Classification and Management Regulations (2013) (Waste Regulations)*. The objectives of the *Waste Regulations* are to regulate the classification and management of waste,²⁸⁶ "prescribe requirements for the disposal of waste to landfills",²⁸⁷ and "prescribe requirements and timeframes for the management of certain waste".²⁸⁸ These *Waste Regulations* exclude certain wastes from their application. There is no mention of food waste in these *Waste Regulations*. Section 7 of *NEMWA* requires "the development of national norms and standards for waste classification".²⁸⁹ Consequently, a Waste Classification and Management System (WCMS) was developed.²⁹⁰ The WCMS provides waste classification techniques, waste assessment, and disposal guidelines.²⁹¹ The WCMS is designed to assist in managing waste disposal facilities and ensuring that waste is correctly classified before disposal, thereby allowing proper disposal practices.²⁹² In this instance, the classification of food waste may aid in ensuring that it is disposed of in a manner that does not adversely affect the environment.

Norms and standards provide fundamental regulatory benchmarks for waste management at every stage of the waste hierarchy.²⁹³ Chapter 2, Part 2 of *NEMWA*, provides for the development of an "integrated system of norms and standards across all three spheres of the government". According to section 9(1) of *NEMWA*,

²⁸³ Section 12(1)(a)(iv) of *NEMWA*.

²⁸⁴ Section 12(1)(b)(iii) of *NEMWA*.

²⁸⁵ Section 69(1) of *NEMWA*.

²⁸⁶ Regulation 2(1)(a) of the *Waste Regulations*.

²⁸⁷ Regulation 2(1)(c) of the *Waste Regulations*.

²⁸⁸ Regulation 2(1)(d) of the *Waste Regulations*.

²⁸⁹ Section 7(1)(a) of *NEMWA*.

²⁹⁰ Section 7(1)(a) of *NEMWA*.

²⁹¹ Alberts and Van Rooyen "Solid Waste Management" 13-12.

²⁹² Alberts and Van Rooyen "Solid Waste Management" 13-13.

²⁹³ Alberts and Van Rooyen "Solid Waste Management" 13-13.

municipalities must use their executive authority to provide local waste management services, such as waste collection, storage, and disposal, consistent with the norms and standards established by national and provincial governments. Section 9(3)(c) of *NEMWA* permits municipalities to develop local standards for separating, compacting, and storing solid waste as components of their municipal waste service. These standards may include requirements to avoid and minimise waste generation and promote solid waste reuse, recycling, and recovery.²⁹⁴ Municipalities can also set local standards for directing solid waste to specific treatment and disposal facilities.²⁹⁵ These provisions empower municipalities to set local standards that seek to promote food waste reduction and proper handling of food waste. In this regard, municipalities must set local standards that include requirements to avoid and minimise food waste and promote a food waste hierarchy. In so doing, municipalities may adopt these standards in waste management bylaws. Furthermore, these standards could be included in schedules in the waste management bylaws. There is no information or guidance on food waste in *NEMWA*. It specifies waste management functions, regulations, documentation, and the issuance of waste licences and landfill contracts. Unfortunately, nothing significant about food waste has been addressed in statutory law. The only call in all sectors is for municipalities to adopt IWMP strategies, with no mention of the food waste problem.

3.3.3 *Foodstuffs Act*

The *Foodstuffs Act*²⁹⁶ provides for and controls the sale and manufacture of food.²⁹⁷ The "*Regulations Governing General Hygiene Requirements for Food Premises, the Transportation of Food and Related Matters (2010) (Hygiene Regulations)*"²⁹⁸ were made in terms of section 15(1) of the *Foodstuffs Act*". The *Hygiene Regulations* stipulate requirements that food premises must comply with to ensure a healthy

²⁹⁴ Section 9(3)(b) of *NEMWA*.

²⁹⁵ Section 9(3)(c) of *NEMWA*.

²⁹⁶ 54 of 1972.

²⁹⁷ Preamble of the *Foodstuffs Act*.

²⁹⁸ Published in GN R638 in *GG* 41730 of 22 June 2018.

and hygienic environment.²⁹⁹ The *Hygiene Regulations* state that food premises must have "(w)aste containers suitable for the hygienic storage of waste pending its removal from the food handling area", for example.³⁰⁰ The *Hygiene Regulations* further state that "(f)ood premises must have a suitable separate area for the hygienic storage and cleaning of waste containers on the food premises".³⁰¹ The *Hygiene Regulations* also place any person in control of the food premise under a duty to ensure that waste is removed from the food premises in which food is handled³⁰² and that waste is stored or disposed of in an environmentally sound manner.³⁰³

3.3.4 *National Health Act*

The *NHA* states that "municipalities must ensure that appropriate health services are effectively and equitably provided".³⁰⁴ Municipal health services are defined in the *NHA* as a set of services that includes food control and waste management.³⁰⁵ The *NHA* empowers health officers to conduct inspections on any premise to ensure compliance with the Act.³⁰⁶ Furthermore, section 83(1) holds that if "a health officer has reasonable grounds to believe that any condition exists that constitutes a violation of the right contained in section 24(a) of the *Constitution*", the health practitioner should investigate such conditions. While the provisions of this Act do not directly address food waste, the *National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners* (hereafter *National Norms and Standards for Environmental Health*), which were issued in terms of section 21(2)(b)(ii) of the *NHA*, can indirectly be applied to address this issue. The *National Norms and Standards for Environmental Health* further aim to strengthen the provision of environmental

²⁹⁹ Regulation 5(3) in the *Hygiene Regulations*.

³⁰⁰ Regulation 5(3)(d)(iii) in the *Hygiene Regulations*.

³⁰¹ Regulation 5(3)(d)(v) in the *Hygiene Regulations*.

³⁰² Regulation 10(4) in the *Hygiene Regulations*.

³⁰³ Regulation 10(5) in the *Hygiene Regulations*.

³⁰⁴ Section 32(1) of the *NHA*.

³⁰⁵ Section 1 of the *NHA*.

³⁰⁶ Section 82 of the *NHA*.

health in the country.³⁰⁷ It also contains provisions related to food-handling premises, food safety, and hygienic practices.³⁰⁸ For instance, it is stated that environmental health risk assessment of premises should be conducted with a focus on conditions that may pose a risk to human health, such as food-handling practices, waste management, and hygienic practices.³⁰⁹ Further, the *National Norms and Standards for Environmental Health* emphasise the importance of maintaining food-handling premises in a manner that fosters a hygienic and clean environment, thereby safeguarding people's health from potential hazards.³¹⁰ Applying these norms and standards to food waste management can help ensure that food waste does not pose a risk to the environment and, therefore, human health. For example, food-handling premises should practice the proper storage, handling, and disposal of food waste.

As a next step, it is meaningful to see if and how food waste is regulated in terms of the general provisions of local government legislation, such as the *Municipal Structures Act* and the *Municipal Systems Act*.

3.3.5 *Municipal Structures Act*

The *Municipal Structures Act* describes some functions, powers, and roles assigned to municipalities in the *Constitution*.³¹¹ Municipalities are obliged to have municipal councils that exercise both legislative and executive powers.³¹² A municipal council is obliged to pursue the objectives outlined in section 152 of the *Constitution*.³¹³ Additionally, "a municipal council has the authority to establish committees to ensure effective and efficient performance of any function or power".³¹⁴ Committees

³⁰⁷ Preamble of the Notice 1229 published in GG 39561 of 24 December 2015.

³⁰⁸ Section 7(13) of the *National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners*.

³⁰⁹ Section 7(13) of the *National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners*.

³¹⁰ Section 7(13) of the *National Environmental Health Norms and Standards for Premises and Acceptable Monitoring Standards for Environmental Health Practitioners*.

³¹¹ Section 84(1) of the *Municipal Structures Act*.

³¹² Section 151(2) of the *Constitution*; *Constitution* read with s 18(1) of the *Municipal Structures Act*.

³¹³ Section 19(1) of the *Municipal Structures Act*.

³¹⁴ Section 79(1)(a) read with s 80(1) of the *Municipal Structures Act*.

established in municipalities enable councils to delegate specific functions and strengthen their work.³¹⁵ However, a municipal council may not delegate the powers mentioned in section 160(2) of the *Constitution*.³¹⁶

Committees may be established to create and oversee the implementation of redistributive or environmental sustainability measures, such as policies and plans to investigate and provide recommendations on addressing the underlying causes of environmental degradation.³¹⁷ Thus, these committees have the potential to improve the overall performance and coordination of municipalities' environmentally relevant decisions and plans.³¹⁸ Regarding food waste, these committees could play a role in food waste regulation by effectively making inputs into policies, plans, bylaws, and programs that seek to promote the minimisation and proper management of food waste. Section 84 of the *Municipal Structures Act* states that a municipality must ensure integrated, sustainable, and equitable social and economic development by providing services and regulating solid waste disposal sites.³¹⁹ The *Municipal Structures Act* stipulates that municipalities should operate solid waste disposal sites in more than one local municipality in a district³²⁰ and determine a waste disposal strategy.³²¹ Concerning "the determination of waste disposal strategy and regulation of waste disposal, as well as the establishment, operation, and control of waste disposal sites", this means that municipalities are obligated to establish and determine measures, plans or strategies that seek to dispose of food waste in a safe manner in its area of jurisdiction.

³¹⁵ SARChI CLES Chair 2023 <https://law.nwu.ac.za/sarchi-cles-chair/section-79-and-80-committees>.

³¹⁶ Section 160(2) of the *Constitution* provides that a municipal council may not delegate certain functions, including passing bylaws, approving budgets, imposition rates and other taxes, levies and duties, and raising of loans.

³¹⁷ Fuo *Local Government's Role in Pursuit of the Transformative Constitutional Mandate of Social Justice in South Africa* 266-267; SARChI CLES Chair 2023 <https://law.nwu.ac.za/sarchi-cles-chair/section-79-and-80-committees>.

³¹⁸ SARChI CLES Chair 2023 <https://law.nwu.ac.za/sarchi-cles-chair/section-79-and-80-committees>.

³¹⁹ Section 84(1)(d) of the *Municipal Structures Act*.

³²⁰ Section 84(1)(e) of the *Municipal Structures Act*.

³²¹ Section 84(1)(e)(i) of the *Municipal Structures Act*.

3.3.6 *Municipal Systems Act*

The *Municipal Systems Act* provides a set of core principles, mechanisms, and processes that are necessary to ensure access to essential services in South Africa.³²² The *Municipal Systems Act* specifies that municipalities, in collaboration with other organs of the state, are obligated to contribute to the gradual realisation of section 24 of the *Constitution*.³²³ Thus, the municipal council is required to make efforts to ensure that municipal services are delivered to local communities in a manner that is environmentally sustainable.³²⁴ Furthermore, municipal councils must promote safe and healthy environments.³²⁵ As mentioned in the previous paragraph, the municipal council can effectively exercise its legislative and executive powers through the adoption of policies, plans, strategies, and programs;³²⁶ the implementation of relevant legislation and bylaws;³²⁷ the provision of municipal services to local communities;³²⁸ the monitoring and regulation of municipal services;³²⁹ and the promotion a safe and healthy environment.³³⁰ It is the function of every municipal council to pass bylaws, develop plans, and make decisions to promote a safe and healthy environment.³³¹

For instance, section 25 provides that each municipal council must, within a specified period after the commencement of its elected term, formulate a single, comprehensive, and strategic plan (the so-called Integrated Development Plan (IDP)) for the development of the municipality.³³² Municipal councils are required to ensure that, in their IDPs, proper resource allocation achieves the targets set in their respective plans.³³³ In relation to waste management, it can be inferred that

³²² Preamble of the *Municipal Structures Act*.

³²³ Section 4(2)(j) of the *Municipal Systems Act*.

³²⁴ Section 4(2)(d) of the *Municipal Systems Act*.

³²⁵ Section 4(2)(i) of the *Municipal Systems Act*.

³²⁶ Section 11(3)(a) of the *Municipal Systems Act*.

³²⁷ Section 11(3)(e) of the *Municipal Systems Act*; see para 3.3.2 above.

³²⁸ Section 11(3)(f) of the *Municipal Systems Act*.

³²⁹ Section 11(3)(g) of the *Municipal Systems Act*.

³³⁰ Section 11(3)(l) of the *Municipal Systems Act*.

³³¹ Section 12 and s 11(3)(l) of the *Municipal Systems Act*.

³³² Section 25(1)(a) of the *Municipal Systems Act*.

³³³ Section 25(1)(b) of the *Municipal Systems Act*.

the IDP must include sectoral environmental plans, which would be the IWMP for food waste regulation. These municipal council functions suggest that they play a direct role in developing and implementing general benchmarks for the regulation of food waste. Section 36 further states that a municipality must affect its IDP and conduct affairs in a manner consistent with its IDP. The implementation and development of IWMP for food waste must be aligned with the IDP. It follows from this Act that municipalities must adopt local strategies, plans, regulations, or policies for municipal waste management services that could also cover food waste.³³⁴

3.4 The national policy framework

The *NWMS* was published with the goal of addressing South Africa's waste management and attaining the aims of *NEMWA*. The goal of this strategy is to promote a waste hierarchy that informs waste management in South Africa. Therefore, this discussion focuses on *NWMS* and how it regulates the challenges associated with food waste. Originally, this was the only national policy to be discussed, but very recently, the national government also published a *Draft Strategy for Reducing Food Losses and Waste* for public comments.

3.4.1 The NWMS, 2020

The *NWMS* was published in 2012 by the Department of Environmental Affairs (DEA)³³⁵ with the goal of tackling South Africa's waste management challenges and realising the objectives of *NEMWA*.³³⁶ The *NWMS* is a statutory requirement for *NEMWA*.³³⁷ The *NWMS* offers a comprehensive framework and strategy for the implementation of the Act.³³⁸ It provides a comprehensive overview of the government's policy and strategic approach to waste management³³⁹ and sets out

³³⁴ Section 25 of the *Municipal Systems Act*.

³³⁵ Now the Department of Environment, Forestry and Fisheries (DEFF).

³³⁶ Alberts and Van Rooyen "Solid Waste Management" 13-9.

³³⁷ Section 6 of the *NEMWA*.

³³⁸ Department of DEFF "2020 National Waste Management Strategy" 9.

³³⁹ DEFF "2020 National Waste Management Strategy" 9.

goals that focus on providing an understanding of the direction of waste management in the local government.³⁴⁰

The *NWMS* was revised and updated in 2020.³⁴¹ The primary findings of the evaluation that informed the revision of the strategy state that, to a great extent, the previous *NWMS* reflected a top-down, state-led approach to waste management and regulation, as it primarily concentrated on promoting the different legal obligations and regulatory mechanisms stipulated in the *NEMWA*, including the provisions around IWMPs, provisions for polluted lands, and Industry Waste Management Plans (IndWMPs).³⁴² Bearing this in mind, *NWMS2020* shifts the waste management approach to promoting innovation, partnerships with the private sector, waste beneficiation, and capacity building for provincial and local governments, fostering sustainable strategic partnerships with all stakeholders.³⁴³

The revised *NWMS* was the first official government instrument to identify problems related to food waste. The *NWMS* is believed to place the circular economy concept at its core, promoting a culture of zero tolerance for pollution, litter, and dumping. It is evident from research that "the strategy is supported by three pillars: waste minimisation, effective and sustainable waste services, and compliance, enforcement, and awareness".³⁴⁴ The *NWMS* encourages authorities to take responsibility for human activities with respect to climate change and environmental damage, which is a statutory mandate under *NEMWA*.³⁴⁵ Thus, the *NWMS* calls for recognition of the food waste problem, as well as its broader classification of general waste, to carry out constant and frequent assessments of the material composition of biodegradable goods in solid waste.³⁴⁶ Despite the fact that all the South African

³⁴⁰ Alberts and Van Rooyen "Solid Waste Management" 13-10.

³⁴¹ The previous Strategy was revised by critically assessing the *status quo* to ensure that the successes are built on, lessons learned are considered, and gaps that the revised strategy must address are identified – see DEFF "2020 National Waste Management Strategy" 28.

³⁴² DEFF "2020 National Waste Management Strategy" 28.

³⁴³ DEFF "2020 National Waste Management Strategy" 29.

³⁴⁴ DEFF "2020 National Waste Management Strategy" 7.

³⁴⁵ DEFF "2020 National Waste Management Strategy" 8.

³⁴⁶ Madondo *An Assessment of Household Food Wastage* 34.

legislation and regulations stated above might assist in governing and managing food waste, no progress has been made in adopting a national bill on food waste. As a result, with the exception of the *NWMS* and the *Draft Strategy for Reducing Food Losses and Waste*, none of them explicitly regulates food waste in particular.

3.4.2 *Draft Strategy for Reducing Food Losses and Waste*

The *Draft Strategy for Reducing Food Losses and Waste* was developed in terms of sections 72 and 73 of the *NEMWA*.³⁴⁷ Additionally, the *Draft Strategy for Reducing Food Losses and Waste* was developed as one of the key interventions of *NWMS 2020*.³⁴⁸ The *Draft Strategy for Reducing Food Losses and Waste* was published in September 2023 for public comments. The *Draft Strategy for Reducing Food Losses and Waste* aims to develop an action plan for the public and private sectors to tackle food losses and waste in the food supply chain.³⁴⁹ Subsequently, the *Draft Strategy for Reducing Food Losses and Waste* seeks to reduce food waste and improve food security in South Africa by implementing new technologies and circular economy approaches.³⁵⁰ It also considers the best practices and policies suitable for the South African context to mitigate the negative environmental impacts associated with food losses and waste.³⁵¹

The *Draft Strategy for Reducing Food Losses and Waste* acknowledges the shortage of research and statistics on food loss and waste.³⁵² Hence, the *Draft Strategy for Reducing Food Losses and Waste* was established to address this gap.³⁵³ The *Draft Strategy* also provides a definition of food loss and waste;³⁵⁴ however, the definition of food loss and waste adopted by the *Draft Strategy for Reducing Food Losses and Waste* considers food waste to be only extended to products intended for consumption by people and "excludes animal feed and food residues, which are not

³⁴⁷ *Draft Strategy on the Reduction of Food Losses and Waste*.

³⁴⁸ *Draft Strategy on the Reduction of Food Losses and Waste* 5.

³⁴⁹ *Draft Strategy on the Reduction of Food Losses and Waste* 8.

³⁵⁰ *Draft Strategy on the Reduction of Food Losses and Waste* 8.

³⁵¹ *Draft Strategy on the Reduction of Food Losses and Waste* 8.

³⁵² *Draft Strategy on the Reduction of Food Losses and Waste* 6.

³⁵³ *Draft Strategy on the Reduction of Food Losses and Waste* 5.

³⁵⁴ See para 2.2 above.

considered edibles".³⁵⁵ The *Draft Strategy for Reducing Food Losses and Waste* also recognises not only the environmental challenges posed by food waste but also the social and economic concerns associated with it.³⁵⁶ In this vein, the *Draft Strategy for Reducing Food Losses and Waste* holds that South Africa cannot afford to waste food, as the majority of South Africans live below the poverty line.³⁵⁷ As a result, it is important for South Africa to take necessary steps to ensure that food losses and waste are addressed. The *Draft Strategy for Reducing Food Losses and Waste* further states that South Africa has committed to taking action to achieve the UN's SDG 12.3, which emphasises halving global food waste per capita at the retail and consumer levels and reducing food losses along the production of the supply chain by 2030.³⁵⁸ Therefore, the *Draft Strategy for Reducing Food Losses and Waste* is a food loss and waste reduction policy directive that assimilates the country's strategic approach to food loss and waste reduction with the commitments and directives of the SDGs and *NWMS*.

With the *Draft Strategy for Reducing Food Losses and Waste's* goal in mind, it aims to work alongside existing instruments dealing with food losses and waste,³⁵⁹ such as Operation Phakisa,³⁶⁰ the South African Food Loss and the Waste Initiative Voluntary Agreement,³⁶¹ Food Waste Prevention and Management Guideline for

³⁵⁵ *Draft Strategy on the Reduction of Food Losses and Waste* 4; see para 2.2 above on the definition of food waste adopted by the *Draft Strategy on the Reduction of Food Losses and Waste*.

³⁵⁶ *Draft Strategy on the Reduction of Food Losses and Waste* 7.

³⁵⁷ *Draft Strategy on the Reduction of Food Losses and Waste* 7.

³⁵⁸ *Draft Strategy on the Reduction of Food Losses and Waste* 7.

³⁵⁹ *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁶⁰ Department of Forestry, Fisheries and the Environment 2021 [https://www.dffe.gov.za/OperationPhakisaChemicalsandWasteEconomy#:~:text=The%20Phakisa%20addresses%20the%20opportunity,and%20risks%20posed%20by%20chemicals](https://www.dffe.gov.za/OperationPhakisaChemicalsandWasteEconomy#:~:text=The%20Phakisa%20addresses%20the%20opportunity,and%20risks%20posed%20by%20chemicals;); *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁶¹ South African Government 2020 <https://www.gov.za/speeches/minister-barbara-creecy-food-loss-and-waste-voluntary-agreement-virtual-launch-29-sep-2020>; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

South Africa,³⁶² and the National Food and Nutrition Security Plan for South Africa 2018-2023.³⁶³

Operation Phakisa Chemicals and Waste Economy is a government program that was initiated in 2017.³⁶⁴ The goal of Operation Phakisa Chemicals and Waste Economy is to reduce the negative environmental impact of waste.³⁶⁵ It formalises and protects informal waste workers while also contributing to South Africa's GDP and economic transformation.³⁶⁶ Municipal solid waste (the majority of which is food waste) was identified as a waste stream that should be prioritised as part of the initiatives aimed at improving product design and waste minimisation by Operation Phakisa Chemicals and Waste Economy.³⁶⁷

The South African Food Loss and Waste Initiative Voluntary Agreement was launched in 2020. This was done by the CGCSA in partnership with the National Department of Trade, Industry, and Competition and the Department of Forestry, Fisheries, and the Environment.³⁶⁸ The South African Food Loss and Waste Initiative

³⁶² DEFF Fisheries "Food Waste Prevention and Management: A Guideline for South Africa"; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁶³ Department of Planning, Monitoring and Evaluation "National Food and Nutrition Security Plan for South Africa 2018 – 2023"; *Draft Strategy on the Reduction of Food Losses and Waste* 11.

³⁶⁴ Department of Forestry, Fisheries and the Environment 2021 <https://www.dffe.gov.za/OperationPhakisaChemicalsandWasteEconomy#:~:text=The%20Phakisa%20addresses%20the%20opportunity,and%20risks%20posed%20by%20chemicals>.

³⁶⁵ Department of Forestry, Fisheries and the Environment 2021 <https://www.dffe.gov.za/OperationPhakisaChemicalsandWasteEconomy#:~:text=The%20Phakisa%20addresses%20the%20opportunity,and%20risks%20posed%20by%20chemicals>; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁶⁶ Department of Forestry, Fisheries and the Environment 2021 <https://www.dffe.gov.za/OperationPhakisaChemicalsandWasteEconomy#:~:text=The%20Phakisa%20addresses%20the%20opportunity,and%20risks%20posed%20by%20chemicals>; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁶⁷ Department of Forestry, Fisheries and the Environment 2021 <https://www.dffe.gov.za/OperationPhakisaChemicalsandWasteEconomy#:~:text=The%20Phakisa%20addresses%20the%20opportunity,and%20risks%20posed%20by%20chemicals>; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁶⁸ South African Government 2020 <https://www.gov.za/speeches/minister-barbara-creecy-food-loss-and-waste-voluntary-agreement-virtual-launch-29-sep-2020>; Consumer Goods Council of South Africa "Food Loss and Waste (FLW) Initiative Signatory Benefits" 1; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

Voluntary Agreement aims to reduce food loss and waste in South Africa by 2030.³⁶⁹ The South African Food Loss and Waste Initiative Voluntary Agreement seeks to bring together all stakeholders in the food supply chain to minimise food loss and waste and to adopt a food waste hierarchy as well as food waste management practices.³⁷⁰

The South African Food Waste Prevention and Management Guideline was launched in 2021 with the aim of providing guidelines on potential measures that can be implemented to prevent and manage food waste.³⁷¹ The guidelines provide awareness of food waste that occurs throughout the food supply chain but with a specific focus on food waste occurring in the consumer phase.³⁷² The goal of the guidelines is to help South Africa decouple economic development and food waste in the consumer phase.³⁷³ The guidelines assist role players across the food supply chain in identifying the causes of food waste and provide advice on ways to prevent and minimise food waste.³⁷⁴ The National Food and Nutrition Security Plan for South Africa 2018-2023 aims to "ensure optimal food security and improved nutritional status for all South Africans".³⁷⁵

The *Draft Strategy for Reducing Food Losses and Waste* is informed and guided by the aforementioned instruments. Additionally, legislative instruments, more specifically those that deal with waste (some of which have already been discussed

³⁶⁹ South African Government 2020 <https://www.gov.za/speeches/minister-barbara-creecy-food-loss-and-waste-voluntary-agreement-virtual-launch-29-sep-2020>; *Draft Strategy on the Reduction of Food Losses and Waste FLW* 10.

³⁷⁰ Consumer Goods Council of South Africa "Food Loss and Waste (FLW) Initiative Signatory Benefits" 1; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁷¹ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁷² DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁷³ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 2; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁷⁴ DEFF "Food Waste Prevention and Management: A Guideline for South Africa" 3; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

³⁷⁵ National Food and Nutrition Security Plan for South Africa 2018-2023 (2017) (hereafter *National Food and Nutrition Security Plan*) 11; *Draft Strategy on the Reduction of Food Losses and Waste* 10.

in the paragraphs above),³⁷⁶ also provide a foundation and guideline for the approach and direction of this strategy.

The Draft Strategy for Reducing Food Losses and Waste identifies five interconnected strategic pillars for achieving the required food loss and waste reduction.³⁷⁷ These include "circular economy and food recovery, collaboration, awareness and education, skills development and capacity building, infrastructure development, and sustainable funding".³⁷⁸ These pillars are guided by four strategic goals that have been adopted and dissected in the *Draft Strategy for Reducing Food Losses and Waste's* Implementation Plan, which are outlined below.³⁷⁹

Goal 1 of the *Draft Strategy for Reducing Food Losses and Waste* aims to "establish an environment conducive to the implementation of the food loss and waste strategy".³⁸⁰ The review, identification, and development of various policies, regulations, norms, standards and guidelines that must be implemented over the coming years were highlighted and specified to achieve this goal and establish an environment conducive to the implementation of a food loss and waste strategy.³⁸¹ For instance, this will include identifying, adapting, and developing applicable guidelines, norms, and standards to prevent food loss and waste during various phases of the food supply chain.³⁸² This will also entail formulating guidelines for the consumption and marketing of foods that do not satisfy the market standards.³⁸³

Goal 2 of the *Draft Strategy for Reducing Food Losses and Waste* focuses on food loss, waste beneficiation, and a circular economy.³⁸⁴ This Goal proposes the mandatory development of a national food loss and waste prevention plan that aims

³⁷⁶ See paras 3.2 and 3.3 above.

³⁷⁷ *Draft Strategy on the Reduction of Food Losses and Waste* 9.

³⁷⁸ *Draft Strategy on the Reduction of Food Losses and Waste* 9.

³⁷⁹ *Draft Strategy on the Reduction of Food Losses and Waste* 9.

³⁸⁰ *Draft Strategy on the Reduction of Food Losses and Waste* 9.

³⁸¹ *Draft Strategy on the Reduction of Food Losses and Waste* 5-7.

³⁸² *Draft Strategy on the Reduction of Food Losses and Waste* 5-7.

³⁸³ *Draft Strategy on the Reduction of Food Losses and Waste* 5-7.

³⁸⁴ *Draft Strategy on the Reduction of Food Losses and Waste* 7-11.

to achieve SDG Target 12.3.³⁸⁵ The proposed food loss and waste prevention plan should outline national targets while providing a roadmap for provincial and municipal governments to achieve these goals.³⁸⁶ The Goal also includes establishing a strategic intervention framework for creating a secondary market for agricultural produce and providing farmers with grade 3 products suitable for the primary market.³⁸⁷

Goal 3 of the *Draft Strategy for Reducing Food Losses and Waste* focuses on capacity building, education, and awareness raising.³⁸⁸ This goal recommends the establishment of a food loss and waste research chair or Centre of Excellence, which will entail public and private sector collaboration to enhance food safety management by educating various food supply chain role players.³⁸⁹ It also aims to improve the existing South African Waste Information System's national data collection on organic waste to report specific food losses and waste generated along the food supply chain.³⁹⁰ It proposes the development of a strategic intervention framework for date labelling to reduce food loss and waste by clarifying the meaning of date labels and introducing illustrations for those who cannot read.³⁹¹

Goal 4 focuses on food waste diversion and GHG emission reduction.³⁹² This goal aims to establish a carbon offset strategy for food loss and waste to encourage carbon offset as an incentive for diverting food waste from landfills to alternative destinations.³⁹³ This strategy aims to enhance capacity development, raise awareness, and manage existing data gaps.³⁹⁴ This goal further aims to enhance food redistribution and donation programmes.³⁹⁵ This goal suggests that food

³⁸⁵ *Draft Strategy on the Reduction of Food Losses and Waste* 7-11.

³⁸⁶ *Draft Strategy on the Reduction of Food Losses and Waste* 7-11.

³⁸⁷ *Draft Strategy on the Reduction of Food Losses and Waste* 7-11.

³⁸⁸ *Draft Strategy on the Reduction of Food Losses and Waste* 11-18.

³⁸⁹ *Draft Strategy on the Reduction of Food Losses and Waste* 11-18.

³⁹⁰ *Draft Strategy on the Reduction of Food Losses and Waste* 11-18.

³⁹¹ *Draft Strategy on the Reduction of Food Losses and Waste* 11-18.

³⁹² *Draft Strategy on the Reduction of Food Losses and Waste* 18-24.

³⁹³ *Draft Strategy on the Reduction of Food Losses and Waste* 18-24.

³⁹⁴ *Draft Strategy on the Reduction of Food Losses and Waste* 18-24.

³⁹⁵ *Draft Strategy on the Reduction of Food Losses and Waste* 18-24.

redistribution and donation programs could be promoted by amending relevant regulations to enable food donations without jeopardising food health and safety.³⁹⁶ The goal also proposes establishing public-private partnerships to create alliances to address the challenges of food waste.³⁹⁷

Although the *Draft Strategy for Reducing Food Losses and Waste* is still subject to additional review and consultation before becoming official, it is important to highlight that it provides critical perspectives on the government's plans and strategic goals for addressing the growing problem of food waste. Once promulgated, they are likely to become gateways for different plans, policies, standards, partnerships, and regulations to be established and published. Similarly, the *Draft Strategy for Reducing Food Losses and Waste* emphasises the importance of all national departments, organs of state, and spheres of government playing a role in achieving the National Food Loss and Waste Implementation Plan.

3.5 Provincial law and policy framework

The *NEMWA* permits provinces to develop norms and standards for waste management, given they do not contradict national norms and standards.³⁹⁸ The following discussion endeavours to provide insights into the Western Cape and its Household Food and Nutrition Security Strategic Framework with the aim of providing guidance on how to deal with food waste. While none of the municipalities considered in this study are from the Western Cape, the discussion below offers versatile ground for understanding the multi-layered waste law and governance regime in South Africa.³⁹⁹

³⁹⁶ *Draft Strategy on the Reduction of Food Losses and Waste* 18-24.

³⁹⁷ *Draft Strategy on the Reduction of Food Losses and Waste* 18-24.

³⁹⁸ Section 8(2) of the *NEMWA*.

³⁹⁹ See para 1.4 above; moreover, the Western Cape seems to stand out as one of the few provinces with established laws and policies concerning waste management.

3.5.1 Draft Western Cape Integrated Waste Management Plan (2022-2027) Province

Section 11(1) of *NEMWA* requires all provincial departments responsible for waste management to prepare an IWMP. As a result, the Western Cape Government published the Draft Western Cape Integrated Waste Management Plan (2022-2027) (hereafter the Draft Plan) in September 2022 for public comments. Thus, the Draft Plan is a recent provincial-level plan aimed at waste management. However, the Draft Plan has no explicit provisions for food waste. The Draft Plan aims to address waste collection, storage, transportation, and disposal.⁴⁰⁰ This emphasises the importance of waste separation at source.⁴⁰¹ Although there is no mention of food waste in the provisions of the Draft Plan, it may fall under its scope because it encourages waste separation at the source, which implies that food waste can be separated from other types of waste.

3.5.2 Western Cape Government Household Food and Nutrition Security Strategic Framework

In September 2016, the Western Cape Government launched a strategic framework called Household Food and Nutrition Security (Strategic Framework).⁴⁰² The Strategic Framework has three goals: "to protect the province's residents while addressing the underlying issues that shape the food economy; ensure resource management; and provide people with access to fresh and healthy food".⁴⁰³ The Strategic Framework is divided into six pillars.⁴⁰⁴ The fourth pillar is food resource management, which aims to integrate climate change solutions into all areas of the

⁴⁰⁰ Western Cape Integrated Waste Management Plan 2022-2027 (Draft) (2022) (hereafter *Western Cape Integrated Waste Management Plan 2022-2027*) 50-68.

⁴⁰¹ *Western Cape Integrated Waste Management Plan 2022-2027* 50-68.

⁴⁰² Household Food and Nutrition Security Strategic Framework (2016) (hereafter *Household Food and Nutrition Security Strategic Framework*) iv; WWF 2016 *Food Loss and Waste* 17.

⁴⁰³ *Household Food and Nutrition Security Strategic Framework* iv; WWF 2016 *Food Loss and Waste* 17.

⁴⁰⁴ *Household Food and Nutrition Security Strategic Framework* iv; WWF 2016 *Food Loss and Waste* 17.

food system by 2040.⁴⁰⁵ Although the Strategic Framework does not explicitly mention food waste, it may be incorporated into this strategy because the language used in the strategy is direct and demonstrates that food waste can be dealt with consistently. The following section explores the governing instruments that can be used to regulate food waste.

3.6 *Regulatory instruments provided for in local government law*

Local government instruments were developed and implemented as extensions of municipalities' legislative and executive powers. Legislation prescribes various instruments.⁴⁰⁶ In South Africa, municipal policy, bylaws, IDPs, public participation, and public-private partnerships, among other things, have been highlighted as local government instruments prescribed by legislation.⁴⁰⁷ This section examines some instruments that municipalities can potentially use to regulate food waste, namely bylaws, local IWMP, public-private partnerships, economic instruments, and municipal budgets. This section of the chapter demonstrates and elucidates how these instruments can assist local government in regulating food waste.

3.6.1 Bylaws

In accordance with the *Constitution*, municipalities are empowered to establish and enforce bylaws for the effective administration of matters that they have rights over.⁴⁰⁸ For instance, municipalities may create and administer bylaws on matters included in Schedules 4 and 5 Part B of the *Constitution*. Generally, bylaws on waste must not conflict with national or provincial government legislation, as this will invalidate the bylaws.⁴⁰⁹

⁴⁰⁵ *Household Food and Nutrition Security Strategic Framework* iv; WWF 2016 *Food Loss and Waste* 17.

⁴⁰⁶ Section 11(3) of *Municipal Systems Act*; Ngcobo *The Informal Economy for Local Economic Development in South Africa* 62.

⁴⁰⁷ Section 11(3) of the *Municipal Systems Act*; Fuo *Local Government's Role in Pursuit of the Transformative Constitutional Mandate of Social Justice in South Africa* 303.

⁴⁰⁸ Section 156(2) of the *Constitution*.

⁴⁰⁹ Section 156(3) of the *Constitution*.

Section 9(1) of the *NEMWA* addresses service delivery mandates and waste management, stating that a municipality must employ its executive authority to deliver waste management services, including waste collection, storage, and disposal. Section 9(2) mandates municipalities to use its exercise authority and carry out their responsibilities concerning waste services, which include waste collection, storage, and disposal services. This involves adherence to all national and provincial norms and standards, alignment of waste management plans with their IDPs, ensuring equitable access to these services, and providing them at a reasonable cost. Municipalities may exercise their executive power by setting local standards for separating, complying, and storing solid waste.⁴¹⁰ Municipal waste bylaws should generally establish local service standards for the separation, compaction, and storage of solid waste, along with guidelines for the management and direction of solid waste disposal. It should be noted that section 9 of *NEMWA* allows waste bylaws "to deal with a variety of waste management service issues, including collection of waste, types of waste collected, methods of waste collection, and waste containers to be used". For example, the *City of Johannesburg's Waste Management Bylaw* of 2013 has a provision for the municipal council to provide a generator or holder of waste with approved respect for the storage of domestic waste pending collection.⁴¹¹ Further, section 26(1) specifies that any person generating domestic waste must place such waste in an approved waste receptacle. The provisions in section 9 of *NEMWA* empower municipalities to discharge their power in a manner that incorporates food waste. Thus, waste bylaws should be enacted to explicitly prescribe how food waste should be collected, stored, treated, and disposed of.⁴¹² The existence of a waste bylaw that explicitly delineates procedures for handling food waste can effectively enhance enforcement efforts. Additionally, section 32(1) of the *NHA* states, "every municipality must ensure that appropriate municipal health services are effectively and equitably provided within their respective

⁴¹⁰ Section 9(3) of *NEMWA*.

⁴¹¹ Section 25(4) of the City of Johannesburg Waste Management Bylaw (2013) (hereafter *Waste Management Bylaw*).

⁴¹² See para 3.3.2 above.

jurisdictions".⁴¹³ Following this provision of the *NHA*, read in sections 11 to 13 of the *Municipal Systems Act*, municipalities have the authority to develop and adopt an environmental health bylaw that aims to promote a clean and healthy environment. This implies that municipalities must develop and adopt environmental health bylaws that to promote proper handling, storage, and disposal of food waste so that waste food does not harm the environment, thereby endangering people's health.

3.6.2 Specific environmental management plans

Municipalities must develop, adopt, implement, and track the performance of environmental management plans.⁴¹⁴ These plans are considered additions to the IDP, although their authority is vested in the environmental legislation.⁴¹⁵ For example, section 11(4) of *NEMWA* requires each municipality to submit its IWMP to the MEC for approval to be included in the IDP.⁴¹⁶ The IWMP may potentially have a direct, indirect, or implied application to food waste management in that it imposes an obligation on municipalities to identify (food) waste and set out standards on how they intend to deal with it when they prepare their IWMPs.⁴¹⁷

3.6.3 Public-private partnerships

A public-private partnership (PPP) is an "economic arrangement between a municipality and the private sector that regulates the use of private sector resources and expertise to supply and deliver assets and services".⁴¹⁸ PPPs enable private companies to engage in municipal governance.⁴¹⁹ These collaborations enable private parties to undertake municipal functions for or on behalf of municipalities.⁴²⁰

⁴¹³ The *NHA* defines the package of environmental health services that municipalities are required to provide, among these services include food control, waste management and general hygienic monitoring; see also para 3.3.4 above.

⁴¹⁴ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-61.

⁴¹⁵ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-61.

⁴¹⁶ See para 3.3.2 above.

⁴¹⁷ See para 3.3.2 above; moreover, the enforcement of IWMPs can be strengthened by including them in the general waste bylaws.

⁴¹⁸ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-73.

⁴¹⁹ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-73.

⁴²⁰ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-73.

One type of PPP is where a private party provides municipal functions such as waste removal.⁴²¹ For example, a municipality may launch a program with local communities and private parties to promote food waste reduction. One example is collaborating with a private party to conduct a composting program that collects food waste from homes and businesses and transforms it into compost for use in parks and gardens. For instance, CGCSA introduced the South African Food Loss and Waste Voluntary Agreement, which commits food manufacturers and retailers to minimise food waste to meet SDG Target 12.3, as discussed earlier.⁴²²

3.6.4 *Economic instruments*

The *NEMWA* provides for economic instruments and empowers the Minister of Forestry, Fisheries, and Environment, "in concurrence with the Minister of Finance, to make regulations for incentives and disincentives to encourage a change in behaviour towards waste generation and management".⁴²³ Economic instruments include taxes, subsidies, and regulations and can change behaviour indirectly through the implementation of a pricing mechanism; a set of incentives and disincentives can be established.⁴²⁴ Pricing offers a more cost-effective and dynamic form of regulation than the traditional command-and-control approach does.⁴²⁵ For example, a law allowing retailers to donate food to food banks and charities may protect businesses from fines for donating food past their sell-by dates and provide tax incentives based on the amount of food donated. The rationale in this instance is to encourage companies to adopt innovative food waste management practices. However, it has been acknowledged that food safety should not be compromised. In this regard, the *Foodstuffs Act* ensures that food safety and hygiene are of paramount importance and that people's health is not jeopardised.

⁴²¹ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-74.

⁴²² Department of Forestry 2020 <https://www.dffe.gov.za/food-loss-and-waste-voluntary-agreement-virtual-launch-word-support-address-delivered-minister/>; see para 2.5 and 3.4.2 above.

⁴²³ Section 69 (1) (bb) of the *NEMWA*.

⁴²⁴ DEFF 2011 http://wastepolicy.environment.gov.za/home/nwms_v2/3/3_8.

⁴²⁵ DEFF 2011 http://wastepolicy.environment.gov.za/home/nwms_v2/3/3_8.

3.6.5 *Municipal budget*

Municipal councils are required to endorse an annual budget for each financial year prior to the commencement of the year.⁴²⁶ The budget should prioritise the community's basic needs to promote social and economic development within the community.⁴²⁷ From an environmental management and protection perspective, it is important that environmental objectives or plans (including waste management) form part of the IDP and the annual budget.⁴²⁸ For instance, the annual budget may include details of any proposed service delivery agreement.⁴²⁹ Annual budgeting allows for the appropriation of money for capital expenditure.⁴³⁰ The municipality is permitted to allocate funds to a capital project only if the money for the project has been appropriated in the budget and if the project has received approval from the council.⁴³¹ Budgets play a pivotal role in municipal management and governance because they assist in identifying and securing provisions for future resource needs. For example, identifying whether there is an increase in the number of households requiring waste collection services and what additional resources are required to deliver such services.

It is clear that municipalities have the authority to develop and enact bylaws (or any other municipal instrument) they deem necessary for regulating food waste within their jurisdiction.⁴³² Once these instruments are adopted, they become binding and guide decision-making. The government (local government and others), ordinary citizens, and private sector must comply with any local norms, standards, and provisions set out in these instruments.

⁴²⁶ Section 16(1) of the *Local Government: Municipal Finance Management Act* 56 of 2003 (hereafter *Municipal Finance Management Act*).

⁴²⁷ SARChI CLES Chair 2023 <https://law.nwu.ac.za/sarchi-cles-chair/municipal-budget>.

⁴²⁸ SARChI CLES Chair 2023 <https://law.nwu.ac.za/sarchi-cles-chair/municipal-budget>.

⁴²⁹ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-27.

⁴³⁰ Section 16(3) of the *Municipal Finance Management Act*.

⁴³¹ Nel, Du Plessis and Du Plessis "Instruments for Local Government Governance" 3-27.

⁴³² A bylaw provides clear and legally binding regulations, ensuring that proper practices are formally established and enforceable.

3.7 Concluding remarks

This chapter deliberated national law and policy as a framework for regulating and addressing food waste in South Africa. The chapter began by dealing with the constitutional framework for waste management to better understand the hierarchy of law, how the *Constitution* forms part of the development of specific legislation, and the role of government spheres in waste management. The *Constitution* gives municipalities the power to manage administrative and legislative affairs. This chapter shows that waste management, specifically solid waste management, belongs to the municipalities. National laws and policies such as *NEMA*, *NEMWA*, *NWMS*, *Municipal Systems Act* and the *Municipal Structures Act* discussed in section 3.3 all emphasise the explicit allocation of authority to local government for the management of waste. From the legislation and policy discussion above, it transpired that local governments are empowered to use their legislative and policy powers to regulate and manage food waste. In addition to exploring waste and local government law, section 3.3 linked the *NHA* and the *Foodstuffs Act* with food waste regulation and management. The *NHA* and the *Foodstuffs Act* empower the government and other stakeholders to take necessary measures to maintain food-handling premises well. The national policy discussed in 3.4 above indicates the importance of having a legislative framework that addresses the issues of food waste. The regulatory instruments discussed in 3.6 above indicate that local government have the authority to pass bylaws, policies, plans and other instruments in response to the need to regulate and address food waste, and as a result, the newly published *Draft Strategy for Reducing Food Losses and Waste* has embarked on this process. The next chapter focuses on three municipal case studies, with specific reference to the eThekweni Metropolitan Municipality, the City of Johannesburg, and the Mangaung Metropolitan Municipality.

Chapter 4 Local level food waste management: a tale of three cities

4.1 Introduction

This chapter builds upon the discussion initiated in chapter 3 regarding the use of local governance instruments with regulatory influence to evaluate the development and implementation of a selected number of instruments that municipalities could, in principle, use to help regulate food waste. The IDPs, waste management bylaws, and other relevant bylaws on food waste in the eThekweni Metropolitan Municipality, City of Johannesburg, and Mangaung Metropolitan Municipalities were considered. The choice of municipalities is explained in chapter 1. Specifically, this chapter examines the extent to which the bylaws and policies of selected municipalities regulate food waste. The objective is to make recommendations, among other things, regarding how municipalities may amend and align their bylaws or policies to include and provide better food waste.

This chapter is divided into four sections, with the first three focusing on each municipality. In each section, the background of the municipality is provided, followed by information on the local food and food waste streams in each municipality. Finally, each municipality's relevant municipal plans, bylaws, and policies were examined. These instruments were evaluated to determine whether and how they were incorporated. The evaluation is admittedly one-dimensional and cannot lead to findings on real-life implementation. However, it creates a starting point for understanding the extent of the municipal recognition of the problem and its potential legal implications. The fourth section of the chapter provides concluding remarks.

4.2 eThekwini Metropolitan Municipality

4.2.1 Background

The eThekwini Metropolitan Municipality (eThekwini Metro) is situated on the east coast of the KwaZulu-Natal Province.⁴³³ It is the country's third-largest metropolitan municipality after Johannesburg and Cape Town.⁴³⁴ The settlement patterns of the eThekwini Metro comprised approximately 45% rural, 30% peri-urban, and 25% urban areas. Approximately 90% of rural regions are administered by traditional authorities.⁴³⁵ The eThekwini Metro comprises 3.9 million residents, contributing to 34.7% of the total population of KwaZulu-Natal Province.⁴³⁶ There are 103 wards in the municipality.⁴³⁷ The eThekwini Metro is served by elected councillors, who facilitate service delivery to improve people's lives.⁴³⁸ The Council comprises a mayor, councillors, an executive committee, and many implementation committees.⁴³⁹

The municipality generates "approximately 1.5 million tonnes of waste per year".⁴⁴⁰ Landfilling is the predominant waste disposal method.⁴⁴¹ Around 1.2 million tonnes of waste are disposed of in landfills.⁴⁴² Bearing that in mind, protecting the natural

⁴³³ EThekwini Metropolitan Municipality 2023 <https://www.durban.gov.za/pages/government/about-ethekwini>; Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 18.

⁴³⁴ EThekwini Metropolitan Municipality 2023 <https://www.durban.gov.za/pages/government/about-ethekwini>; Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 18.

⁴³⁵ eThekwini Metropolitan Municipality Integrated Waste Management Plan 2016-2021 (Draft) (2016) (hereafter *eThekwini Metropolitan Municipality Integrated Waste Management Plan*) 12.

⁴³⁶ EThekwini Metropolitan Municipality 2023 <https://www.durban.gov.za/pages/government/about-ethekwini>.

⁴³⁷ EThekwini Metropolitan Municipality 2023 <https://www.durban.gov.za/pages/government/about-ethekwini>.

⁴³⁸ EThekwini Metropolitan Municipality 2023 <https://www.durban.gov.za/pages/government/about-ethekwini>.

⁴³⁹ EThekwini Metropolitan Municipality 2023 <https://www.durban.gov.za/pages/government/about-ethekwini>.

⁴⁴⁰ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 3.

⁴⁴¹ *eThekwini IDP*.

⁴⁴² *eThekwini IDP*.

environment from the negative impacts of improper waste management becomes important.

4.2.2 *The local food sector*

The local food system of the eThekweni Metro contributes significantly to the local economy and food waste.⁴⁴³ The local food sector in the eThekweni Metro is comprises various actors involved in food production, post-harvesting handling and storage, processing, retail, distribution, and consumption.⁴⁴⁴ Based on research conducted by the Southern Africa Food Lab in partnership with the Seriti Institute in the eThekweni Metropolitan Municipality, the majority of food waste was created in the later phases of the supply chain.⁴⁴⁵

Agriculture contributes to only a small portion of the eThekweni economy.⁴⁴⁶ As a result, eThekweni's food production falls significantly short of demand, making the province a net importer of food from neighbouring districts, provinces, and countries.⁴⁴⁷ Food waste was low in the agricultural production and post-harvesting handling phases of the eThekweni Metro.⁴⁴⁸ The majority of processing, packaging, and storage facilities are owned, controlled, and run by large commercial firms such as Bidfood and Fruit Spots.⁴⁴⁹ However, at the time of writing this thesis, the available information on the generated food waste was notably scarce and limited

⁴⁴³ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 23.

⁴⁴⁴ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 23.

⁴⁴⁵ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 23.

⁴⁴⁶ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 23.

⁴⁴⁷ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 23.

⁴⁴⁸ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 23.

⁴⁴⁹ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekweni Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 25.

in the processing, distribution, and consumption phases of the eThekwini value chain.⁴⁵⁰

Retail, wholesale, and distribution are important food sectors in the eThekwini Metro.⁴⁵¹ eThekwini Metro manages a range of wholesale fresh produce markets, all of which are managed by business support, tourism, markets, and agri-business units.⁴⁵² For instance, the Durban Fresh Produce Market is the third-largest fresh produce market in South Africa.⁴⁵³ In the eThekwini Metro, the amount of food waste generated during the supply chain's retail, whole, and distribution phases is undocumented.⁴⁵⁴ eThekwini is projected to have 3.9 million residents and attracts approximately five hundred thousand tourists per year.⁴⁵⁵ Given that eThekwini is a Metropolitan Municipality with a small agricultural sector and a relatively small processing and packaging value chain, it is plausible to infer that the majority of food waste generated occurs in the later phases of the supply chain, such as the distribution and consumption phases.⁴⁵⁶

4.2.3 Relevant bylaws, plans and local policies

Bylaws, plans, and local policies serve as legal frameworks that municipalities develop and adopt to guide and regulate various aspects of their respective jurisdictions.⁴⁵⁷ The cities of eThekwini, Johannesburg, and Mangaung have bylaws, plans, and local policies to regulate waste and incidental issues. The following section examines the bylaws, plans, and local policies of the three selected

⁴⁵⁰ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 26.

⁴⁵¹ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 26.

⁴⁵² Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 26.

⁴⁵³ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 28.

⁴⁵⁴ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 28.

⁴⁵⁵ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 28.

⁴⁵⁶ Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 29.

⁴⁵⁷ See para 3.6 above.

metropolitan municipalities that regulate waste in general and promote environmental, public health, and safety. The rationale underlying the selection of bylaws, plans, and local policies discussed below is that these local instruments contain content that seems to relate to the issue of food waste. As a result, they could be applied in the context of addressing food waste.

4.2.3.1 *eThekwini Municipality: Waste Removal Bylaw, 2016*

It has been established that "the municipal council has legislative authority over waste management in the eThekwini Metropolitan Municipality".⁴⁵⁸ The eThekwini Metropolitan Municipality adopted the *eThekwini Municipality: Waste Removal Bylaw* of 2016 to regulate waste collection, removal, treatment, and disposal.⁴⁵⁹ The *Waste Removal Bylaw* governs all areas within the jurisdiction of the eThekwini Metro and is binding on all people.⁴⁶⁰ Chapter 2 of the *Waste Removal Bylaw* focuses on domestic and business waste. The Municipality is responsible for domestic⁴⁶¹ and business⁴⁶² waste.⁴⁶³ This means that the municipality must take all necessary and reasonable steps to ensure that domestic and business waste is managed in a safe and sustainable manner. Section 6 of chapter 2 of the *Waste Removal Bylaw* focuses on the waste bins and containers. This section determines that waste must be stored in containers and bins before being safely treated or disposed of. These waste containers and bins used by waste generators are designed to create effective and safe waste storage before it can be removed from the premises by the municipality

⁴⁵⁸ Preamble of the *Waste Removal Bylaw*.

⁴⁵⁹ Preamble, read with s 3 of the *Waste Removal Bylaw*.

⁴⁶⁰ Section 4 of the *Waste Removal Bylaw*.

⁴⁶¹ Domestic waste, as outlined in the *Waste Removal Bylaw*, refers to waste commonly produced on residential premises, encompassing the manure or dung from any animal or bird maintained as a domestic pet.

⁴⁶² According to the *Waste Removal Bylaw*, business waste is defined as waste produced on premises utilized for non-residential purposes. This category includes waste generated by informal traders and waste produced on residential premises where business activities occur, irrespective of the legality of these activities.

⁴⁶³ Section 5(1) of the *Waste Removal Bylaw*. Section 5(1) of the *Waste Removal Bylaw* states that the municipality is obligated, either directly or through an authorized waste removal contractor, to furnish a service for the collection and removal of domestic waste and business waste from premises within its jurisdiction.

or an authorised waste removal contractor.⁴⁶⁴ Every waste generator was encouraged to ensure that all waste bins and containers on their premises were kept clean, in good condition, and replaced as necessary.⁴⁶⁵ Building on this section, it can be suggested that food waste should be stored in containers and bins throughout the supply chain before it can be safely disposed of. Furthermore, this section could also be used to encourage retailers to store food that no longer meets consumer standards but is still considered consumable separately and in separate containers and, as a result, to enable donation of such food instead of disposing of it. Furthermore, a waste generator is permitted, with prior written authorisation of the municipality, to use suitable domestic waste for composting, provided neither the waste nor the compost is a nuisance or a fire hazard,⁴⁶⁶ and as long as the waste and compost are stored on the premises where they are created or made and not on any verge or neighbouring property.⁴⁶⁷ It follows from this section that food waste can be used for compositional purposes.

In terms of section 7 of the *Waste Removal Bylaw*, the municipality has the discretion to provide bulk waste containers if it believes these containers are more appropriate than waste bins in light of the following factors:⁴⁶⁸ "quantity of domestic waste generated on the premises, nature of the domestic waste",⁴⁶⁹ and "sustainability of waste bins for storing this type of waste".⁴⁷⁰ It is stated that "the waste containers provided by the municipality to a waste generator for the temporary storage of domestic garbage or business waste must only be used for this purpose".⁴⁷¹ Section 13 of the *Waste Removal Bylaw* deals with "disposable plastic bags and waste containers for domestic waste". Each home must be provided with a quantity of waste bags, as determined by the municipality,⁴⁷² or a "waste

⁴⁶⁴ Section 6(1) and (1) of the *Waste Removal Bylaw*.

⁴⁶⁵ Section 6(4)(a) -(c) of the *Waste Removal Bylaw*.

⁴⁶⁶ Section 6(3)(c)(i) of the *Waste Removal Bylaw*.

⁴⁶⁷ Section 6(3)(c)(ii) of the *Waste Removal Bylaw*.

⁴⁶⁸ Section 7(1) of the *Waste Removal Bylaw*.

⁴⁶⁹ Section 7(1)(a) of the *Waste Removal Bylaw*.

⁴⁷⁰ Section 7(1)(b) of the *Waste Removal Bylaw*.

⁴⁷¹ Section 7(2) of the *Waste Removal Bylaw*.

⁴⁷² Section 13(1)(a) of the *Waste Removal Bylaw*.

container if the waste created by the waste generator is more appropriately stored in a waste container", as established by the municipality.⁴⁷³ At its discretion, the municipality may distribute disposable plastic garbage bags at convenient intervals, given its activities in each region under its authority.⁴⁷⁴ Every waste generator must guarantee that the waste generated from his/her premises is placed exclusively in waste bins lined with these bags and not straight into a waste bin if the municipality has provided him/her with disposable plastic refuse bags.⁴⁷⁵ This section shows that, at its discretion, the municipality may supply households and businesses with waste containers to separate food waste from domestic or other waste, allowing food waste to be properly kept and managed before it can be disposed of. Although the *Waste Removal Bylaw* does not explicitly respond to or address how food waste should be handled and managed, the municipal council has the requisite authority to alter the bylaw to respond to the current issue of food waste.⁴⁷⁶

4.2.3.2 *eThekwini Municipality: Air Quality Management Bylaw, 2018*

The *eThekwini Municipality Air Quality Management Bylaw 2018 (Air Quality Management Bylaw)* was published in 2018 for public comments. However, the *Air Quality Management Bylaw* has not yet been promulgated. This offers a perspective on the municipalities' management of emissions from various sources that threaten public health, well-being, and the environment. For instance, section 8(1) of the *Air Quality Management Bylaw* specifies that when prioritising the compounds in ambient air that pose a threat to human health, well-being, or the environment, the municipality must consider the persistent substance in the environment, especially if the substance is not biodegradable and has the potential to accumulate in people, the environment, or food chains.⁴⁷⁷ Although this bylaw does not speak directly to the issues of food waste, it can be drawn from this bylaw that municipalities are advised to consider other means of dealing with food waste rather than sending it

⁴⁷³ Section 13(1)(b) of the *Waste Removal Bylaw*.

⁴⁷⁴ Section 13(2) of the *Waste Removal Bylaw*.

⁴⁷⁵ Section 13(3) of the *Waste Removal Bylaw*.

⁴⁷⁶ Section 156(2) of the *Constitution*.

⁴⁷⁷ Section 8(1)(d) of the *Air Quality Management*.

to landfills, as doing so contributes to GHG emissions into the atmosphere and, as a result, poses a threat to the environment.

4.2.3.3 *eThekwini Municipality: Food, Milk and Milk Products Bylaw, 2022*

The *eThekwini Municipality Food, Milk and Milk Products Bylaw 2022 (Food, Milk and Milk Products Bylaw)* was published in 2022 for public comments. Although the *Food, Milk and Milk Products Bylaw* has not been promulgated, it offers some perspective on the municipality's attempts to prevent and reduce municipal health nuisances within its jurisdiction.⁴⁷⁸ The Municipality recognised the need to prevent and minimise municipal health nuisances within the eThekwini Metro.⁴⁷⁹ Therefore, this bylaw aims to provide measures to manage and control food, milk, and milk products.⁴⁸⁰ This bylaw further aims to provide measures that prohibit certain activities or conduct to promote a healthy and safe environment in dairy food-handling premises.⁴⁸¹ Section 14 of the *Food, Milk and Milk Products Bylaw* deals with waste management in the handling, conveyance, and transportation of food. In terms of section 14(5), each food premise must have an adequate waste receptacle storage space, paved, drained to a gully, connected to the municipal sewer, and provided with a standpipe,⁴⁸² a storage area for waste receptacles to be cleaned and maintained in a way that does not generate a health hazard,⁴⁸³ waste receptacles made of durable non-absorbent material, designed to facilitate easy cleaning, equipped with a close-fitting cover, and large enough to store all waste pending removal or disposal as contemplated by the municipality's bylaw dealing with waste removal.⁴⁸⁴ Building upon the provisions of this bylaw, it should be noted that food that is being considered waste in the dairy food-handling premises (which falls under agricultural production) should be managed to promote a healthy and safe environment. This means there should be measures in place that direct food

⁴⁷⁸ Preamble of the *Food and Milk Products Bylaw*.

⁴⁷⁹ Preamble of the *Food and Milk Products Bylaw*.

⁴⁸⁰ The *Food and Milk Products Bylaw*.

⁴⁸¹ The *Food and Milk Products Bylaw*.

⁴⁸² Section 14(5)(a) of the *Food and Milk Products Bylaw*.

⁴⁸³ Section 14(5)(b) of the *Food and Milk Products Bylaw*.

⁴⁸⁴ Section 14(5)(c) of the *Food and Milk Products Bylaw*.

waste management. Therefore, it seems that, to some extent, the regulation and management of food waste in food-handling premises is recognised and observed.

4.2.3.4 *eThekwini Municipality: Informal Trading Bylaw, 2014*

eThekwini Municipality: Informal Trading Bylaw 2014 (Informal Trading Bylaw) was adopted to provide the right to engage in informal trading.⁴⁸⁵ Section 22 of the *Informal Trading Bylaw* prohibits an informal trader from throwing away goods in a manhole, stormwater drain, or public toilet. Section 25(1) shows that litter generated by informal traders must be disposed of in waste containers that are approved or supplied by the municipality. Section 25(2) states that an informal trader shall not dump or deposit any litter on any land, premises, public roads, public places, or public property except in a refuse receptacle approved or supplied by the municipality. Section 35(6) of the *Informal Trading Bylaw* stipulates that the municipality may sell, destroy, or otherwise dispose of impounded perishable products that pose or may pose a health risk or nuisance⁴⁸⁶ and foodstuffs that are unfit for human consumption at any time after the impoundment.⁴⁸⁷ It follows from the provisions of this bylaw that food considered unfit for human consumption should be destroyed or disposed of. Although this bylaw does not mention food waste, it can be inferred from the provisions above that food waste management in the informal trading industry is observed and acknowledged. Therefore, it follows that the provisions of this bylaw can find application to address food waste, in that street traders are empowered to dispose of food that is considered waste in a waste container approved or supplied by the municipality.

4.2.3.5 *eThekwini Municipality: Municipal Public Health Bylaw, 2022*

The *eThekwini Municipality: Municipal Public Health Bylaw, 2022 (Municipal Public Health Bylaw)* was adopted to provide measures for controlling, minimising, or eliminating municipal nuisance, prohibiting certain activities or conduct in order to

⁴⁸⁵ The *Food and Milk Products Bylaw*.

⁴⁸⁶ Section 35(6)(a) of the *Informal Trading Bylaw*.

⁴⁸⁷ Section 35(6)(b) of the *Informal Trading Bylaw*.

promote a healthy and safe environment and providing for incidental matters.⁴⁸⁸ Chapter 4 of the *Municipal Public Health Bylaw* lists the components contributing to municipal health nuisances. Section 5(1) of the *Municipal Public Health Bylaw* holds that "a municipal health nuisance exists if any activity, condition, situation, premises, or thing, on account of refusal, a waste product, or any practice, is likely to endanger life or health or adversely affect the well-being or comfort of the community". Expanding on the previous point, food that is considered waste could lead to a nuisance in municipal health. This bylaw further states that such activities, situations, and conditions include an accumulation of waste in such a manner or in such a quantity that it may cause injury or danger to health and maintain or dispose of organic matter or waste in such a manner that endangers health and the environment.⁴⁸⁹ The bylaw holds that no person may cause a municipal health nuisance.⁴⁹⁰ Section 6(1) instructs the occupants of any premises to maintain clean conditions in all the parts. Building on the provisions of this bylaw, it is apparent that waste management is acknowledged and observed. However, the bylaw does not explicitly state how food waste should be dealt with. Taking section 6(1) into consideration in the context of food waste, it can be suggested that occupiers of any premises, which will extend to food-handling premises, should take necessary measures to ensure that food that is considered waste is managed to maintain clean and hygienic conditions in all parts of their premises.

4.2.3.6 2023/24 to 2027/28 IDP

The Cleansing and Solid Waste Unit (CWS) oversees the waste management unit in eThekweni Metro.⁴⁹¹ As explained earlier, the Municipal Systems Act requires the municipality to prepare an IDP.⁴⁹² The eThekweni Metropolitan Municipality developed its IDP from 2023/24 to 2027/28 to effect the provisions of the *Municipal*

⁴⁸⁸ Preamble of the *Municipal Public Health Bylaw*.

⁴⁸⁹ Section 5(1)(a) and (c) of the *Municipal Public Health Bylaw*.

⁴⁹⁰ Section 5(3) of the *Municipal Public Health Bylaw*.

⁴⁹¹ *eThekweni IDP* 212.

⁴⁹² Section 25(1) of the *Municipal Systems Act*.

Systems Act.⁴⁹³ This IDP is focused on creating a more inclusive developmental local government that will put the municipality's goal of developing a caring and liveable city into action.⁴⁹⁴ The IDP recognises that landfilling of waste is the most prominent method of waste disposal in this municipality.⁴⁹⁵ It further states that "the CWS has been responsible for ensuring that the waste sector is one of the most active in launching initiatives that contribute to the reduction of carbon emissions, with the first landfill gas-to-electricity projects in Africa at two of its landfill sites".⁴⁹⁶ eThekweni Metro's vision is to be the most caring and liveable by 2030.⁴⁹⁷ This IDP highlights that to achieve this vision, eThekweni Metro's waste management plan requires a turnaround strategy linked to this vision.⁴⁹⁸ This IDP does not explicitly refer to food waste management. However, the IDP emphasises the need to develop and implement an IWMP that aligns with the vision of the eThekweni Metro. Therefore, the magnitude of the food waste problem is considered. It is imperative that matters related to food waste be addressed when developing the eThekweni Metro's IWMP. Similarly, it is important to note that such an IWMP should be developed in such a manner that it establishes guidelines, norms, and standards to prevent and manage food waste at various phases of the food supply chain.

4.2.3.7 IWMP 2016-2021 (Draft)

All municipalities are required by *NEMWA*, *NWMS*, and the IWMP Process to develop an IWMP, as was explained earlier.⁴⁹⁹ eThekweni Metro's IWMP has since been lodged for approval by the MEC for Economic Development, Tourism and Environmental Affairs.⁵⁰⁰ Although this draft has not been legally accepted, it will establish rules for dealing with waste, particularly for those that could subsequently help deal with food waste. The IWMP sets waste management priorities and

⁴⁹³ eThekweni IDP 10.

⁴⁹⁴ eThekweni IDP 10.

⁴⁹⁵ eThekweni IDP 212.

⁴⁹⁶ eThekweni IDP 212.

⁴⁹⁷ eThekweni IDP 212.

⁴⁹⁸ eThekweni IDP 212.

⁴⁹⁹ See chapter 3 above.

⁵⁰⁰ eThekweni IDP 551.

objectives, establishes waste collection, minimisation, reuse, and recycling targets, and outlines the methodology for designing new waste disposal facilities and decommissioning current waste disposal facilities.⁵⁰¹ The eThekwini population is anticipated to produce between 1.0 and 1.5 million tonnes of domestic waste per year.⁵⁰² The Waste Classification and Management Regulations list many types of waste that fall under the general waste category, including domestic solid waste.⁵⁰³ However, food waste was not explicitly mentioned in the list of types of waste that fell within the category of general waste. As the IWMP is a draft, the eThekwini Metro can still identify and incorporate guidelines or programs on how to prevent and manage food waste that occurs throughout the different phases of the food supply chain.

4.3 City of Johannesburg

4.3.1 Background

Johannesburg is situated at the heart of South Africa's economic heartland in the Gauteng Province.⁵⁰⁴ It becomes apparent that "Gauteng is the most populated province in the country, with the City of Johannesburg accounting for an estimated 5.74 million of the province's overall population of 15.18 million".⁵⁰⁵ Johannesburg holds the distinction of being South Africa's largest metropolitan municipality, encompassing the highest population, considerable size, and a thriving economy.⁵⁰⁶ It is also one of the three metros in the Gauteng Province.⁵⁰⁷ Johannesburg is one of the most advanced commercial cities worldwide. In 2018, the city contributed to approximately 14.9% of the national GDP.⁵⁰⁸

⁵⁰¹ eThekwini *IDP* 10.

⁵⁰² Southern Africa Food Lab "Understanding Food Loss and Waste Streams in the eThekwini Municipality, OR Tambo District Municipality and the Waterberg District Municipality" 31.

⁵⁰³ eThekwini *IDP* 43.

⁵⁰⁴ COGTA "Profile: City of Johannesburg Metropolitan Gau" 6.

⁵⁰⁵ *City of Johannesburg IDP* 18.

⁵⁰⁶ COGTA "Profile: City of Johannesburg Metropolitan Gau" 5.

⁵⁰⁷ COGTA "Profile: City of Johannesburg Metropolitan Gau" 5.

⁵⁰⁸ COGTA "Profile: City of Johannesburg Metropolitan Gau" 5.

Johannesburg has grown over the last decade.⁵⁰⁹ One important factor is that the City of Johannesburg continues to draw people from other provinces and around the world who are looking for greater economic possibilities and a higher quality of life.⁵¹⁰ Johannesburg's population primarily comprises young people.⁵¹¹ This could be linked to youth migration from other parts of the country.⁵¹² Johannesburg is considered South Africa's economic hub and is frequently the first job seeker to pick up throughout the country.⁵¹³ Johannesburg's economy is driven by four industries, three of which are service-related.⁵¹⁴ It is stated that "the four most important sectors are financial and commercial services; retail and wholesale commerce; community and social services; and manufacturing".⁵¹⁵

Cleanliness in the City of Johannesburg is a challenge, and it is recognised that "the assistance of all departments and entities, as well as private institutions and the general public, is necessary to help reach the planned cleanliness goals".⁵¹⁶ Johannesburg collects and removes waste from 1.72 million residences.⁵¹⁷ Johannesburg collected waste from an extra 11 100 houses less frequently than every week.⁵¹⁸ Ninety-four thousand three hundred and fifty-one homes used communal waste dumps, while 14 800 used their own waste dumps, and 9 250 houses had no waste collection. In total, 131 352 homes experienced a waste removal backlog.⁵¹⁹ Therefore, despite providing waste removal services to its

⁵⁰⁹ Anon <https://municipalities.co.za/overview/2/city-of-johannesburg-metropolitan-municipality>.

⁵¹⁰ Anon <https://municipalities.co.za/overview/2/city-of-johannesburg-metropolitan-municipality>.

⁵¹¹ Anon <https://municipalities.co.za/overview/2/city-of-johannesburg-metropolitan-municipality>.

⁵¹² Anon <https://municipalities.co.za/overview/2/city-of-johannesburg-metropolitan-municipality>.

⁵¹³ Anon <https://municipalities.co.za/overview/2/city-of-johannesburg-metropolitan-municipality>.

⁵¹⁴ City of Johannesburg 2018
https://www.joburg.org.za/about_/Pages/About%20the%20City/About%20Joburg/Economic-Data.aspx.

⁵¹⁵ City of Johannesburg 2018
https://www.joburg.org.za/about_/Pages/About%20the%20City/About%20Joburg/Economic-Data.aspx.

⁵¹⁶ *City of Johannesburg IDP 39.*

⁵¹⁷ *City of Johannesburg IDP 39.*

⁵¹⁸ *City of Johannesburg IDP 39.*

⁵¹⁹ *City of Johannesburg IDP 39.*

citizens, Johannesburg continues to face backlogs associated with waste removal.⁵²⁰ This is due to the fact that Johannesburg is a highly populated city.

Waste in Johannesburg is becoming increasingly complicated and challenging to manage owing to the significant amount of waste generated.⁵²¹ Johannesburg's ability to provide adequate and efficient waste management services is compromised.⁵²² Consequently, many types of waste are not collected, properly treated, or disposed of, resulting in environmental problems.⁵²³ It has been reported that "waste in Johannesburg was previously controlled through disposal in four landfills, two of which were closed after reaching their maximum capacity".⁵²⁴ Additionally, "the last two operating landfills used for waste disposal quickly ran out of space as waste generation increased daily".⁵²⁵ Therefore, Johannesburg requires a multifaceted waste management strategy that includes food waste management.

4.3.2 *The local food sector*

Johannesburg is recognised as the most advanced commercial metropolitan municipality on the African continent, as well as the country's economic hub.⁵²⁶ Johannesburg is an urban area, with the agricultural sector contributing the least to its economy.⁵²⁷ This is an example of a city in which the retail, wholesale,

⁵²⁰ COGTA "Profile: City of Johannesburg Metropolitan Gau" 30.

⁵²¹ Radzilani 2021 <https://inclusivecities.ukzn.ac.za/blog/role-of-local-communities-in-waste-management-in-the-city-of-johannesburg/#:~:text=The%20City%20of%20Johannesburg%20indicated,disposal%20also%20worsen%20the%20situation>. The city of Johannesburg is confronted with a huge amount of waste as a result of urbanisation. As a result of that, the City of Johannesburg becomes overburdened to fully provide efficient and effective waste management services to its residents.

⁵²² Radzilani 2021 <https://inclusivecities.ukzn.ac.za/blog/role-of-local-communities-in-waste-management-in-the-city-of-johannesburg/#:~:text=The%20City%20of%20Johannesburg%20indicated,disposal%20also%20worsen%20the%20situation>.

⁵²³ Radzilani 2021 <https://inclusivecities.ukzn.ac.za/blog/role-of-local-communities-in-waste-management-in-the-city-of-johannesburg/#:~:text=The%20City%20of%20Johannesburg%20indicated,disposal%20also%20worsen%20the%20situation>.

⁵²⁴ Rashama, Christian and Matambo 2023 *Engineering Proceedings* 1.

⁵²⁵ Rashama, Christian and Matambo 2023 *Engineering Proceedings* 1.

⁵²⁶ COGTA "Profile: City of Johannesburg Metropolitan Gau" 1.

⁵²⁷ COGTA "Profile: City of Johannesburg Metropolitan Gau" 21.

distribution, and consumption sectors contribute significantly to its economy.⁵²⁸ For example, the Johannesburg fresh-product market is located in a city.⁵²⁹ Furthermore, Johannesburg is dominated by restaurants.⁵³⁰ According to recently published data, Johannesburg generates approximately 12 kg of food waste per person annually, predominantly from restaurants and households.⁵³¹ Johannesburg is predominantly residential and commercial, with a limited agricultural sector. It can thus be inferred that Johannesburg generates a large amount of food waste in the later phases of the supply chain as opposed to the earlier phases. However, it is important to note that, at the time of writing this dissertation, there was very little to no information available on food waste generated in all supply chain phases other than the household phase.

4.3.2 Relevant bylaws, plans and local policies

4.3.2.1 City of Johannesburg: Waste Management Bylaw, 2013

Johannesburg's Waste Management Bylaw of 2013 (*Johannesburg Waste Management Bylaw*) indicates that the municipal council in the City of Johannesburg is responsible for ensuring that "all waste generated within its jurisdiction is collected, transported, treated, disposed of, or recycled in accordance with this bylaw"⁵³² and that such "collection, transportation, treatment, disposal, and recycling take the waste hierarchy into consideration".⁵³³ The overarching goal of the *Johannesburg Waste Management Bylaw* is to establish and uphold a waste hierarchy.⁵³⁴ It intends to uphold the waste hierarchy by ensuring "that waste is avoided, or where it cannot be avoided, minimised, reused, recycled, recovered, and disposed of in an environmentally sound manner".⁵³⁵ The bylaw aims to promote sustainable development and environmental justice through fair and

⁵²⁸ COGTA "Profile: City of Johannesburg Metropolitan Gau" 25-26.

⁵²⁹ COGTA "Profile: City of Johannesburg Metropolitan Gau" 9.

⁵³⁰ COGTA "Profile: City of Johannesburg Metropolitan Gau" 9.

⁵³¹ Rashama, Christian and Matambo 2023 *Engineering Proceedings* 1.

⁵³² Section 2(1)(a) of the *Waste Management Bylaw*.

⁵³³ Section 2(1)(b) of the *Waste Management Bylaw*.

⁵³⁴ Section 2(2) of the *Waste Management Bylaw*.

⁵³⁵ Section 3(1)(a) of the *Waste Management Bylaw*.

reasonable waste management measures within its jurisdiction.⁵³⁶ It also aims to regulate the collection, transportation, treatment, disposal, and recycling of waste.⁵³⁷ The bylaw shows that the council has discretion in appropriate circumstances to order a waste holder or generator who is deemed to not comply with the waste hierarchy to take reasonable measures to remedy such non-compliance.⁵³⁸ Section 4 of the *Johannesburg Waste Management Bylaw* specifies the obligations of generators and holders of waste. Section 4 of the *Johannesburg Waste Management Bylaw* requires the generator or holder of waste to manage it in a manner that does not pose a threat to the health or environment.⁵³⁹ This section further requires the generator or holder of waste to manage such waste so that it does not create a nuisance.⁵⁴⁰ Expanding on this section, it can be inferred that food waste generators along the various phases of the supply chain should manage such waste so that it does not threaten the environment and, therefore, people's health.

Chapter 3 of the *Johannesburg Waste Management Bylaw* focuses on waste minimisation and recycling. Section 20 of the *Johannesburg Waste Management Bylaw* specifies that "the reduction, reuse, recycling, and recovery of waste should result in less environmental harm than waste disposal". Section 20(1) of the *Johannesburg Waste Management Bylaw* requires "all generators and holders of waste to ensure that waste is avoided, or where it cannot be avoided altogether, minimised, reused, recycled, or recovered whenever possible and disposed of in an environmentally safe and sustainable manner." Section 22 focuses on the obligation of generators and waste holders to separate waste into recyclables and non-recyclables. The bylaw allows "the Council to prescribe, by notice in the provincial gazette from a prescribed date, areas that specified generators or holders of particular categories for the purpose of recycling separate those categories of waste and store, dispose of, or treat the separated waste in a prescribed manner". It

⁵³⁶ Section 3(1)(b) of the *Waste Management Bylaw*.

⁵³⁷ Section 3(1)(c) of the *Waste Management Bylaw*.

⁵³⁸ Section 3(2) of the *Waste Management Bylaw*.

⁵³⁹ Section 4(a) of the *Waste Management Bylaw*.

⁵⁴⁰ Section 4(a) of the *Waste Management Bylaw*.

follows from the above that generators or holders of food waste in various phases of the supply chain should follow a waste hierarchy when dealing with food waste.

Chapter 4 addresses municipal services. It places a duty on the municipal council to consider the waste hierarchy when providing municipal services to local communities.⁵⁴¹ Section 25(4) of the *Johannesburg Waste Management Bylaw* stipulates that "the municipal council may provide or instruct a generator or holder of waste with an approved receptacle for the storage of domestic waste, pending its collection". Further, section 26(1) specifies that "any person generating domestic waste must place such waste in an approved waste receptacle". Chapter 6 of the *Johannesburg Waste Management Bylaw* focuses on the transportation, treatment, and disposal of waste. Section 33(2) specifies that no person may burn waste, either in a private or public place, for disposal. In light of the foregoing, the *Johannesburg Waste Management Bylaw* emphasises the separation of waste at the source and the implementation of the waste hierarchy. As a result, this bylaw may be applied to address food waste in that it can encourage generators or holders of food waste at various phases of the supply chain to separate food waste from other types of waste to promote the adoption of the best food waste management practices. Moreover, it is clear from the preceding discussion that the municipal council has the necessary authority to amend the bylaw in response to the prevailing issue of food waste.

4.3.3.2 *City of Johannesburg: Informal Trading Bylaw, 2012*

The *City of Johannesburg Informal Trading Bylaw* of 2012 (*Johannesburg Informal Trading Bylaw*) was enacted to govern "informal trading within Johannesburg's jurisdictional area in a manner that recognises and enhances the city's constitutional and other legislative obligations".⁵⁴² The *Johannesburg Informal Trading Bylaw* does not directly discuss the management and regulation of food waste. However, food waste regulations can be inferred from section 7 of the bylaw. Section 7 states that

⁵⁴¹ Section 24(1) read with (3)(a) of the *Waste Management Bylaw*.

⁵⁴² Preamble of the *Informal Trading Bylaw*.

an informal trader must dispose of waste generated by his or her business in any refuse receptacle provided by the council for the public or at a council dumping site.⁵⁴³ Furthermore, an informal trader must not dispose of waste in a manhole, stormwater drain, or other locations not intended for waste disposal.⁵⁴⁴ This section is arguably essential because it relates to environmental health and safety in areas where an informal trader conducts business and provides guidance on how to handle waste to maintain a healthy environment. Although this bylaw is silent on the aspect of food waste, waste management is acknowledged. Therefore, it can be inferred from the provisions of this bylaw that food that is considered waste should be disposed of in waste containers provided by the municipality.

4.3.3.3 City of Johannesburg: Street Trading Bylaw, 2004

The *City of Johannesburg Metropolitan Municipality Street Trading Bylaw, 2004* (hereafter *Johannesburg Street Trading Bylaw*) was developed to regulate the sale, offering, or rendering of services on public roads or public places.⁵⁴⁵ The *Johannesburg Street Trading Bylaw* prohibits any person carrying out street trading from conducting such a business in a manner that creates nuisance or health risks.⁵⁴⁶ Section 8(a) of the *Johannesburg Street Trading Bylaw* "states that a street trader must keep the place occupied by him or her for business purposes in a clean and healthy condition". The bylaw further states that a street trader must dispose of the waste generated by his or her business in a container or bin provided by the municipality or at a dumping site.⁵⁴⁷ Section 8 stipulates that street traders must ensure that the place they occupy is kept clean and hygienic at the end of their business day. It follows from this bylaw that street traders are empowered to manage the waste generated during their business operations, in that they are expected to clean up their businesses in such a manner that promotes a clean and hygienic environment. Therefore, this bylaw can be used to address food waste. As

⁵⁴³ Section 7(1)(c) of the *Informal Trading Bylaw*.

⁵⁴⁴ Section 7(1)(d) of the *Informal Trading Bylaw*.

⁵⁴⁵ Section 3 of the *Street Trading Bylaw*.

⁵⁴⁶ Section 7(j)(i) and (iii) of the *Street Trading Bylaw*.

⁵⁴⁷ Section 8(c) of the *Street Trading Bylaw*.

street traders are given guidelines on how to deal with waste generated from their businesses, they can, in principle, wisely deal with food considered to be waste.

4.3.3.4 *City of Johannesburg: Public Health Bylaw, 2004*

The purpose of the *City of Johannesburg Public Health Bylaw, 2004* (*Public Health Bylaw*) was to "enable the municipal council to protect and promote the long-term health and well-being of people in the municipal area".⁵⁴⁸ This can be attained by supervising and regulating activities that may have adverse effects on public health, demanding the appropriate maintenance and management of premises.⁵⁴⁹ This bylaw provides components related to municipal health services, including waste management. This bylaw recognises that everyone has "a constitutional right to an environment that is not harmful to his or her health or well-being".⁵⁵⁰ This bylaw instructs occupiers of any premises to ensure that such premises are used and maintained in a manner that does not cause public health hazards or nuisances. Furthermore, this bylaw prohibits any person from causing a public health nuisance. Building on the provisions of this bylaw, it is apparent that waste management is acknowledged and observed. However, the bylaw does not specifically state how food waste should be dealt with. Taking into consideration food control and waste management as components forming part of the package of municipal health services, it can be suggested that occupiers of any premises, extending to food-handling premises, should take necessary measures to ensure that food that is considered waste is managed to maintain clean and hygienic conditions in all parts of their premises.

4.3.3.5 *IDP 2020/21*

According to the IDP's objectives, the city seeks to divert waste from landfills, implement waste separation at the source, expand recycling programs, provide an adequate waste management service that caters to all waste streams, including

⁵⁴⁸ Section 2 of the *Public Health Bylaw*.

⁵⁴⁹ Section 2(a) of the *Public Health Bylaw*.

⁵⁵⁰ Section 3(1) of the *Municipal Public Health Bylaw*.

special waste streams, and implement a waste collection system for densely populated regions, such as backyard residents and informal communities,⁵⁵¹ which ensures that the city provides safe and reliable waste management services to its residents. This approach aims to improve service delivery in local communities, achieve integrated waste management planning, and amend bylaws, particularly those that currently regulate and manage food waste.⁵⁵² This implies that the Johannesburg IDP must be considered when reviewing, identifying, and developing waste management guidelines, norms, standards, and programs to address, prevent, and manage food waste in various phases of the supply chain.

4.3.3.6 IWMP, 2011

Johannesburg's Integrated Waste Management Plan of 2011 (Johannesburg's IWMP) guides the city's waste management policy and services. *Johannesburg's IWMP* aims to make Johannesburg's Integrated Waste Management Policy easier to implement.⁵⁵³ The City of Johannesburg Integrated Waste Management Policy objectives and mandate, as drawn from the *NEMWA*, have been used to identify eight core goals for the *IWMP*.⁵⁵⁴ These goals address the primary difficulties identified within the City of Johannesburg while taking into account national and provincial aims, as well as Johannesburg's general goal of being a clean city.⁵⁵⁵

The Plan aims to "implement sustainable waste reduction, reuse, recycling, and recovery programs through strategic interventions, such as the promotion of composting, waste-to-energy, and other reuse and recycling activities supported by the implementation of waste separation at source programs".⁵⁵⁶ It also aims to manage and safely dispose of waste through the Best Practical Environmental Option (BPEO) interventions to save landfill airspaces and decrease any negative

⁵⁵¹ *City of Johannesburg IDP* 246.

⁵⁵² *City of Johannesburg IDP* 193.

⁵⁵³ *City of Johannesburg IWMP* ix.

⁵⁵⁴ *City of Johannesburg IWMP* ix.

⁵⁵⁵ *City of Johannesburg IWMP* ix.

⁵⁵⁶ *City of Johannesburg IWMP* 47.

environmental impact.⁵⁵⁷ The plan aims to prevent pollution and environmental degradation through strategic interventions aimed at promoting judicious waste management by all waste generators in Johannesburg.⁵⁵⁸

The Plan also aims to develop or implement an adequate and efficient waste management system aligned with provincial and national information requirements to achieve integrated waste management reporting and planning.⁵⁵⁹ Johannesburg's *IWMP* acknowledges that all these goals should contribute to the improvement of the quality of life of people within the City of Johannesburg by ensuring a clean and safe environment.⁵⁶⁰ This means that in order to reach these goals, food waste should be incorporated into the City of Johannesburg's *IWMP*. Consequently, the vision must be converted by developing an IWMP that establishes guidelines, norms, standards, and programs to promote food waste prevention and management at different phases of the supply chain within the City of Johannesburg.

4.4 Mangaung Metropolitan Municipality

4.4.1 Background

The Mangaung Metropolitan Municipality is located in Free State Province.⁵⁶¹ The provinces of Gauteng, the Eastern Cape, the Northern Cape, KwaZulu-Natal, and the Northwest border the Free State, as does the bordering country of Lesotho.⁵⁶² Mangaung comprises "three urban centres (Bloemfontein, Botshabelo, and Thaba Nchu) and a rural area with small towns, namely Dewetsdorp, Wepener, Van Stadensrus, and Soutpan".⁵⁶³ Rural areas account for the majority of the municipal territory (97.17%) and are characterised by considerable commercial farming in the west, primarily mixed crop production and cattle farming.⁵⁶⁴ "The Metro is

⁵⁵⁷ *City of Johannesburg IWMP* 53.

⁵⁵⁸ *City of Johannesburg IWMP* 70.

⁵⁵⁹ *City of Johannesburg IWMP* 62.

⁵⁶⁰ *City of Johannesburg IWMP* 47.

⁵⁶¹ COGTA "Profile: Mangaung Metropolitan Free State" 7.

⁵⁶² Statistics South Africa 2023 https://www.statssa.gov.za/?page_id=993&id=mangaung-municipality.

⁵⁶³ COGTA Affairs "Profile: Mangaung Metropolitan Free State" 9.

⁵⁶⁴ COGTA "Profile: Mangaung Metropolitan Free State" 9.

distinguished by three distinct land use types, including formalised stands in urban areas, small holdings, and farms".⁵⁶⁵ Mangaung has a population of 747 431.⁵⁶⁶

The economy of Mangaung is one of the most diverse in the Free State Province, accounting for 1.8% of the province's GDP.⁵⁶⁷ The government sector is a major driver of the economy and has experienced the highest growth in the last five years as a result of increased government intervention in livelihood enhancement.⁵⁶⁸ "The finance sector is the second fastest-growing sector because of its highly active estate and construction activities".⁵⁶⁹ It is stated that "small businesses play a major role in the Mangaung economy in terms of employment creation, income generation, and output growth".⁵⁷⁰ In Mangaung, formal waste removal is provided to 249 735 houses, leaving a shortfall of 15 515 (60%) houses unserved.⁵⁷¹ Approximately 82.4% of houses receive waste collection services from municipal authorities, private companies, or community members, 10% rely on their own common dump, and 3% utilise a communal dump.⁵⁷²

4.4.2 *The local food sector*

The Mangaung Metropolitan Municipality is an example of a municipality whose economy is dominated by agricultural production.⁵⁷³ This differentiates it from the large-scale commercial agriculture and subsistence farming.⁵⁷⁴ Livestock farming (game, cattle, sheep, goats, and pigs) and poultry are two of the Metro's most important agricultural activities.⁵⁷⁵ Mangaung Metropolitan Municipality had the

⁵⁶⁵ COGTA "Profile: Mangaung Metropolitan Free State" 9.

⁵⁶⁶ Statistics South Africa 2023 https://www.statssa.gov.za/?page_id=993&id=mangaung-municipality.

⁵⁶⁷ COGTA "Profile: Mangaung Metropolitan Free State" 23.

⁵⁶⁸ Statistics South Africa 2023 https://www.statssa.gov.za/?page_id=993&id=mangaung-municipality.

⁵⁶⁹ Statistics South Africa 2023 https://www.statssa.gov.za/?page_id=993&id=mangaung-municipality.

⁵⁷⁰ Statistics South Africa 2023 https://www.statssa.gov.za/?page_id=993&id=mangaung-municipality.

⁵⁷¹ COGTA "Profile: Mangaung Metropolitan Free State" 28.

⁵⁷² COGTA "Profile: Mangaung Metropolitan Free State" 28.

⁵⁷³ COGTA "Profile: Mangaung Metropolitan Free State" 24.

⁵⁷⁴ COGTA "Profile: Mangaung Metropolitan Free State" 24.

⁵⁷⁵ COGTA "Profile: Mangaung Metropolitan Free State" 24.

highest concentration of dairy cattle.⁵⁷⁶ Poultry farming is prevalent in the Botshabelo Region.⁵⁷⁷ The Mangaung Metropolitan Municipality does not have a strong industrial sector that focuses on processing, retail, and wholesale.⁵⁷⁸ To the best of our knowledge, no captured data on food waste in Mangaung Metropolitan Municipality is available. However, based on the economic background of this municipality, it is plausible that the majority of food waste originates from agricultural production and households as opposed to the processing, retail, and wholesale phases.

4.4.3 *Relevant bylaws, plans and local policies*

4.4.3.1 *Mangaung Metropolitan Municipality: Waste Management Bylaw, 2013*

The *Mangaung Metropolitan Waste Management Bylaw* of 2013 (*Mangaung Waste Management Bylaw*) gives effect to environmental rights, as "contemplated in section 24 of the *Constitution*, by regulating waste management within the municipality".⁵⁷⁹ In doing so, the Mangaung Metropolitan will "ensure that waste is avoided, or where it cannot be avoided, minimised, reused, recycled, recovered, and disposed of in an environmentally sound manner,⁵⁸⁰ and promote and ensure effective delivery of waste services".⁵⁸¹

Section 5 of the *Mangaung Waste Management Bylaw* focuses on the obligations of waste generators. Every person is responsible for managing any waste generated by his or her actions or the activities of others working in his or her direction so that the waste does not endanger human health or harm the environment.⁵⁸² In particular, "the individual must ensure that waste generation is avoided, and where it cannot be avoided, the toxicity and amount of waste are minimised",⁵⁸³ "waste is

⁵⁷⁶ COGTA "Profile: Mangaung Metropolitan Free State" 24.

⁵⁷⁷ COGTA "Profile: Mangaung Metropolitan Free State" 24.

⁵⁷⁸ COGTA "Profile: Mangaung Metropolitan Free State" 24.

⁵⁷⁹ Section 2(1)(a) of the *Mangaung Waste Management Bylaw*.

⁵⁸⁰ Section 2(1)(c) of the *Mangaung Waste Management Bylaw*.

⁵⁸¹ Section 2(1)(d) of the *Mangaung Waste Management Bylaw*.

⁵⁸² Section 5(1) of the *Mangaung Waste Management Bylaw*.

⁵⁸³ Section 5(1)(a) of the *Mangaung Waste Management Bylaw*.

reduced, reused, recycled, or recovered",⁵⁸⁴ "where waste must be disposed of, the waste is treated and disposed of in an environmentally sound manner",⁵⁸⁵ and "waste is managed in such a way that it does not endanger health or the environment or cause a nuisance due to noise, odour, or visual impacts".⁵⁸⁶ This section emphasises the importance of applying waste hierarchy when dealing with waste. It seems that the provision of this section may be applied to addressing food waste at different phases of the supply chain, in that all role players involved in the supply chain must ensure that food waste generation is avoided, where it cannot be avoided, and that it is managed in such a manner that it does not harm the environment.

Chapter 3 of the *Mangaung Waste Management Bylaw* focuses on providing waste services. Any person or property owner who generates general waste must ensure that it is stored in a container that is provided or approved by the municipality.⁵⁸⁷ Section 9(2) of the *Mangaung Waste Management Bylaw* sets out measures that must be undertaken by the waste generator or waste holder to ensure that the waste generated is stored in accordance with the guidelines of the municipality.⁵⁸⁸ Chapter 4 focuses on the storage, separation, and collection of recyclable domestic waste. It is provided that "the municipality may require any person or property

⁵⁸⁴ Section 5(1)(b) of the *Mangaung Waste Management Bylaw*.

⁵⁸⁵ Section 5(1)(c) of the *Mangaung Waste Management Bylaw*.

⁵⁸⁶ Section 5(1)(d) of the *Mangaung Waste Management Bylaw*.

⁵⁸⁷ Section 9(1) of the *Mangaung Waste Management Bylaw*.

⁵⁸⁸ Section 9(2) of the *Mangaung Waste Management Bylaw* outlines the responsibilities for individuals or premise owners as follows; a) they must ensure that the receptacle is stored inside the yard where applicable, away from the public area when waiting for collection; (b) On the agreed collection date, place the receptacle outside the premises in an area accessible to municipal officials or service providers; (c) prevent pollution and harm to the environment (d) ensure that waste cannot be blown away, and that the receptacle is covered or closed; (e) implement measures to prevent tampering by animals; (f) ensure that nuisances such as odour, visual impacts, and breeding of vectors do not arise; (g) have suitable measures in place to prevent accidental spillage or leakage; (h) ensure that the receptacle is intact and not corroded or rendered unfit for the safe storage or transportation of waste; (i) ensure that a receptacle(s) provided by the Municipality is not used for any purpose other than the storage of waste; (j) in cases where a receptacle(s) is damaged or corroded, notify the Municipality and arrange for replacement as soon as it comes to their attention; (k) ensure that waste is only collected by the Municipality or an authorized service provider; (l) in cases where an owner or occupier is not available on the day of collection, make necessary arrangements to ensure that waste is accessible for removal or collection.

owner to separate their waste and utilise the different receptacles provided by the municipality or service provider".⁵⁸⁹ It is established that "no person may use other receptacles for recyclable materials if the municipality, service provider, or industry supplies separate receptacles for recyclable materials".⁵⁹⁰ The *Mangaung Waste Management Bylaw* outlines the responsibilities of the city and its residents in managing waste. As established, this bylaw requires residents to separate their waste into recyclables and non-recyclable materials and to dispose of their waste in an environmentally responsible manner. As a result, this bylaw emphasises the separation of waste at the source and proper storage of waste before disposal. It can be inferred from this study that food waste should be separated from other types of waste and stored in separate containers to enable the adoption of the best food waste management practices.

4.4.3.2 Mangaung Metropolitan Municipality: Environmental Health Services Bylaw, 2019

The *Mangaung Metropolitan Municipality Environmental Health Services Bylaw* of 2019 (*Mangaung Environmental Health Services Bylaw*) was enacted to allow the Council to establish "minimum environmental health standards to prevent disease, prolong life, protect and promote the health and well-being of people in the municipal area"⁵⁹¹ by establishing, in conjunction with other relevant laws, an effective legal and administrative framework within which the Council can effectively manage and regulate activities with the potential to adversely impact public health,⁵⁹² and necessitate good property maintenance and management.⁵⁹³ Chapter 2 of the *Mangaung Environmental Health Services Bylaw* promotes sustainable development. Sections 4(a) and (iv) relate specifically to waste, "noting that waste must be avoided, or if it cannot be avoided entirely, it must be minimised, reused, recycled, or disposed of responsibly". As a result, it is essential to emphasise that

⁵⁸⁹ Section 13(3) of the *Mangaung Waste Management Bylaw*.

⁵⁹⁰ Section 13(4) of the *Mangaung Waste Management Bylaw*.

⁵⁹¹ Section 2 of the *Mangaung Environmental Health Services Bylaw*.

⁵⁹² Section 2(a)(i) of the *Mangaung Environmental Health Services Bylaw*.

⁵⁹³ Section 2(a)(ii) of the *Mangaung Environmental Health Services Bylaw*.

this bylaw has an effect on environmental rights, as contemplated in section 24 of the *Constitution*, by ensuring that waste is properly managed. Although this bylaw does not specifically mention food waste, it highlights the importance of employing a waste hierarchy when dealing with it. The provisions of this bylaw appear to be applicable to addressing food waste at various stages of the supply chain, in that all role players involved in the supply chain must ensure that food waste generation is avoided and, where it cannot be avoided, that it is managed in such a way that it does not harm the environment.

4.4.3.3 *Mangaung Metropolitan Municipality: Fresh Produce Market Bylaw, 2018*

The *Mangaung Metropolitan Municipality Fresh Produce Market Bylaw, 2018* (*Mangaung Fresh Produce Market Bylaw*) aims to regulate and manage activities on and with respect to the municipal fresh produce market.⁵⁹⁴ Additionally, the *Mangaung Fresh Produce Market Bylaw* seeks to provide information related to activities in the municipal fresh produce market.⁵⁹⁵ Section 5(19) of the *Mangaung Fresh Produce Market Bylaw* prohibits any person in the market from discarding or depositing in any place other than receptacles provided for fruit peels, vegetable leaves, or waste of any kind. Section 23 focuses on the cleanliness of the premises, providing that every person who has been allocated a place to carry out business must always maintain that place in clean and hygienic conditions. Section 72 addresses dust and waste receptacles. Every person hiring premises in the market must provide an adequate number of dust and waste receptacles of type and size approved by the General Manager of the Market for use on such premises.⁵⁹⁶ It is also the responsibility of every person hiring such premises to ensure that the contents of such receptacles are removed regularly and dumped in a place determined by the General Manager.⁵⁹⁷ As a result, the bylaw "emphasises the importance of waste management in and around the fresh municipal produce

⁵⁹⁴ Preamble of the *Mangaung Fresh Produce Market Bylaw*.

⁵⁹⁵ Preamble of the *Mangaung Fresh Produce Market Bylaw*.

⁵⁹⁶ Section 72 of the *Mangaung Fresh Produce Market Bylaw*.

⁵⁹⁷ Section 72 of the *Mangaung Fresh Produce Market Bylaw*.

market". Therefore, this bylaw can be used to address food waste during the processing and retail phases.

4.4.3.4 *Mangaung Metropolitan Bylaw Relating to Street Trading, 2006*

The *Mangaung Metropolitan Municipality Bylaw Relating to Street Trading, 2006* (*Mangaung Street Trading Bylaw*) was enacted to regulate street traders' businesses within the jurisdiction of the Mangaung Metropolitan Municipality.⁵⁹⁸ Section 15 of the *Mangaung Street Trading Bylaw* focuses on control measures. A street trader is prohibited from conducting business in a manner that causes a nuisance.⁵⁹⁹ Sections 15(1) and (d) show that a street trader must not dump, store, or deposit waste material on land, premises, or public places other than the municipality approved waste receptacle. A street trader must remove all waste from a public place daily at the end of his business.⁶⁰⁰ Section 15(2)(b) states that a street trader must conduct his or her street trading business in such a way that it is not dangerous to public health or safety. It follows from this bylaw that street traders are empowered to manage the waste generated during their business so that such waste does not create a nuisance to either public health or the environment. Therefore, this bylaw can be used to address food waste. As street traders are given guidelines on how they should deal with waste generated from their businesses, they can apply these guidelines when dealing with food, which is considered waste.

4.4.3.5 *Mangaung Metropolitan Municipality: Informal Trading Bylaw, 2019*

The *Mangaung Metropolitan Municipality Informal Trading Bylaw* (*Mangaung Informal Trading Bylaw*) was promulgated to regulate informal trading within the jurisdiction of the Mangaung Metropolitan Municipality.⁶⁰¹ This bylaw aims "to regulate informal trading to ensure good environmental health and public safety".⁶⁰² Section 8 of the *Mangaung Informal Trading Bylaw* specifies that an informal trader

⁵⁹⁸ Preamble of the *Mangaung Street Trading Bylaw*.

⁵⁹⁹ Section 15(1)(a) of the *Mangaung Street Trading Bylaw*.

⁶⁰⁰ Section 15(2)(a) of the *Mangaung Street Trading Bylaw*.

⁶⁰¹ Clause 2.1 of the *Mangaung Informal Trading Bylaw*.

⁶⁰² Clause 2.1 (d) of the *Mangaung Informal Trading Bylaw*.

must dispose of waste generated by their business, regardless of the receptacle provided by the municipality to the public or at the municipality's dumping site.⁶⁰³ An informal trader must not dispose of waste in a manhole, stormwater drain, or another place not intended to dispose of it.⁶⁰⁴ An informal trader is further obligated to ensure that the area or place occupied by him for business purposes is clean and hygienic.⁶⁰⁵ The bylaw sought to address how informal traders should handle waste when conducting a business. The bylaws underline the importance of keeping the environment clean, which means that informal traders must ensure that the waste within their occupied space is properly managed. It follows from this bylaw that informal traders are empowered to manage the waste generated during their business in that they are expected to clean up their businesses in such a manner that they promote a clean and hygienic environment. Therefore, it follows that this bylaw can be applied to address food waste. As informal traders are given guidelines on how to deal with waste generated from their businesses, they can apply these guidelines when dealing with food, which is considered waste.

4.4.3.6 *IWMP, 2014*

The *Mangaung Metropolitan Municipality Integrated Waste Management Plan of 2014 (Mangaung IWMP)* was reviewed in 2011. It is indicated by the *Manguang IWMP* that the Mott MacDonald PDNA (previously PD Naidoo & Associates Consulting Engineers (Pty) Ltd) was appointed by the International Labour Office (ILO) to review the 2011 IWMP for the Mangaung Metropolitan Municipality.⁶⁰⁶ The *Mangaung IWMP* acknowledges that the municipality has no waste policy in place and that the waste management bylaw currently in place is not in "alignment with the reduction and source separation targets set out in the *NEMWA* and, specifically, the *NWMS*".⁶⁰⁷ The objective of this IWMP is to regulate waste management by

⁶⁰³ Clause 8.1 (c) of the *Mangaung Informal Trading Bylaw*.

⁶⁰⁴ Clause 8.1 (d) of the *Mangaung Informal Trading Bylaw*.

⁶⁰⁵ Clause 8.1 (a) read with (b) of the *Mangaung Informal Trading Bylaw*.

⁶⁰⁶ *Mangaung Metropolitan Municipality Integrated Waste Management Plan Review 5*.

⁶⁰⁷ *Mangaung Metropolitan Municipality Integrated Waste Management Plan Review 21*.

prioritising the development of policies.⁶⁰⁸ This expressly indicates that a waste policy needs to be developed to suit the particular intentions of the municipality in terms of waste management.⁶⁰⁹ Therefore, the Mangaung Metropolitan Municipality must develop an IWMP that can identify and establish guidelines, norms, and standards to be followed and applied at various phases of the supply chain to prevent and manage food waste.

4.5 Concluding remarks

This chapter examines the extent to which the local laws, plans, and policies of eThekweni, Johannesburg, and Mangaung Metropolitan Municipalities provide food waste. The chapter further sought to provide an in-depth analysis of these municipalities' food waste problems by exploring the various phases of the food supply chain in which waste occurs. Despite extensive investigation, it is clear that there is a major shortage of information on the local food sector in the cities of Johannesburg and Mangaung Metropolitan Municipalities. As a result, providing a relatively complete assessment of both Johannesburg and Mangaung's food waste problems is difficult.

As the discussions have revealed, each of the three municipalities developed and adopted IDPs, bylaws, and plans for waste management dating back to 2009. These bylaws, IDPs, and plans are generally progressive, as they emphasise the promotion of waste hierarchy and the separation of waste at the source as a means of diverting waste from landfill sites. Nevertheless, certain provisions in these instruments are generic and may not specifically address issues related to food waste. For instance, some tend to provide guidelines on how to handle waste in food-handling premises and do not speak directly to food waste in such premises. These three municipalities have tools such as IWMPs and waste management bylaws that are directly related to the food waste regulations in these cities. The three municipalities have

⁶⁰⁸ *Mangaung Metropolitan Municipality Integrated Waste Management Plan Review 21.*

⁶⁰⁹ *Mangaung Metropolitan Municipality Integrated Waste Management Plan Review 21.*

instruments, such as IWMPs and waste management bylaws, which are directly linked to the regulation of food waste in these cities.

In section 4.2.2, the chapter discusses several local laws, plans, and policies of the eThekweni Metropolitan Municipality that regulate waste, informal trading, street trading, food and milk products, and public health that relate to and could be applied to food waste. Considering the *Waste Removal Bylaw*, the city regulates and manages domestic and business waste within its area. The *Waste Removal Bylaw* encourages waste separation at the source and the adoption of a waste hierarchy, which are crucial practices for proper waste management. The eThekweni Metropolitan Municipality can use its *Waste Removal Bylaw* to pave the way for efficient and effective food waste management. The eThekweni Metropolitan Municipality has other bylaws, such as *Informal Trading*, *Street Trading*, *Municipal Public Health*, and *Food and Milk Product Bylaws*, which can be linked to the regulation and management of food waste.

Like the eThekweni Metropolitan Municipality, Johannesburg Metropolitan Municipality and Mangaung Metropolitan Municipality both have several regulatory instruments that are also related to food waste and can be applied to address such waste. Through waste management, both Johannesburg and Mangaung Metropolitan Municipalities regulate domestic waste within their respective areas of jurisdiction. The waste management bylaws of these two municipalities also emphasise the significance of separating waste at source and implementing a waste hierarchy as a practice to manage waste. According to the examination in sections 4.2.2, 4.3.2, and 4.4.2, the challenge that eThekweni, Johannesburg, and Mangaung Metropolitan Municipalities must address is the identification, development, and implementation of guidelines, norms, standards, programs, and plans that incorporate food waste. The next section concludes the research with recommendations and comments on a potential future research agenda.

Chapter 5 Conclusion

5.1 Background to the study

South Africa faces many food waste challenges, including high levels of food insecurity, inadequate waste management infrastructure, and a lack of understanding of the significance of food waste reduction among various actors.⁶¹⁰ Municipalities in South Africa are responsible for solid waste management,⁶¹¹ and efficient waste management services are crucial for promoting a clean environment.⁶¹² The increasing global concern about food waste and its environmental and socio-economic implications has prompted this study. It went on to examine the extent to which South African law regulates food waste, with the objective of investigating developments in three cities in the country.⁶¹³

Research focusing on identifying the causes and consequences of food waste throughout the supply chain⁶¹⁴ and on food waste management has been conducted.⁶¹⁵ Research has also focused on reducing harvest and post-harvest food waste.⁶¹⁶ A significant number of studies have focused on quantifying the magnitude of the food waste problems.⁶¹⁷ However, to the best of the researcher's knowledge, no study has thus far focused on food waste regulation from a legal perspective. Existing studies have also not thoroughly examined the linkages and relationships between food waste and local government regulations.

5.2 Study focus, research question, scope and limitation

This study was launched on the premise that the South African legal framework offers a useful basis for evaluating and developing food waste management regulatory systems in cities. The fundamental research question guiding this study

⁶¹⁰ See paras 2.4, 3.4 above.

⁶¹¹ See chapter 3 and 4 above.

⁶¹² See chapter 3 and 4 above.

⁶¹³ See para 1.3 above.

⁶¹⁴ See para 1.1 above.

⁶¹⁵ See para 1.1 above.

⁶¹⁶ See para 1.1 above.

⁶¹⁷ See para above.

aimed to establish the extent to which South African law regulates food waste in cities.⁶¹⁸

Chapter 2 of this study provides a comprehensive definition of food waste and explores various perspectives to enhance the understanding of this concept.⁶¹⁹ It begins by providing a definition of waste to determine when food is regarded as waste.⁶²⁰ The literature review addressed the aim of chapter 2 by highlighting growing concerns about food waste and its implications for food security, environmental sustainability, and the economy.⁶²¹

Chapter 3 examines various laws and policies pertaining to food waste. Particular attention was paid to South Africa's *Draft Strategy for Reducing Food Losses and Waste*, the most recent and most directly applicable future policy in the field of food waste management. This chapter provides a clear answer to the question of whether existing laws and policies regulate food waste in the pursuit of environmental sustainability in municipalities. To answer this question, chapter 3 examines all statutes and policies relevant to food waste.⁶²² This section provides an overview of the role of local governments in waste management.⁶²³ Chapter 3 highlights the importance of regulatory and policy instruments in addressing food waste.⁶²⁴ Chapter 3 emphasised the authority of local governments to enact bylaws, policies, and other measures to effectively regulate food waste.⁶²⁵

Chapter 4 examines the extent to which the IDPs and certain bylaws and policies of the City of Johannesburg, eThekweni Metropolitan Municipality, and Mangaung Metropolitan Municipality currently regulate food waste.⁶²⁶ This consisted of the process of identifying and analysing the waste management bylaws, environmental

⁶¹⁸ See para 1.2 above.

⁶¹⁹ See para 1.1 and 2.2 above.

⁶²⁰ See para 2.2 above.

⁶²¹ See para 2.4 above.

⁶²² See para 3.3 above.

⁶²³ See para 3.2, 3.3, 3.4, 3.5 and 3.6.

⁶²⁴ See para 3.6 above.

⁶²⁵ See para 3.2, 3.3, 3.4, 3.5 and 3.6.

⁶²⁶ See paras 1.4 and 4.1 above.

health bylaws, and other relevant bylaws of the selected municipalities, with the aim of ascertaining whether these municipalities have adopted legal instruments to regulate food waste.⁶²⁷

This study had some limitations. The lack of readily available reliable data on food waste presents a significant obstacle to investigating the sources of food waste in South African cities. In terms of the methodology adopted, this study was limited because it was conducted through doctrinal legal research. Only laws and policies were considered. The law seems to provide adequate provisions for instruments that may be used by municipalities to regulate food waste.⁶²⁸ The study did not venture into an empirical analysis of the situation on the ground and, therefore, cannot make any findings related to the implementation and effectiveness of existing laws, policies, and plans. Although this study explored various general aspects, the case study was limited to only three municipalities.⁶²⁹ Although the study recognised the importance of other municipalities' regulatory and policy instruments on waste management, it was not possible to include them in this study, even though they would be important to the study of food waste regulation as a countrywide imperative. Furthermore, the scope of this study is concerned with the regulation of food waste in cities. Consequently, rural areas, towns, and secondary cities have not been evaluated. This had to be done in the interest of time and considering the page limitations applicable to theses of this type.

5.3 *Main findings*

The main findings of this study are as follows:

- The definition of food waste and food waste management are still not universally settled.⁶³⁰ However, the literature on these notions has expanded, resulting in a variety of specific views and understandings.⁶³¹ Certain ideas

⁶²⁷ See para 4.1 above.

⁶²⁸ See para 3.6 above.

⁶²⁹ See chapter 4 above.

⁶³⁰ See para 2.2 and 2.5.1 above.

⁶³¹ See para 2.2 above.

have emerged from various studies in different subject fields.⁶³² Some characteristics can be identified and used as a starting point for exploring food waste regulation, as was done in this study.

- South African cities are experiencing increasing waste generation as a result of urbanisation.⁶³³ Municipalities may address food waste through waste management programs developed around the waste hierarchy in the five phases of the supply chain.⁶³⁴
- Several national laws and policies in South Africa have been dedicated to protecting the environment through proper internal waste management.⁶³⁵ These laws can help local governments regulate and manage food waste in cities by structuring and identifying the best waste management options and practices to manage food waste. According to an analysis of South Africa's national legislative and policy framework, there is a lack of comprehensive legislation or a coherent legal response specifically addressing food waste in South African cities.
- The current legal framework for food waste in South Africa is fragmented and inadequate. Existing legislation on waste primarily focuses on general waste management, with little attention paid to the specific challenges posed by food waste.⁶³⁶ However, waste legislation can help municipalities accomplish their food waste management aims and objectives. Municipalities can employ regulatory and policy instruments to control food waste. These regulatory and policy instruments include the *Constitution*, *NEMA*, and *NEMWA*, as illustrated in chapter 3. Chapter 4 of this study revealed that municipalities have the authority to establish and implement local policies and bylaws to regulate food waste in their respective jurisdictions.

⁶³² See para 2.2 above.

⁶³³ See para 1.1 above.

⁶³⁴ See para 2.5.2 and 3.6 above.

⁶³⁵ See para 3.3 above.

⁶³⁶ See section 3.3.1 and 3.3.2 above.

- The South African government recently published its *Draft Strategy for Reducing Food Losses and Waste*, which is aimed at reducing food losses and waste, emphasising the need for a comprehensive and coordinated approach.⁶³⁷ The *Draft Strategy for Reducing Food Losses and Waste* is part of *the NWMS'* waste minimisation pillar and aims to promote sustainability and reduce the amount of food that goes to waste.⁶³⁸ The *Draft Strategy for Reducing Food Losses and Waste* is a significant step towards establishing a comprehensive policy and / or legal framework for food waste management.
- Except for the recently published *Draft Strategy for Reducing Food Losses and Waste*, which is not yet enforceable, city-level law (and national law) makes no explicit mention of food waste and how it should be addressed to protect the environment.
- The waste management bylaws of the three discussed metropolitan municipalities emphasised the importance of proper waste management as part of their overall waste management strategy. They highlighted the responsibility of waste holders to take measures to ensure that waste is managed in a manner that does not cause environmental degradation. Municipalities are obliged to provide receptacles to their residents to encourage the separation of waste at the source and ensure the proper control and storage of waste. For instance, residents must separate their waste into recyclables and non-recyclable materials and dispose of their waste in an environmentally responsible manner.
- The analysis of national law and policy highlighted that all spheres of the government play a vital role in coordinating, implementing, and monitoring waste management (which could also refer to food waste in particular).⁶³⁹

⁶³⁷ See para 3.4.2 above.

⁶³⁸ See para 3.4.2 above.

⁶³⁹ See para 3.2 above.

- The study examined the regulatory instruments of Johannesburg, eThekweni, and Mangaung.⁶⁴⁰ The instruments seem to fall short when it comes to the regulation of food waste. What seems to be missing from the local instruments is the following:
 - Provisions for the separation of food waste from other types of waste;
 - Provision for different collection methods; and
 - Provision for compulsory reporting and recording of food waste.
- The study identified limited engagement between the private sector and municipalities, explicitly targeting food waste management in South African cities (metropolitan municipalities).⁶⁴¹ Thus, it is evident that more emphasis needs to be placed on formalising PPP and strengthening collaboration efforts to regulate food waste effectively in South Africa.

5.4 Recommendations

This study provides the following recommendations based on the findings outlined above:

- Food waste should be explicitly addressed through policies and legislation. A clear definition and standard for food waste should be established. This should be performed to establish clear identification, classification, and measurement standards. This will offer a common understanding of all stakeholders involved in food waste management at different phases of the food supply chain.
- The *Draft Strategy for Reducing Food Losses and Waste* offers a definition of food waste,⁶⁴² however, this definition only considers food waste for consumption by people and excludes food residues and parts of food that are not considered edible. Consequently, the researcher recommends that food

⁶⁴⁰ See para 4.2.3, 4.3.3 and 4.4.3 above.

⁶⁴¹ See para 3.6.4 above.

⁶⁴² See para 2.2 above.

waste be seen as an act of discarding or finding alternative uses of food that is still fit for human consumption, as well as food that is deemed unfit or inedible. This definition emphasises the inclusion of both foods that are still fit for consumption by people as well as those deemed unfit and inedible. Food waste management involves the recovery or reuse of food and agricultural products for consumption, animal feed, industrial use, or environmental benefits.

- A law reform process is recommended to improve efficient food waste management regulation. This law reform process may typically consider the following:
 - Establish laws and regulations at both national and local levels that support and promote the donation of surplus food to charitable organisations. This could include liability protection for food donors and standardised procedures for safe food-handling transportation.
 - Establishing a law at both national and local level that obligates the separation of food waste at its source requires appropriate recycling and composting facilities. This will help to divert food waste from landfills and promote the production of organic fertilisers.
 - Introduce a national and local law requiring mandatory reporting from food producers, retailers, and restaurants to report on their food waste generation, management practices, and progress towards reduction targets. This will help to create transparency and accountability in the system.
- The municipal council of a municipality should review current regulatory instruments pertaining to food waste. This includes updating and revising waste management bylaws and IWMPs. This is crucial to ensure that these instruments explicitly address food waste. Municipalities should also raise awareness and encourage residents to separate food waste from other types of waste. This can be addressed in bylaws, IDPs, and IWMPs.

- Researchers should investigate the economic feasibility and potential benefits of establishing food waste recovery systems in South African cities.⁶⁴³
- It is also recommended that the waste hierarchy, polluter pays, and extended producer responsibility principles should be applied throughout the food sector phases.⁶⁴⁴ This can help shift the focus towards the prevention of food waste and more sustainable management practices while also promoting responsibility among all stakeholders involved in the food supply chain.

5.5 *Comments on future research*

The scope and focus of this study were limited, as previously explained. Through this research, several areas have emerged with promising opportunities for exploration. Some unanswered questions that remain, include the following:

- To what extent can municipalities regulate food waste in such a way that it can be used to address food security concerns of legal relevance?
- What is the extent of the impact of the absence of specific legislation on food waste, and to what extent can empirical studies help us understand this?
- What are the implications of civil and criminal liability related to donated food (in the event that retailers are permitted to donate food that is considered waste as a result of not meeting consumer standards), and how can the legal framework contribute to addressing this issue?
- What may South Africa possibly learn from other comparable jurisdictions?

⁶⁴³ This will be in line with the *Draft Strategy on the Reduction of Food Losses and Waste* where it encourages the establishment of Centre of Excellence and Research Chairs to conduct research on food waste; see *Draft Strategy on the Reduction of Food Losses and Waste* 11.

⁶⁴⁴ This will be in line with the *NWMS* and *Draft Strategy on the Reduction of Food Losses and Waste* where they provide for the commissioning and approval of these principles as a policy approach and directive for minimising waste (this should be applicable to food waste).

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