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COMMUNITY-BASED WASTE MANAGEMENT AND ITS IMPACT ON PUBLIC HEALTH IN HIGH-DENSITY AREAS: A CASE STUDY OF MBARE, HARARE

WESLEY T MUSHUNJE

B222031B

SUPERVISOR: DR. R.B MAPONGA

DISSERTATION SUBMITTED TO THE DEPARTMENT OF SUSTAINABLE DEVELOPMENT, FACULTY OF SCIENCE AND ENGINEERING AT BINDURA UNIVERSITY OF SCIENCE EDUCATION IN PARTIAL FULFILMENT OF BACHELOR OF SCIENCE HONOURS DEGREE IN DEVELOPMENT STUDIES

JUNE 2026

DECLARATION

I, Wesley T Mushunje, B222031B, declare that this dissertation titled "**Community-based waste management and its impact on public health in high-density areas: A case study of Mbare, Harare"** is the product of my own work except for the references, which have been credited to their sources. The work was not copied from any source without acknowledgment of the publisher.

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Supervisor signature  Date: 14.08.2026

(DR R.B MAPONGA)

Chairperson's signature 

(DR BOWORA)

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Abstract

There are inadequate municipal waste collecting facilities in Mbare, Harare, that have led to waste build-up and pose a threat to public health, causing people in the area to engage in informal community-based waste management projects. This study aimed to determine the interventions, to analyze the public health impacts they had, and to understand the barriers and facilitators that enabled their application. A qualitative study design was used and consisted of interviews, focus group discussions, participatory mapping, transect walks, environmental observations, and codesign workshops. Data were analyzed thematically. Results The study revealed that residents of the town were involved in neighborhood clean-up campaigns, informal recycling, separation of household waste, as well as market waste reuse activities. Inadequate waste management resulted in diarrhea, respiratory diseases, skin infections, and occupational injuries. Key barriers included limited protection, police harassment, and inadequate disposal facilities, but strong community and local leadership networks were considered to be strong enablers. Despite lack of support from institutions, the study found informal waste management solutions play a role in providing environmentally safe sanitation and livelihood support. The study recommends formal recognition of waste groups as organizations, availability of protective equipment, and increased cooperation by local authorities and communities.

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ACRONYMS

ARISE	Accountability and Responsiveness in Informal Settlements for Equity
CBAM	Carbon Border Adjustment Mechanism
CBPR	Community-Based Participatory Research
DRC	Democratic Republic of the Congo
EMA	Environmental Management Agency (Zimbabwe)
EU	European Union
EV	Electric Vehicle
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GIS	Geographic Information System
GVC	Global Value Chain
HIV	Human Immunodeficiency Virus
HPV	Human Papillomavirus
ICBSWM	Informal Community-Based Solid Waste Management
IDI	In-Depth Interview
IWP	Informal Waste Picker
NGO	Non-Governmental Organization
NNA	Nearest Neighbor Analysis

PPE	Personal Protective Equipment
QGIS	Quantum Geographic Information System
SDH	Social Determinants of Health
SME	Small and Medium Enterprise
SPSS	Statistical Package for the Social Sciences
STI	Sexually Transmitted Infection
UAE	United Arab Emirates
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
ZHRC	Zimbabwe Human Rights Commission
ZIMSTAT	Zimbabwe National Statistics Agency
ZIMTRADE	Zimbabwe Trade Promotion Organization
ZRP	Zimbabwe Republic Police

Chapter 1: Introduction

1.1 Introduction

This chapter starts the research analysis by describing the topic and giving an elaborated background to the waste management problem area of Mbare, Harare, and what it can mean for the public by detailing the history of the problem, with the beginning in colonial spatial planning, and its current incarnation in recent municipal service failure. Then the chapter states what the problem is and identifies the fact that there is a disconnect in the community´s informal responses as well as policy direction. The research aim and three specific objectives are presented next, as well as three research questions related to the purpose of each objective. It is noted how the problem will help to address gaps in the literature, inform policy, empower the community, and provide a replicable structure. The problem is narrowed down to Mbare's Matapi, Hostels, and Nenyere blocks: on solid waste and qualitative methods. The chapter also makes explicit the limitations (e.g., generalizability limitations, recall bias, seasonal limitations), and delimitations (i.e., the exclusive data were collected in a study of adults and focused on Mbare, and qualitative methods) of its approach. Last but definitely not least, important concepts are explained in paragraph form so that the reader can be certain of the clarity in terminology, and the chapter ends with a description of the dissertation structure detailing what each subsequent chapter will cover.

1.2 Background

Mbare, Harare's oldest, most populous, and densely populated township in Africa, has a historical trauma and history, and an ongoing waste management crisis. Founded as Harari Township in 1907, the suburb was purposely sited in the near vicinity of city cemetery, sewage works, and abattoir by colonial authorities, creating a space that concentrated environmental dangers outside white, commercial districts while housing Black workers (Potts, 2019). This colonial logic of spatial marginalization gave rise to a legacy of infrastructural neglect with a long-lasting impact long after independence in 1980. When the area became independent, it was renamed Mbare, but the physical fabric of the suburb – narrow alleys, high-density flats, inadequate drainage, and few open spaces – is still very much the same. As Chirisa and Dube (2019, p. 45) note, "the historical geography of Mbare becomes inseparable from the larger political economy of colonial and post-colonial urban

planning in Southern Africa," an idea that will continue to influence the decay of infrastructure and waste governance failures in the region today.

In the decades after independence, Mbare rapidly expanded under the pressures of rural-urban migration, disrupted formal economic activity, and experienced an acute deprivation of affordable housing. For example, Matapi flats, intended to accommodate approximately 3,000 people, now accommodate an estimated 12,800 people, more than fourfold their intended capacity. Some families of 13 persons share single rooms (Zimbabwe Human Rights Commission, 2026). Such extreme overcrowding has strained municipal services that are already weak asunder. The Harare City Council, which was also beset with financial constraints, political interference, and a shortage of trucks and personnel, cannot reliably collect waste throughout the city. Collection has, at best, been sporadic and at worst, has been absent in high-density regions, such as Mbare (Moyo, 2023; Ndlovu & Sibanda, 2023).

The impact of this municipal failure is apparent every day. Raw sewage pours through many walls of the flats and contaminates areas where people cook, and children play, whilst uncollected waste sits on high streets, walls crack and crumble, roofs leak, and the pipes lead to blocked drainage (Zimbabwe Human Rights Commission, 2026). Diversions during the rainy season - between November and March - when there are blocked drains filled with solid refuse, are flooding people, straining the water, and creating an environment full of mosquitoes that multiply the possibility of waterborne diseases (Cisse, 2021). Local community health workers have proclaimed that conditions are "ripe for outbreaks of waterborne diseases such as cholera and typhoid" (Zimbabwe Now, 2024, para. 4). These have been described by the Zimbabwe Human Rights Commission (2026, p. 8) as "a violation of human rights, particularly the right to human dignity afforded to persons under Section 51 of the Constitution."

In the wake of this municipal collapse, people in Mbare have resisted the health catastrophe. Instead, they have organized a host of informal, community-driven waste management initiatives. These are neighborhood clean-up campaigns (all focused on women, which include weekly sweeping and drain clearing), scavenger-recycler cooperatives (youth who sort and sell plastics, metals and cardboard), household waste separators (older women who compost organic waste) and market waste reusers (informal traders at Mbare Musika who gather fruit and vegetable waste for animal feed) (Zamba, 2020; Moyo, 2023). These initiatives work with no official recognition,

technical support or health protections. Waste workers deal with refuse with their bare hands, sustain cuts and injuries, breathe the smoke of open burning, and are harassed by municipal police, who deem their activities illegal (Ndlovu & Sibanda, 2023). But these works persist, despite these challenges, because they deliver crucial services the municipality does not.

While emerging literatures have highlighted the potential health hazards associated with uncollected waste in informal African settlements (Cisse, 2021; Adjei-Mensah, 2026; Mmereki, 2024), few studies systematically explored the relationship between community waste initiatives and health outcomes, which are measurable. In Zimbabwe, literature on informal waste management has been concerned mainly to the economic roles of the waste pickers or the technical side of the recycling process and less about health implications (Kadungure et al., 2023). Besides, barriers, including the absence of physical protective personnel (PPE) and police abuse, have already been reported in other African cities (Katusiimeh & Nambale, 2024), which is why none of the studies have analyzed obstacles and enablers according to a ranked and community-generated approach in Mbare. Therefore, this paper aims to fill the identified gaps in policy by qualitatively investigating how informal waste management impacts health, the barriers and facilitators, and the design of a community-centered approach.

1.3 Problem Statement

Substantial lack of municipal waste services in Mbare have led to a public health crisis with inadequate formal community responses that are poorly described in studies and have not yet received policy support. Unless there is evidence that connecting these grassroots actions to health gains or risks, policymakers can't devise efficient, low-cost solutions. The published literature confirms the negative effects of uncollected waste in African informal settlements on disease such as cholera, typhoid, malaria, and respiratory diseases (Cisse, 2021; Adjei-Mensah, 2026). Yet, few studies have empirically explored the specific link between community-led waste initiatives and measurable public health outcomes in high-density Zimbabwean suburbs (Mmereki, 2024). Moreover, these include obstacles such as a lack of personal protective equipment while at various locations in much of the African continent (Katusiimeh & Nambale, 2024), and that there were still no studies that ranked community-generated analyses of barriers and enablers to be seen in

Mbare as well. This study hence fills this gap, by making an exploratory study of how informal waste management influences health, what is the challenge; and barriers and facilitators, and how to construct a community-centered approach.

1.4 Research Aim and Objectives

Aim: To investigate the connection between informal community-based waste management initiatives and public health intervention outcomes in Mbare, Harare, as well as to develop a sustainable, community-centered, strong, solid waste management framework.

Objectives:

1. Identifying, mapping, and describing the existing informal waste management initiatives working in Mbare; identifying their actors, methods, and scale.
2. To determine the perceived and actual public health impacts of such projects on waste–related illness, injuries, and environmental hazards.
3. The barriers and enablers that affect the potential of the interventions are analyzed.

1.5 Research Questions

1. . What informal community-based waste management initiatives operate in Mbare, what are the stakeholders, what are their mechanisms, and at what level do they operate?
2. What health consequences (diseases, injuries, environmental hazards) are being perceived or observed by the public as a consequence of these informal waste-management activities?
3. What are barriers (e.g. lack of protective clothing, harassment, no place to get it removed) and enablers (e.g., social networks, local champions, external assistance) that affect the impact of these initiatives?

1.6 Significance of the Problem

This study is important for many reasons. First, it offers the initial empirical evidence from Mbare on the health impacts of informal waste management, filling the void identified in the recent systematic reviews (Mmereki, 2024; Parvez et al., 2022). Second, results will advise the Harare City Council, Ministry of Health, Zimbabwe Republic Police, and international donor agencies (UNDP, WHO) on community-based low-cost alternatives to failed centralized systems. Third, the participatory design of the study, with community members acting as co-researchers, also benefits a historically underserved population and generates locally owned recommendations. Fourthly, the community-centered framework can be used as a template for other high-density suburbs in Zimbabwe (e.g., Epworth, Chitungwiza) and in similar environments in sub-Saharan Africa. Lastly, by documenting how structural barriers (police harassment, lack of legal recognition) impede community action, the study enforces policy response guided by principles of environmental justice (Agyeman et al., 2016).

1.7 Scope of the Problem.

The study was geographically constrained to Mbare, comprising the residential blocks of Matapi, Mbare Hostels, and Nenyere, where the waste was most visibly built up, and informal recycling activities were more publicized (Zamba, 2020; Moyo, 2023). The study is based on solid (not liquid or hazardous) waste and community-led (not private formal) programs. Public health outcomes are measured by self-reported morbidity, environmental checklists, and key informant interviews with clinic staff (no clinical trials or laboratory tests are performed). The approach is entirely qualitative, prioritizing depth, context, and community voice over statistical generalization. The study does not seek to quantify cause-and-effect relationships but to highlight patterns, perceptions, and relationships, as experienced by residents. The time period for data collection (three months) is limited to a phase only; the results are indicative of the conditions of that period.

1.8 Limitations.

Several limitations related to the research design and context, as identified by this study, are acknowledged in the present study. Firstly, since the method is altogether qualitative, the results

cannot be statistically generalized to other populations or domains. The relatively small sample size (45 participants in interviews and focus groups) means that the experiences measured may not reflect the overall profile of Mbare residents, especially those who are highly mobile or avoidants. Second, subject dependence on self-reported health outcomes introduces recall bias, i.e., participants may remember episodes of diarrhea or respiratory illness incorrectly, and social desirability bias, in which waste workers may underreport illegal actions such as burning or dumping. Third, the researcher's presence at transects strolls and participatory mapping may have affected the behavior of participants (observer effect) so as to avoid revealing illegal dumpsites or exaggerate the clean-up efforts. Fourth, the study was based on a three-month period which shows only a micro glimpse of waste management and health, for example the seasonal change of higher disease rates during rainy season may not be fully considered. Fifth, access to some informal waste employees was hindered by fear of police violence, which might have occurred, even in the presence of snowball sampling, among the most hidden or marginalized individuals.

1.9 Delimitations

Subject terms delimitations are clearly defined and deliberately set on the researcher to ensure the research is practical and meaningful. The study is limited only to Mbare, as it does not focus on other high-density suburbs of Harare, including Epworth and Chitungwiza, as Mbare has the longest history of municipal neglect and the most prominent informal waste activities. The study does not involve liquid waste (except sewage and medical waste/industry waste materials), as solid waste is the most visible and frequently mentioned complaint by residents. The study concentrates purely on community-based informal initiatives, devoid of formal private waste collectors, because the research objective is grounded in a bottom-up response to municipal failure. It only includes adult residents 18 years and older, not children, because children do not frequently act as decision makers in waste management, and getting ethics clearance for child subjects is a challenging job. Qualitative methods only are used in this study, excluding quantitative surveys or clinical measurements; the research questions were framed around depth of understanding, lived experiences and community voice, rather than statistical measurement. Last but not least, the study will not aim to assess long-term health outcomes or participants over time; instead, it captures a cross-sectional perspective of perceptions and observable conditions at one point in time.

1.10 Definition of Terms.

Informal Community-Based Waste Management

According to Adjei-Mensah (2026, p. 5), informal community-based waste management refers to "unregulated, self-organized activities undertaken by residents to collect, sort, recycle, reduce, or dispose of solid waste without direct municipal support."

In the context of this study, informal community-based waste management refers to the locally initiated and community-driven waste management practices undertaken by residents of Mbare without formal municipal assistance. These activities include neighborhood clean-up campaigns, collection and sale of recyclable materials, composting of organic waste, and the reuse of market waste as animal feed.

Public Health Outcomes

Cisse (2021, p. 1894) defines public health outcomes as "the measurable effects of environmental conditions on the health of populations, specifically including waste-related communicable diseases, injuries, and mental well-being."

For this study, public health outcomes refer to the physical, social, and psychological health effects associated with exposure to poor waste management practices in Mbare. These outcomes include diseases linked to blocked drains and accumulated waste, respiratory illnesses caused by waste burning, injuries sustained during waste handling, and psychological distress associated with living in an unhealthy environment.

Barriers

Katusiimeh and Nambale (2024, p. 8) describe barriers as "factors that hinder the effectiveness of informal waste initiatives, including discriminatory bylaws, lack of legal recognition, and absence of protective equipment."

In this study, barriers refer to the social, institutional, economic, and environmental challenges that limit the effectiveness of informal community-based waste management activities in Mbare. These include inadequate protective clothing, harassment by law-enforcement authorities, lack of

designated waste disposal sites, limited financial support, and the absence of formal recognition for informal waste workers.

Enablers

According to Adjei-Mensah (2026, p. 11), enablers are "factors that facilitate the success of community-led waste initiatives, including strong social networks, local champions, and external support from NGOs or churches."

Within the context of this research, enablers refer to the conditions and support systems that promote the sustainability and effectiveness of informal waste management activities in Mbare. These include community cooperation, strong local leadership, assistance from non-governmental organizations and churches, access to waste management training, and reliable markets for recyclable materials.

Environmental Justice

Agyeman et al. (2016, p. 324) define environmental justice as "the principle that environmental burdens and benefits should be distributed equitably, and that marginalized communities should participate meaningfully in decision-making processes that affect their environment."

In this study, environmental justice refers to the equitable treatment and meaningful involvement of Mbare residents in issues relating to waste management and environmental health. It emphasizes the need to address historical neglect, unequal exposure to environmental hazards, and the exclusion of marginalized communities from waste management decision-making processes.

Community-Based Participatory Research

Wallerstein et al. (2018, p. 13) define community-based participatory research as "an orientation to research that equitably involves community members, organizational representatives, and researchers in all aspects of the research process, with the goal of co-producing actionable knowledge that benefits the community."

For this study, community-based participatory research refers to a collaborative research approach in which Mbare residents actively participate in the design, implementation, and evaluation of the study. This includes their involvement in interviews, community mapping, identification of waste

management challenges, and the development of practical waste management strategies intended to benefit the community.

1.11 Conclusion

This chapter has presented the research topic, a comprehensive historical and contemporary backdrop for the waste management crisis in Mbare, and highlighted the problem: the municipal failure has resulted in residents participating in ad-hoc informal waste operations that are ignored by respect or health protection provisions, yet nothing empirical has been done to examine their role in public health. The research purpose and the three objectives are defined, and then they were followed by three research questions. The importance of the problem has been justified in addressing existing gaps in the literature, informing policy, empowering the community, and providing a replicable architecture. The focus is contained within Mbare's Matapi, Hostels, and Nenyere blocks for empirical and statistical solid waste and qualitative methods. The following paragraphs formative of key terms will allow for proper definition of terms for clarity and consistency in the entirety of this dissertation. In the next chapter (Chapter 2), the relevant literature is reviewed, the conceptual framework is developed, and the gap areas are sketched more specifically.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter describes a literature review of informal community-based waste management and public health in urban slum areas, in general urban informal settlements, i.e., city areas within Africa and high-density areas in Zimbabwe. It describes some theoretical models, some empirical studies, and conceptual controversies concerning how informal waste management systems come to be developed and work, and the relationship they have with public health. This chapter has four main sections: introduction to the topics and objective framework and conceptual framework; theoretical framework from global, regional, and local perspectives; review of the literature according to research objectives; last section presents key issues and research gaps. In this section, the key topics of the research concerning the research objectives will be summarized, relating to the ways the respective themes contribute to the research aims. The conceptual model of the Study and the significant deficiencies revealed and identified in the literature with the interplay between informal waste management and public health is explained as well.

2.2.1 Overview of Themes

This study is inspired by three intertwined themes of the research objectives. These themes provide a high-level overview model for literature review and comprehension of the relationship between informal waste management systems and public health in Mbare.

Theme 1: Community-Level Waste Management Activities

The first theme provides an overview of informal community-Based Waste Management programs emerging in urban settlements. It has been well researched that whenever municipal waste collection systems are incapable of operation or fail, residents set up self-organization systems at a household level for the collection, recycling, separation, reuse, and disposal of waste. Such actions often entail neighborhood cleanup drives, informal waste picking, organization for recycling, composting activities, and market waste reuse systems. Prior studies have shown that informal waste management has become an important survival strategy for many developing countries because of unemployment, poverty and weak local governance arrangements. In cities such as Lagos, Kampala, Accra and Nairobi, informal waste workers reclaim recyclable resources and reduce waste volume in densely populated areas. But often these agents are the social outsiders and excluded from formal channels of waste management, despite their environmental effects. The theme is directly related to Objective One on the project, in which we shall investigate, map and describe the incidence of informal waste management in communities like Mbare.

Theme 2: Public health impacts due to the addition of informal waste management

The 2nd theme concerns the importance of informal waste management and inadequate environmental protection to public ill-health. Previously, we have witnessed that in the case of uncontrolled waste accumulation causes excessive environmental pollution, accompanied by the growing number of infectious diseases in an increased amount among citizens in informal settlements. In African cities, studies have shown that the urban population of waste has created habitats for mosquitoes, rodents, and flies that have contributed to rising rates of malaria, diarrheal, and other infectious diseases. Burning waste from open sites is a huge contributor to respiratory diseases, too by pumping out toxic fumes and particulates. Informal waste workers are also reported in danger from professional injuries, such as cuts, skin infections, and hazardous waste materials mishandling. More than the disease, academics are starting to pay attention to the

psychological and social effects of bad environmental conditions. The urban living conditions are on the decline, and those who live there are often subjected to stress, stigma and neglect. This theme underpins Objective Two of what the study asks about a focus on measuring public health impacts of an informal waste disposal system in Mbare.

Theme Three: Barriers and Enablers to Informal Waste Management

The third motif will be examining the variables influencing the success and continuity of this community-based "informal" waste management. It has been noted in the current literature that there were obstacles for informal waste workers and community cleanup organizations. These comprise, and are not limited to, legal lack of acknowledgement, lack of protection, police harassment, no established waste disposal outlets, small funds, and under-institutional support. While the aforementioned issues have been highlighted, other studies also find the enabling facilitators of informal waste management solutions for such waste systems. The key aspects include strong networks, community involvement, local leadership for collective action, leadership and collaboration with local governments, community-based support from churches and other nongovernmental organizations, and access to recycling markets. Furthermore, the literature shows that the success of the implementation of informal waste management campaigns, most notably for waste generation, depend on the cross-fertilization between the hurdles and the enabling conditions in the specific social and political environment of the specific country of interest. This theme is highly connected to Objective Three of the study – finding the barriers and facilitators for informal community-based waste management activity in Mbare.

2.2.2 Objective Framework

The focus of the objective framework indicates how the study objectives are linked (or directly related) to major research themes. Goal 1: To identify and map informal community-based waste management programs implemented in Mbare. The objective would involve the type, mechanism, and nature of informally carried out waste activities in the community. Objective Two has investigated the public health impacts of informal waste management. It covers research on wasterelated diseases, occupational injuries, environmental health risks, and the general consequences of inadequate waste disposal management on community well-being. Aim 3: Analyze the obstacles as well as drivers to the informal waste management programs. The aim is

to determine which institutional, economic, environmental, and social mechanisms will be supportive of the sustainability and effectiveness of these schemes.

2.2.3 Conceptual Framework

The conceptual framework of this study is informed by three interlocking theoretical perspectives: environmental justice theory, community-based participatory research, and the social determinants of health model. Population-based, health-based, and integrated models are two of the key guiding principles, and the goal of this study is to add to the wider narrative that characterizes the povertyenvironment association. Environmental justice theory argues that the burden of the environment is skewed in society; the less privileged members of society bear more associated economic and environmental costs (Agyeman et al., 2016). Waste collection, sanitation, and environmental sanitation infrastructure services and protection of the environment are always in low service in high-density suburbs and informal settlements in most African cities. In the case of Mbare, a problematic waste management status quo exposes deeper historical and socio-economic imbalances in ways reminiscent of inequities rooted in colonial urban planning and the failures of postcolonial urban governance. The participatory research approach that can be found in the community-centered way emphasizes the role of community members in identifying community problems from the local context and generating meaningful solutions (Wallerstein et al., 2018). Rather than view residents as passive recipients of local municipality services, the framework instead frames communities as active participants, interacting with local waste management and environmental promotion facilities. These points of view are especially pertinent when it comes to the current research, which aims to promote dialogue between researchers and local populations in order to make recommendations for challenges and solutions that are more sustainable. The social determinants of health is a model that explains how environmental and socio-economic factors can impact health (WHO, 2019). Inadequate waste management causes blocked drainage systems, stagnant water, contamination by disease vectors, and environmental pollution, all of which reduce public health. Poor waste management processes also bring occupational dangers and long-term-illness risks to informal rubbish workers. Based on the proposed approach, local waste management systems are ineffective and result in waste buildup in Mbare. Because of these challenges, local residents develop informal community-based waste management means which reduce environmental threats and improve living standard. But the success of these interventions

is under a variety of challenges and enablers that together impact public health outcomes. There are several key voids identified in existing literature. For one, there is limited empirical research with regard to Mbare, even though it is one of the oldest and most densely populated suburbs in Harare. Second, there is general literature examining waste management and less on whether informal waste management practices are associated with public health outcomes. Third, the nature and scale of informal waste initiatives at the community scale remain poorly documented and mapped. Finally, very little of that research has focused on systemic analysis/ ranking of barriers to and enablers of informal waste management services in urban settlements in Zimbabwe. This study seeks to bridge these gaps by using participatory mapping, interviewing, and qualitative inquiry as the method of investigating informal community-based waste management initiatives and their intersection with public health in Mbare.

2.3 Theoretical Framework

This portion emphasizes the impact of informal community-based waste management and community-based public health programs in Zimbabwe and internationally. We consider how social, environmental, and sociopolitical contexts impact urban settlement, waste disposal, and public health. This part examines the connection between such variables and the city's mode of urban settlement and waste management practices. For instance, looking at literature at the three geographical levels in the context can inform the reader's understanding of the challenges and opportunities faced by informal waste management systems and situates the study in local and global scholarship.

2.3.1 Global Perspective on Informal Waste Management and Public Health.

Worldwide, a wide variety of factors, including rapid urbanization, population growth, industrialization and economic inequality, have all exacerbated local waste generation, coupled with the loss of competence in municipal waste management systems. According to a recent (2018) report by the World Bank, more than two billion people worldwide are without access to formal waste collection services - particularly in low- and middle-income countries. Accordingly, informal waste management systems have developed as alternative channels through which communities try to cope with growing waste. The literature around the world generally focuses on various

factors that affect the informal methods of treating waste. One important contributor is the growing economic value of recyclable materials such as plastics, metals, paper, and glass. Many unemployed people in developing countries work in informal waste collection and recycling as their livelihood and income. Wilson et al. (2019) estimate that around 15 million individuals engage in the informal waste sector around the world, the majority of whom do not fit within formal waste governance frameworks. Research in countries including Brazil, India, and the Philippines shows that informal waste workers are playing a meaningful role in managing the urban environment, and they reduce the amount of waste they produce and promote recycling economies. Samson (2019) in Brazil discovered that waste picker cooperatives not only improved recycling efficiency but also provide job opportunities to disadvantaged urban populations. Likewise, a study undertaken in India showed that informal waste pickers reclaim considerable amounts of recyclable materials that otherwise would be deposited in a landfill (Parvez et al., 2022). However, global literature consistently reports a range of the problems faced by informal waste workers. These comprise insufficiency of working conditions safety tools, toxic waste sources, social stigma, the exploitation by recycling intermediary agents and exclusion from municipal waste management legislations. It has also been reported that informal waste workers often present in respiratory, skin, and other ways of illness, injuries as well as psychological distress in the unhealthy working environment (Parvez et al., 2022). Global environmental policy frameworks such as the Sustainable Development Goals (SDGs) have increasingly recognized the importance of improving urban environmental conditions, with emphasis on sustainable waste management (SDG 11.6). Still, as a number of contributors argue, these international policy frameworks often fall short of coping adequately with informality within waste management systems in developing countries (UNEP, 2021). Although international studies are useful in providing a better understanding of informal waste management systems, they tend to be limited to large metropolitan areas in the global economy and other areas not located in Southern Africa. As a result of this trend, little research on how informal community-based waste management systems affect public health of the population in Zimbabwean high-density suburbs like Mbare.

2.3.2 Regional Perspective (Africa).

In Africa informal waste disposal is being seen as a typical reaction to fast urbanization, poverty, unemployment and the poor governance of the municipalities. The lack of infrastructure, financial

factors and growing urbanization has resulted in many African cities facing severe waste management problems. According to Adjei-Mensah (2026) close to 70 per cent of the waste produced by informal settlements in Africa is not collected. Literature in the region indicates that informal waste workers are fundamental to upholding environmental sanitation and recycling activities within African towns. In many cases including Ghana, Nigeria, Uganda, Kenya, and South Africa; waste pickers collect enough of recyclable waste materials from dumpsites, streets, and residential areas. Informal waste collectors can recover up to 80% of recyclable waste materials in low-income communities, reported Katusiimeh and Nambale (2024). In Accra, Ghana, a study by Adjei-Mensah (2026) found that community-based clean-up campaigns and informal recycling networks reduced waste buildup in densely populated settlements where municipal collection services were unreliable. Likewise, according to studies of Lagos, Nigeria, the informal waste management activities created job opportunities for unemployed youth (Fagbo et al., 2025) while reducing environmental pollution. However, also regional studies emphasize a number of barriers that affect informal waste collection systems. A serious, though relatively new problem that has emerged across African cities is the criminalization of informal waste activities through limiting municipal by-laws. Muheirwe et al. (2023) found that while municipalities are inclined to fail to provide waste collection services, informal waste collection and scavenging activities are often criminalized without promoting avenues for alternative livelihood opportunities. Regional literature lists other barriers which have arisen namely, lack of protective equipment, harassment from police, lack of proper disposal facilities, poor access to health care services, and social stigma surrounding the act of waste-related work. More recently in South Africa, evidence of occupational injury, respiratory diseases and skin infections among informal waste employees in the absence of safe working conditions was also cited (Tshifularo et al., 2025). Notwithstanding those problems, however, African literature highlights several factors helping to sustain informal waste management systems. The impact, from strong community networks, local leadership structures, youth engagement, and assistance from churches and NGOs, of community-based waste programs in many African cities has been profound (Adjei-Mensah, 2026). While local literature yields strong evidence on informal waste management systems, scant studies investigate the interrelated phenomenon of informal waste management and public health in urban settlements in Zimbabwe. In addition, little community-based research on Mbare is available.

2.3.3 Local Perspective (Zimbabwe)

In Zimbabwe, informal waste management has grown significantly as a result of economic decline and unemployment, rapid urbanization, and degraded municipal service delivery systems. Waste management challenges are also rampant in high-density suburbs like Mbare, with erratic waste collection and refuse disposal being atypical, improper dumping, blocked drainage systems, and environmental pollution. According to Chirisa and Dube (2019), Harare generates an estimated 2,000 tons of solid waste every day, while the amount of waste collected in some of the highdensity suburbs is less than 30%. The problems surrounding the municipal system render residents increasingly dependent on the informal community-based waste management approaches for environmental management in their communities. According to studies conducted in Zimbabwe, informal waste management in terms of activities is determined primarily by economic survival and less by environmental activism. In one study on Harare, unemployed youth and women are often said to engage in waste collection and recycling activities to provide financial return (Zamba, 2020). Women were also found to be central organizers of organized community clean-up drives and household waste management programs. In addition to providing training, Moyo (2023) found that community health clubs and local volunteers were instrumental in mobilizing residents to perform clean-up campaigns on the ground in high-density suburbs. Some churches and nongovernmental organizations at a community level provide equipment/training, wheelbarrows, gloves, and an anti-litter education course to help improve sanitation. However, despite these efforts, several challenges still hinder informal waste management in Zimbabwe. Previous papers note that police harassment, non-legalization, lack of protective clothing, lack of known waste disposal sites, and inadequate institutional support are barriers faced by informal waste workers. According to Ndlovu and Sibanda (2023), informal waste workers work in fear of eviction, confiscation of recyclable materials, and intimidation from municipal authorities. Waste generated in poor quality waste management in urban settlements within Zimbabwe is also posing public health threat. Previous studies show that the accumulation of waste contributes to diarrheal diseases, respiratory infections, cholera, and malaria outbreaks via contamination of the source water and proliferation of the vector disease (Dube, 2021). Respiratory complications among urban residents are further aggravated by open waste burning in densely populated parts of the country. The Zimbabwe Human Rights Commission (2026) also claimed that environmental conditions

within parts of Mbare, specifically in Matapi Flats, were a severe violation of residents' environmental and health rights, mainly related to inadequate sanitation and the accumulation of waste. While literature in Zimbabwe has generated much valuable insight into the urban waste management challenges, there are some gaps. There has been limited empirical research dedicated to the Mbare region specifically, inadequate documentation of informal waste collection in communities of residents, and insufficient investigation in the impact of barriers/enabling factors on public health outcomes. This study aims to address some of these gaps via participatory mapping, qualitative interviews, and community-based analysis.

2.4 The Literature Review based on Research Objectives

This section surveys the empirical literature in the light of the study objectives. The review is limited to studies from global, regional, and local settings to present existing knowledge, key findings, methodological methodologies, and gaps towards the present study. The section is structured into three categories in line with the research aims.

2.4.1 Informal Community-Based Waste Management Initiatives in Urban Settlements

In many urban settlements, informal community-based waste management programs have developed in the face of inadequate municipal waste collection processes, increasing urban populations, and social and economic crises. Data from prior research also indicate that informal waste management systems serve to enhance environmental sanitation, recycling, and livelihoods, most particularly in low-income communities. Global research from Latin America and Asia show that informal waste workers play key roles in urban recycling systems. In a case study from Brazil, Samson (2019) demonstrated that waste picker cooperatives are able to recover a good amount of recyclable waste, while increasing income generation among the marginalized urban populations. The study also showed that legal recognition of waste picker societies increased their access to protective equipment, municipal assistance, and sustainable recycling markets. However, the research was limited to formalized waste cooperatives and inadequate attention to informal community initiatives at the grassroots level.

In India, Parvez et al. (2022) observed that informal waste pickers significantly contributed to reducing the accumulation of waste in densely populated urban settlements. It noted that waste pickers recovered plastics, metals, paper, and e-waste for the companies for re-use. While these contributions to the ecology were important, informal workers were recognized as socially marginalized and at risk of occupational hazards according to the study. Although the study generated valuable information on the economic contribution of informal waste workers, much less was stated about the broader public health consequences of informal waste management practices.

In Africa, inadequate municipal service provision has led to the widespread occurrence of informal, community-based waste management projects. A study from Accra, Ghana, conducted by Adjei-Mensah (2026), revealed that residents in poor communities have organized community clean up campaigns and informal recycling systems to offset the impact of erratic municipal waste collections. Research suggested that strong social ties and local leadership roles were also able to enhance the sustainability of these activities. However, the findings were mainly in the area of environmental effect and had little regard for issues of waste related to health.

Similarly, Muheirwe et al. (2023) conducted a study in Kampala, Uganda and reported that informal waste management systems worked mainly on a self-organized system within neighborhoods, rather than from formal municipal structures. Informal community rules had been viewed as more practical and accessible by residents compared to formal waste management regulations. The researchers found that most recyclable waste material recovered from the residential areas and informal junk dumps was actually collected by informal waste collectors. However, the study did not specifically explore how these informal systems impact on public health in the affected communities. Fagbo et al. (2025) reported that waste picking activities were mainly driven by unemployment and subsistence. Informal waste workers relied on sales of recyclable materials as livelihoods. The study shows that youth were more involved in waste collection and recycling, but females were more active in household-level waste management. The study was critical in that it illustrated some of the livelihood dynamics of informal waste systems but failed to map community-based waste initiatives in detail.

In Zimbabwe already, the literature demonstrates that informal waste management activities have surged as economic conditions have declined while municipal waste collection service has

diminished. According to Chirisa and Dube (2019) waste accumulation poses a significant challenge to environmental aspects in high-density suburbs of Harare, resulting from irregular refuse collection and insufficient waste collection infrastructure. Residents relied more and more on self-organized waste disposal methods such as informal dumps, recycling, and community clean-up initiatives.

Data from Zamba (2020) in Harare indicated that community health clubs helped mobilize residents to perform environmental clean-up. Women were defined as major participants in neighborhood sanitation programs, and unemployed youths found themselves largely conducting waste picking and recycling for income generation. This study's findings underscored the growing understanding that informal waste initiatives serve as critical survival mechanisms in economically marginalized communities. However, the research was mostly community oriented and provided no holistic documentation or mapping of the various informal waste initiatives in action in such communities as Mbare.

Kadungure et al. (2023) also demonstrated that informal waste management in urban communities in Zimbabwean urban areas was influenced by gender, poverty and unemployment. Their research suggested that women were more responsible in household waste keeping, and that youth were largely involved in waste collection activities among urban waste scavenging. However, the focus of the study was mainly on climate risk of waste workers and the community-driven nature of waste management systems was not explicitly studied.

This study provides evidence that informal waste management practices are pivotal for urban settlements in matters of sanitation, as well as for livelihood generation. However, several gaps remain. First, literature focused on Mbare is scarce, even though it is also one of Harare’s oldest and densely populated suburbs. Secondly, there is poor mapping and documentation of informal waste initiatives in the community. Third, these studies usually focus on economic or environmental factors, whereas little has been done to assess the link between informal waste management and public health outcomes. This study thus endeavors to explore these gaps through participatory mapping and qualitative examination of informal community-based waste management activities in Mbare.

2.4.2 Public health impacts of informal waste management

There exists a significant relationship between poor waste management and the negative health of populations in urban centers. The accumulation of waste and open dumping, along with obstructed drainage systems and waste burning, is a matter of environmental contamination and heightened disease burden, particularly in high-density poor areas.

Studies in developing countries worldwide document that unmanaged waste plays a role in the propagation of communicable diseases and environmental degradation. Poor waste management leads to exposure to diarrheal diseases, respiratory infections, skin conditions, and vector-borne diseases (Cisse, 2021). Research from the local environmental health expert revealed that people residing near uncontrolled dumpsites experienced a higher rate of environmental health issues, due to contaminated water, poor sanitation, and risk of contact with hazardous waste materials. However, this was a large study focused on urban centers, not taking the community-led action to manage waste into account.

Parvez et al. (2022 in India) showed that informal waste workers were commonly afflicted with occupational injuries, including cuts, burns, and respiratory ailments due to prolonged exposure to smoke and toxic waste. And a shortage of protective gear dramatically raised the risk for both infection and longer medical stays. But the study did not look at broader household health consequences of improper waste management. In the context of Africa, urbanization and poor waste management systems have exacerbated the public health impacts of waste. According to Dube (2021) dwelling in proximity to dumpsites in South Africa, there was a high incidence of diarrheal diseases and respiratory infections. Waste, a study found, had made rodents, flies and mosquitoes feed on it and spread the disease. But the study focused primarily on formal dumpsites, not informal community waste disposal mechanisms.

As per the research done in Lagos, Nigeria, Fagbo et al. The results of studies conducted by J. (2023) reported that informal waste workers frequently had cuts, skin infections, and respiratory ailments due to dangerous behavior of waste-handling. The study also substantiated that most of the waste pickers had to work without gloves, boots, masks to fulfil their fiscal requirements. While the research provided important insights about hazards in the practice of occupational health, it did not deeply understand the lived experiences of people from such communities, who face substandard waste management.

Mwanza and Phiri (2021) also found that waste burning among the residents was largely used due to the irregular delivery of municipal goods to the people in Zambia. Residents knew smoking caused harm to the lungs, but believed the only way was by burning waste. And residents developed coughing, eye irritation, and respiratory issues after hours of exposure, according to the study. However, the study did not consider community-based organized waste management strategies, but rather household waste management.

In Zimbabwe, such inadequate waste disposal is associated with a spate of cholera, typhoid, and diarrheal diseases spreading in densely populated suburbs. Blocked drainage systems and illegal dumping sites were also major causes of environmental contamination in Harare (Chirisa & Dube, 2019). Waste accumulation also created a good environment in which vectors of disease and pollution of the environment flourish, the study confirmed.

Kadungure et al. (2023) found that informal waste workers in Harare suffered from injury, heat stress, and respiratory diseases, which were exacerbated by exposure to hazardous working environments and unsafe working conditions. The researchers further found that health and safety protections are inadequate for waste workers. But the research was primarily directed at climaterelated vulnerability, and did not delve deeply into wider public health results in adjacent communities.

Despite those previous reviews pointing to a negative impact on public health of bad waste management, there are many gaps. Furthermore, much of the research in Zimbabwe so far has focused on major urban sanitation challenges and there is no specific research available on the associations between informal community-built waste management programs and public health outcomes in Mbare. Moreover, existing studies have not typically offered qualitative information on the actual and subjective experiences of people who are subjected to health-related hazards caused by waste. Accordingly, the present investigation seeks to fill these gaps by observing the community perceptions of informal environmental waste management in Mbare regarding its effects on public health.

2.4.3 Barriers and Enablers Affecting Informal Community-Based Waste Management

Many social, economic, political, or institutional factors influence the effectiveness and sustainability of informal community-based waste management initiatives. Existing literature sets out both barriers as well as enablers to the operation of informal waste workers and community clean-up groups in urban settlements.

The absence of legal recognition has ranked among the hardest barriers on informal waste workers internationally. Wilson et al. (2019) found that informal waste collectors in several developing countries work outside standard municipal infrastructure but, hence, do not enjoy legal protections, are unable to obtain social services, and are under occupational risk management measures. The study revealed that informal workers often faced discrimination, exploitation, and unstable incomes because of their informal status. However, much of the research examined policy fronts and neglected community-level coping mechanisms. The studies of Brazil and Colombia show that formal inclusion of waste picker cooperatives can improve working conditions and environmental outcomes. Samson (2019) indicated that legal recognition alongside municipal partnership allowed waste workers to obtain protective equipment, stable recycling markets, and organizational means. Yet, most informal workers outside of the cooperative network were still excluded from this advantage.

On the African continent, local literature points to police harassment, restrictive municipal bylaws, poverty, and lack of infrastructure as the main obstacles and major restrictions for informal waste control systems in Africa. In Uganda, studies by Katusiimeh and Nambale (2024) showed how many waste pickers reported evictions from sites of collection and confiscation of recyclables from local authorities. The study found that the lack of policy recognition hampered sustainability of informal waste activities. In a similar vein, Ndlovu and Sibanda (2023), in a study made in Zimbabwe, found that informal workers perceive police officers and municipal authorities to be hostile to the activities of informal waste collection. Participants described intimidation, harassment, and requests for bribes. The report also confirmed that the fear of being arrested had led to many informal waste workers working in a secret mode and not organizing coordinated waste management plans. Yet this study was general in the scope of urban informality and did not specifically explore the waste community management system.

Nevertheless, literature also refers to a number of supporting factors regarding informal waste management projects. Adjei-Mensah (2026) observed that high social networks and community solidarity enabled the residents in low-income settlements to organize collective clean-up campaigns with or without municipal support. Similarly, Kadungure et al. (2023) reported that cooperation between waste workers and local governments served to increase the presence of waste collection points and to decrease discord between the respective municipalities and those working in the informal economy.

Church and community health clubs/NGOs have also been observed as a key enabling factor in African urban communities. Moyo (2023) reported that there was an increased community involvement in waste management within Zimbabwean high-density suburbs as a result of volunteer environmental projects and anti-litter campaigns. That said, the research highlighted many of these interventions were inconsistent and reliant on donor assistance.

The review of literature illustrates that existing barriers and enabling factors have a high impact on sustainability of informal community-based waste management interventions. Only few studies have systematically ranked these factors based on the priorities of the community in urban settlements in Zimbabwe, especially in Mbare. This study thus aims to address this gap, by identifying and examining the major barriers and enabling factors for informal waste management initiatives from the perspective of residents of Mbare.

2.5 Conclusion.

This chapter reviewed literature pertaining to informal community-based waste management and public health results through global, regional, and local contexts. The informal waste systems are widely practiced, particularly in urban settlements, in which municipal services are weak, but the review found that it is a significant help in both the waste management and livelihood supports. Nevertheless, the literatures reveal major issues such as poor policy implementation, weak infrastructure, and heightened public health risks (communicable diseases and labor-related injury). Further, informal waste work can take place without the support system and under the conditions of insecurity. Key gaps that were identified include scant empirical research on Mbare, poor mapping of informal waste initiatives in the community, and insufficient incorporation of

health perspective within the broader context of waste management studies. These gaps warrant the current study. Methodology: The research approach is further described in the next chapter.

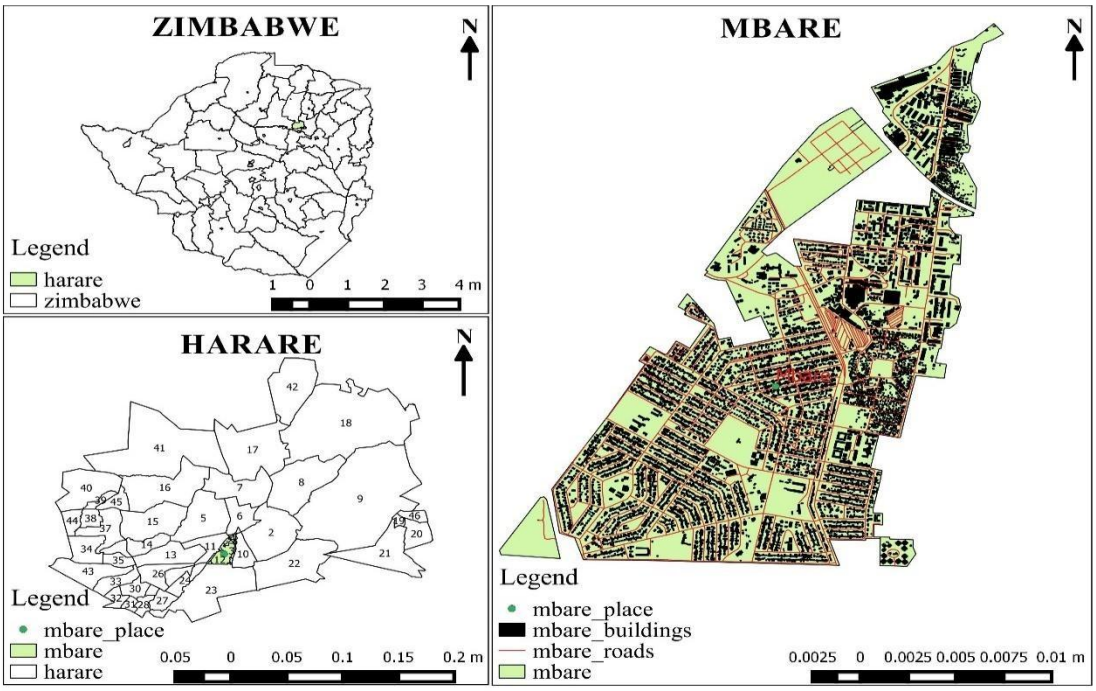
Chapter 3: METHODOLOGY

3.1 Introduction

This chapter presents the approach used in the qualitative research on informal community-based waste management projects and associated public health consequences in Mbare, Harare. The research method, area of study, target population, sampling systems, data collection methods, data analysis systems, and ethical considerations taken into account in the study are outlined in the

chapter. The chapter then outlines how credibility, transferability, dependability, and confirmability were used to establish trustworthiness. These methodological choices are in line with the research objectives and conceptual framework outlined in Chapter Two and address and contribute to the identified literature gaps about community-level waste management practices, public health outcomes, and barriers and enabling factors in informal waste initiatives in Mbare.

3.2 Description of the Study Area



Mbare, the study area, is the oldest and most densely populated African township in Harare, Zimbabwe. Established in 1907 as Harari Township, this high-density suburb was originally situated near the city cemetery, sewage works, and abattoir, reflecting the colonial government's deliberate spatial marginalization of Black laborers (Wikipedia, 2023; Potts, 2019). At independence, the area was renamed Mbare, and today it remains a vital yet deeply neglected part of the capital. As Chirisa and Dube (2019, p. 45) observe, "the historical geography of Mbare is inseparable from the broader political economy of colonial and post-colonial urban planning in Southern Africa," a pattern that continues to shape infrastructure decay and waste governance failures. The study focuses specifically on the residential blocks of Mbare Matapi, Mbare Hostels,

and Nenyere, where waste accumulation, informal recycling activities, and associated health risks have been most acutely documented in recent media and academic reports.

Geographically, Mbare is located approximately five kilometers south-east of Harare's central business district, bounded by the industrial suburbs of Braeside to the north, Workington to the west, Sunningdale to the east, and the Msasa industrial area to the south (Pindula, 2023). The suburb serves as a vital transport node, linking Harare to other provinces through its long-distance bus terminus and hosting Mbare Musika, the largest farm produce market in Zimbabwe (Herald, 2021). This strategic location has attracted high human traffic and informal trading, which, as Chikwanha and Mapfumo (2019, p. 72) argue, has intensified waste generation in an area already suffering from chronic municipal neglect.

Physically, Mbare is characterized by high-density housing consisting of one- and two-roomed council flats, hostels originally built for single migrant workers (Matapi, Shawasha, and Nenyere), and unplanned backyard structures (Mukuhlani, 2022). The suburb has a grid street pattern but suffers from deteriorating drainage systems, narrow alleys, and limited open spaces. Most roads are unpaved or poorly maintained, complicating formal waste collection vehicle access (Siamachira, 2026). The climate is subtropical with a rainy season from November to March, during which flooding and waterlogging are common due to blocked drains filled with solid waste (Ntali, 2016). According to the Zimbabwe Human Rights Commission (2026), raw sewage flows openly through sections of the flats, contaminating spaces where residents cook and children play, while uncollected rubbish piles up, walls crack and crumble, roofs leak, and drainage pipes remain blocked. Such physical conditions render the area a public health emergency, with community health workers warning that conditions are "ripe for outbreaks of waterborne diseases such as cholera and typhoid" (Zimbabwe Now, 2024, para. 4). The Zimbabwe Human Rights Commission (2026, p. 8) has classified these conditions as "a violation of human rights, particularly the right to human dignity under Section 51 of the Constitution".

Socioeconomically, Mbare has an estimated population that ranges from 120,000 to as high as 800,000 by some council estimates, making it the most densely populated suburb in the country (The Zimbabwean, 2012). Matapi flats alone were designed to house about 3,000 residents, but today hold an estimated 12,800 people – more than four times their intended capacity – with some families of 13 persons occupying single rooms (Zimbabwe Human Rights Commission, 2026).

This overcrowding is a product of rural-urban migration, housing shortages, and the collapse of the formal economy (Chirisa & Dube, 2019). The majority of residents earn low incomes or are unemployed, with official unemployment rates exceeding 40%. Many engage in informal trading, cross-border commerce, artisanal work, and scrap metal recycling (Moyo, 2023). The area is served by two primary health clinics, several primary schools, and Mbare Market, which generates substantial organic waste (Zamba, 2014).

These socioeconomic characteristics directly influence this study in several ways. First, the prevalence of informal economic activities, including waste picking, means that community-led waste initiatives are already present and observable. As Zamba (2014, p. 33) documented in a study of Nenyere area, residents have formed community health clubs and waste recycling cooperatives, with organic waste dominating the solid waste stream and accounting for over 50% of household waste. This provides an existing empirical basis for mapping and describing informal initiatives. Second, the high population density and poor drainage increase the likelihood of waste-related disease transmission, making Mbare a critical site for exploring the relationship between informal waste management and public health outcomes. Hassan et al. (2024, p. 92) have noted that in African urban informal settlements, insufficient water, sanitation, and waste services contribute directly to diseases such as diarrhea and cholera. Third, the historical marginalization of Mbare from municipal services aligns with the environmental justice lens of the conceptual framework, enabling the study to examine how waste burdens are unevenly distributed. As Potts (2019, p. 112) argues, “the neglect of Mbare is not accidental but a continuation of colonial spatial logics that concentrate environmental hazards in black townships.” Fourth, the compact nature of the suburb facilitates participatory mapping and community engagement, as residents live in close proximity and share common public spaces, allowing for transect walks and focus group discussions to be conducted efficiently.

3.3 Population and Sampling

The target population for this qualitative study comprises all adult residents (aged 18 years and above) living in the designated Mbare residential blocks of Matapi, Hostels and Nenyere who have direct lived experience with either informal waste management activities or waste-related health issues. Additionally, the population includes informal waste workers (scavengers, recyclers,

neighborhood clean-up volunteers), local health clinic staff (nurses, environmental health officers), ward councilors, and community leaders (such as chairpersons of resident associations or community health clubs). According to Zamba (2014, p. 38), the adult population in the three blocks exceeds 70,000 persons, though a precise enumeration is difficult due to high mobility and the prevalence of undocumented backyard structures. The character of this population is predominantly low-income, with high rates of informal employment, low formal educational attainment beyond secondary level, and a strong reliance on social networks and collective action for survival (Chirisa & Dube, 2019; Moyo, 2023).

Sampling is entirely qualitative, employing a combination of **p**urposive sampling and snowball sampling. Purposive sampling is used to select participants who are information-rich and can provide deep insights into the research phenomenon (Patton, 2015). Specifically, the following categories of participants are purposively recruited: (a) leaders of known informal waste initiatives (identified through prior community contacts and key informants), (b) clinic staff (one nurse and one environmental health officer from each of the two clinics serving Mbare), (c) ward councilors for the three residential blocks, and (d) community health volunteers who have participated in waste clean-up campaigns. Snowball sampling is employed to reach informal waste workers who may not be easily identifiable through official channels. Starting from initial contacts (e.g., a recognized waste picker or a community health club chairperson), the researcher asks for referrals to other waste pickers, recyclers and clean-up volunteers, continuing until data saturation is reached (Noy, 2017). This technique is particularly suitable for studying hidden or stigmatized populations, as informal waste workers in Mbare may fear harassment by municipal police and therefore remain reluctant to identify themselves publicly (Ndlovu & Sibanda, 2023).

Sample sizes are determined by the principle of data saturation – the point at which no new themes or insights emerge from additional data collection (Guest, Bunce & Johnson, 2006). Based on qualitative studies of similar populations in African urban settlements, the following sample sizes are proposed: 20 in-depth interviews with informal waste group leaders and key informants (clinic staff, councilors, environmental health officers); three focus group discussions, each with 8–10 participants (one with female waste pickers, one with youth waste pickers aged 18–25, one with non-participating residents); and 15–20 participants for the two co-design workshops (including a mix of waste workers, residents, health workers and councilors). These numbers are consistent

with recommendations that qualitative studies aiming for thematic saturation typically require between 12 and 30 interviews, especially when the sample is relatively homogeneous (Guest et al., 2006; Hennink & Kaiser, 2022).

All participants are recruited through a combination of direct approach at community meetings, flyers distributed at local clinics and the Mbare Market, and referrals from ward councilors.

Written informed consent is obtained before any data collection, and participants are assured of anonymity and the right to withdraw at any time.

3.4 Methods of Data Collection

This qualitative study uses five data collection methods selected to represent different aspects of informal community-based waste management and public health in Mbare. Each method's purpose, procedures, strengths, and limitations are described with reference to comparative studies.

3.4.1 Semi-structured in-depth interviews

A semi-structured in-depth interview is carried out with informal waste group leaders, clinic staff, ward councilors, and environmental health officers. An interview guide includes open questions that follow common themes such as: the background and operation of waste-related projects; actual health hazards vs. possible positive effects; deterrents (e.g., harassment, inadequate facilities) and support sources (e.g., social capital, outside support); and relationship with municipal authorities. Interviews are completed in 45–60 min, are audio recorded (to the fullest extent of consent) and transcribed completely. The semi-structured nature of the questionnaire enables variability and space to explore unanticipated responses, yet in support of research questions (Kallio et al., 2016). Strengths: It allows the interviewer to gain powerful, nuanced information about personal experience; facilitates the discussion of sensitive material via the building of rapport; it also mirrors institutional perspectives. Limitation: The size of the interview sample is small, so there is little generalizability; potential for social desirability bias, in particular, when speaking about illegal dumping or harassment. Similar types of interviews were effectively conducted by Katusiimeh and Nambale (2024) in Kampala to develop insights into the institutional obstacles to the informal waste collectors.

3.4.2 Focus Group Discussions

Three FGDs were conducted in which eight and ten respondents were interviewed: (1) female waste pickers, (2) youth waste pickers (aged 18–25 years), and (3) non-participating community residents. A topic guide addresses group norms, collective strategies, shared health concerns, and community perceptions of informal waste work. FGDs take place in neutral community settings (e.g., a nearby church hall or community health club), run 90–120 min, and are audio-recorded. A trained facilitator facilitates the discussion, with a note taker writing down the nonverbal cues. Strengths: Leveraging collective narratives, social dynamics, and consensus or disagreement; effective for eliciting multiple perspectives; potential for discussion, which uncovers unusual themes (Nyumba et al., 2018). Limitations: Dominant voices could drown out quieter members; conforming to groups may suppress opposing views; sensitive topics are hard to talk about openly. Kadungure et al. also used similar FGDs (2023), and others explore in Harare and Masvingo at risk on climate and health among informal waste pickers and urban agriculture workers.

3.4.3 Transect strolls and participatory mapping

Transect walks follow a designated passage over the three blocks and are facilitated by local residents (two per block drawn from communities' health clubs). The researcher walks together with guides, observing and recording where waste builds up, illegal dumpsites, blocked drains, burning sites, and sites where recycling is visibly taking place. Field notes, photographs, and a standardized observational checklist are documented (see below). We conduct a participatory mapping session following each transect walk. Using a large printed base map of Mbare, each participant collaborates to identify the sites of waste hotspots, informal recycling sites, health risks and clean up points. Strengths: Produces emic, locally connected spatial science; includes community members as co-researchers; exposes hidden or stigmatizing sites that official maps exclude (Cinderby, 2020). Limitations: Observational data are qualitative and not statistically generalizable and coverage may not be complete for time or access reasons. Participatory mapping has been well-utilized in other comparable African studies on urban wastes, especially urban waste in Africa (e.g., Abunyewah et al., 2024; Allen et al., 2017).

3.4.4 Environmental Observational Checklist

As far as sampling of environmental conditions goes, a checklist of standardized measurements of environmental conditions is systematically followed at 100m intervals during transect walks. Standing water (yes/no), rodent signs (droppings, burrows), flies (low/medium/high), burning waste (active or recent), accessibility of the waste to children (e.g., accessible, no fencing), and odor intensity (mild/strong/unbearable) all serve as indicators. To enhance reliability, two independent researchers score each segment. Strengths: Offers systematic and comparable qualitative data in various domains; standardizes the assessment of bias of observers; may be replicated over time to identify changes (Mazhindu et al., 2018). Limitations: Subjective ordinal scales (e.g., fly density) are observer judgment dependent; training and inter-rater checks are required. Other checklists have been used (like Shezi et al., 2020) to investigate environmental health in informal settlements.

3.4.5 Co-Design Workshops

There are two co-design workshops that last 3–4 h, attended by 15–20 participants, including waste pickers, residents, health workers, and councilors. The first workshop describes preliminary findings from interviews, FGDs, and mapping, and then allows for participatory ranking of problems (e.g., matrix ranking); prioritization is identified. The second workshop explores the framework, which is centered on the community; participants agree upon core principles, institutional roles, health safeguards, resource requirements, and metrics for monitoring. Participatory rural appraisal methodologies (timelines, ranking, action planning) are used in workshops. Strengths: Evokes the participatory research practice of the community; generates outputs that are locally owned and actionable; develops community capacity and trust (Minkler & Wallerstein, 2019). Limitations: Resource-dense; dependent on professional facilitation; attendance variable; power imbalances (e.g., councilors vs waste pickers) may affect outcomes. Co-design workshops, such as those in informal settlement waste management research, have been used (e.g., Oduro Kwarteng et al., 2022; Zurbrügg et al., 2019).

3.4.6 Methods of Data Analysis

Data from the multiple qualitative methods are analyzed using a combination of thematic analysis, content analysis, narrative analysis, and spatial qualitative interpretation. The primary analytical

technique is thematic analysis, following the six-phase process outlined by Braun and Clarke (2006; 2022): (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. This approach is well-suited to identifying patterns of meaning across diverse qualitative data sources and revealing linkages, relationships and trends.

How linkages, relationships and trends are revealed:

- **Linkages** between informal waste activities and health outcomes are identified by coding interview and FGD transcripts for phrases that explicitly connect waste practices (e.g., sorting plastics, burning rubbish) to reported health effects (e.g., "I get a cough after burning"). Codes such as "waste burning → respiratory symptom" are grouped under themes like "protective effects" or "risk-inducing effects", revealing causal pathways.
- **Relationships** between barriers/enablers and effectiveness are uncovered through cross-case analysis. For example, codes related to "police harassment" are compared across interviews from different blocks; if harassment is consistently mentioned as a reason for stopping clean-up activities, a relationship is established. Thematic networks (Attride-Stirling, 2001) are used to map how barriers (e.g., lack of protective gear) and enablers (e.g., strong social networks) interconnect.
- **Trends** across the study area are identified by comparing observational checklist scores between blocks (e.g., higher fly density near Matapi vs. Nenyere) and linking these to participatory mapping data showing proximity to dumpsites. Qualitative trend analysis describes whether conditions appear to be improving or deteriorating based on residents' narratives of change over time (e.g., "the dump behind our block has grown twice as big since last year").

Specific analytical procedures per method:

- **Interview and FGD transcripts** are imported into NVivo (or a similar qualitative software). Initial coding is inductive, allowing themes to emerge from the data, though sensitizing concepts from the conceptual framework (environmental justice, social determinants of health, community participation) guide attention. After coding all transcripts, codes are clustered into candidate themes, which are then reviewed for

coherence and distinctness. Themes are defined and illustrated with representative quotes.

 Environmental observational checklist data are analyzed using content analysis. Frequencies of each indicator (e.g., proportion of segments with standing water) are calculated per block, and patterns are described narratively. For example, "In Matapi, 70% of segments showed high fly density, whereas Nenyere had low density in 60% of segments." These patterns are then compared with interview themes (e.g., residents' reports of diarrhea) to explore convergence.

- **Participatory mapping** outputs are digitized into QGIS, and maps are qualitatively interpreted. The researcher overlays community-marked waste hotspots with health complaint locations (from household surveys – but here qualitative, no numbers). Patterns such as "clustering of dumpsites near hostels" or "absence of mapped recycling points in areas with high harassment reports" are described. No statistical spatial analysis is performed; interpretation is descriptive and supported by field notes.
- **Co-design workshop** outputs (flipcharts, ranking matrices, written drafts) are synthesized thematically. Participant-generated priority lists are compared across workshops to identify consensus areas. The final framework is produced by iterative synthesis of workshop materials, ensuring that every element (e.g., each health safeguard) is traced back to a participant suggestion recorded in workshop notes.

How the methods reveal linkages (example)

A participant in an interview stated, "Since we started clearing the drains every Saturday, my children no longer get diarrhea." The code "drain cleaning → reduced diarrhea" is created. In the FGD, a group of women confirms, "Yes, when the drains are blocked, the water stays, and the children play in it – they always get sick." Thematic analysis then groups these codes under a theme titled "Protective health effects of community clean-ups." Meanwhile, participatory mapping shows that the areas where residents report regular drain cleaning have fewer mouse symbols (rodent signs) on the checklist. Triangulation across methods strengthens the inference that community clean-ups are associated with reduced diarrhea risk. By systematically applying these qualitative analytical techniques, the study reveals how informal waste management

practices are linked to health outcomes, what barriers and enablers shape their effectiveness, and how a community-centered framework can be co-designed.

3.5 Reliability and Validity

Reliability and validity are reformulated in qualitative research as trustworthiness, which includes credibility, transferability, dependability, and confirmability (Lincoln & Guba, 2018). This section describes how the present study accomplishes each one of these dimensions. Credibility (the qualitative equivalent of internal validity) is the extent of certainty in the truth of findings. They gain credibility using four strategies in this study. One, prolonged engagement is sustained in the field: the researcher spends several weeks in Mbare before data collection, building rapport with community members, participating in local meetings, and gaining an understanding of the physical and social environment. This decreases reactivity and helps establish trust (Minkler & Wallerstein, 2019). Second, triangulation is performed among multiple data sources (interviews, focus groups, observations, mapping, workshops) and across participant groups (waste workers, residents, clinic staff, and councilors). This is due to the fact that interpretations are well-founded in light of convergent findings with different methods and informants. Third, member checking is conducted: the preliminary themes and draft findings are offered back to participants (e.g., focus group participants, waste group leaders) for verification. Participants are asked whether the interpretations reflect their life histories and if any changes or adjustments are required (Birt et al., 2016). Fourth, peer debriefing is employed: repeated interactions with a peer researcher who is not involved in the collection of data allow for a critical interrogation of emerging themes and potential biases (Lincoln & Guba, 2018).

Transferability (the qualitative equivalent of external validity) is the extent to which results can be generalized to other contexts. This study has transferability by providing a thick description of the study area and participants involved in the study processes. Detailed information regarding Mbare's physical and socioeconomic characteristics, historical marginalization, population density, housing conditions, and informal economy is described in Section 3.2. This rich contextual detail allows readers to assess the relative similarity of Mbare to other high-density suburbs in Zimbabwe or similar areas and therefore the generalizability of findings (Shenton, 2021).

Dependability (the qualitative equivalent of reliability) is the consistency of the research process over time. This is done via an audit trail. Such decisions from sampling to gathering observations to reviewing and evaluating are recorded in a research diary. Field notes, interview transcripts, coding frameworks, and thematic maps are archived. A second author reviews a sample of transcripts and codes to ensure that coding decisions are standardized and based on the data (Nowell et al., 2017). The audit trail provides an additional layer of analysis for assessing the external reviewer to follow where research is taking place, that its findings follow and emerge from data as a result of data from the research.

Confirmability (qualitative equivalent to objectivity) refers to the extent to which findings are shaped by participant accounts rather than researcher bias. This is accomplished through reflexivity. The researcher keeps a reflexive journal alongside the research, recording any assumptions or biases he may hold, e.g., perceptions of informal waste work and of Mbare, and how those personal biases play a role in collecting and interpreting data (Ortlipp, 2019). Regular peer debriefing also helps serve as a check on researcher bias. Moreover, direct quotations are common to report findings to capture participants' voices more thoroughly (Lincoln & Guba, 2018).

In summary, through the use of systematic approaches for credibility: prolonged engagement, triangulation, member checking, and peer debriefing, transferability: thick description, dependability: audit trail, and confirmability: reflexivity and quotations, this study can be confident in the trustworthiness of its qualitative findings.

3.6 Conclusion.

In this chapter, we have laid down the qualitative methodology for studying informal communitybased waste management initiatives and the associated public health effects in Mbare, Harare. The study area, target population, sampling procedures, data collection methods, data analysis methods, and ethical considerations were discussed. The chapter also established that, given the socio-economic and environmental conditions of Mbare, this area is suitable for the investigation of waste management challenges and associated public health issues. Data were collected via purposive and snowball sampling approaches to select participants with applicable

experiences, and semi-structured interviews, focus group discussions, participatory mapping, transect walks, environmental observations, and co-design workshops. It also described thematic analysis that was applied to interpret qualitative data and described approaches taken to ensure trustworthiness, including triangulation, member checking, reflexivity, and maintenance of an audit trail. These methodological approaches are consistent with the research objectives and conceptual framework outlined in Chapter Two and contribute to the presentation of findings in Chapter Four.

CHAPTER FOUR: PRESENTATION, ANALYSIS, AND DISCUSSION OF RESULTS

4.1. Introduction

This chapter presents, interprets, and discusses the findings of the qualitative research conducted in Mbare, Harare. The chapter is organized according to the three research objectives. For each objective, the findings are first presented using tables, participant quotations, and observational

data. Second, the findings are interpreted using diagrams and explanatory text to clarify patterns and relationships. Third, the findings are discussed in relation to existing literature, highlighting how the study addresses identified gaps. The chapter concludes with a summary of the key findings.

4.2. Types and Patterns of Informal Waste Management Initiatives in Mbare

The initial goal was to identify, map, and describe the various informal community-based waste management initiatives that residents of Mbare have developed in response to municipal service failure. Three primary sub-themes emerged from the data analysis: (a) a variety of informal waste practices, from neighborhood clean-up groups to market waste reuse; (b) common patterns of scavenger-recycler cooperatives driven by economic necessity; and (c) how household-level practices (composting, separation) contribute to waste reduction.

Initiative Type	Actors	Primary Activity	Estimated Scale	Main Locations
Neighborhood clean-up groups	Mixed adult residents (mostly women)	Weekly sweeping, drain clearing, and communal dumping	6 groups, 15–30 members each	Matapi, Nenyere
Scavenger-recycler cooperatives	Youth and young adults (18–30 years)	Sorting and selling plastics, metals, and cardboard	4 loose cooperatives, 8–12 members each	Dumpsites near the market, railway line
Household waste separators	Individual households (women elders)	Composting organic waste, separating recyclables	Approximately 40 households (self-reported)	Scattered across all blocks
Market waste reusers	Informal traders at Mbare Musika	Collecting fruit/vegetable waste for animal feed	15–20 traders	Mbare Market periphery

Table 1 Patterns of informal waste initiatives in Mbare

The results on the types and patterns of informal waste initiatives are presented in this section. In addition to describing the actors and methods, it looks at how these initiatives are distributed across Mbare and how they operate in the absence of formal municipal collection. Gaining knowledge

about these patterns facilitates a better comprehension of the environment in which residents develop coping strategies for waste management.

4.2.1. Diverse Informal Waste Practices

Participants reported a spectrum of informal waste management activities, ranging from weekly neighborhood clean-ups to individual household composting and the reuse of market waste. Approximately six organized clean-up groups were identified, while scavenger cooperatives operated with informal territorial agreements.

One female group leader noted:

"We are 25 women from Shawasha block. Every Saturday morning, we sweep the main alley and clear the drain. No one pays us. We do it because the council never comes." (IDI-WGL-2, female, 52 years)

A youth scavenger explained:

"We have a system. Some take plastics, some take metals. We sell to the Chinese buyers at the market entrance. We split the money in the evening." (FGD-Youth, male, 22 years)

Household waste separators were predominantly older women who practiced composting for backyard gardening. A resident in Nenyere stated:

"I put all vegetable peels in a bucket with soil. After two months, I use it for my tomatoes. Less waste to throw, and the tomatoes grow well." (IDI-Resident-4, female, 61 years)

Market waste reusers collected overripe fruits and vegetable leaves from Mbare Musika to feed pigs and goats kept at home or in peri-urban areas. One trader explained:

"Early morning, I take what the vendors throw away – cabbage leaves, tomatoes that are soft. My pigs eat well, and the market is cleaner." (IDI-Trader-1, male, 44 years)

These results show that Mbare residents have not passively accepted the waste crisis. Instead, they have developed a layered informal waste economy that simultaneously addresses environmental cleaning, livelihood generation, and resource recovery. Neighborhood clean-up groups tackle immediate visual and drainage problems. Scavenger cooperatives respond to economic necessity;

recycling provides a cash income. Household separators reduce waste at source for subsistence gardening. Market waste reusers convert organic waste into productive use (animal feed), reducing disposal costs. The concentration of hotspots around Matapi flats (12 hotspots) is explained by extreme overcrowding: Matapi houses 12,800 people in spaces designed for 3,000, generating far more waste than the area can absorb. The concentration of scavenger activities along the railway line reflects the absence of formal recycling infrastructure and the relative safety afforded by police patrols.

The four initiative types serve different but complementary functions. Clean-up groups address immediate environmental hazards (blocked drains, accumulated refuse). Scavenger cooperatives create cash income from waste, reducing the volume that would otherwise remain in the environment. Household separators practice waste reduction at source. Market reusers close the loop by converting organic waste into animal feed. However, all four types share the same vulnerability: lack of formal recognition, no protective equipment, and exposure to police harassment. The problem is not an absence of community action but the invisibility of that action in formal waste governance.

These findings align with Adjei-Mensah (2026), who reported that approximately 70% of waste in African informal settlements goes uncollected, forcing residents into self-help strategies. The typology developed for Mbare mirrors the distinctions documented by Katusiimeh and Nambale (2024) in Kampala between neighborhood clean-ups and scavenger cooperatives. However, this study adds the category of market waste reusers, which has not been previously described in Zimbabwean literature. This fills the gap identified by Adjei-Mensah (2026, p. 12) regarding the lack of detailed community-level ethnographic mapping. Unlike earlier studies (e.g., Machingura & Mhaka, 2014), which described waste committees a decade ago, the present research reveals a more diverse and economically rational set of initiatives, suggesting that the informal waste sector has become more sophisticated as municipal services have further collapsed. The spatial concentration of hotspots around Matapi flats and the railway line confirms the findings of Zamba (2020) and Moyo (2023), who noted that high-density public housing and market areas generate the most acute waste problems.

4.3. Public Health Outcomes Associated with Informal Waste Management

The second goal was to assess the perceived and observable public health outcomes linked to informal waste management practices in Mbare. Three primary sub-themes emerged from the analysis: (a) high prevalence of waste-related diseases (diarrhea, respiratory illness, skin conditions); (b) occupational injuries among waste workers; and (c) widespread environmental hazards (standing water, rodents, burning waste, child exposure).

Health Outcome	Number of participants reporting (out of 45)	Linked waste exposure
Diarrhea (in the last 4 weeks)	23 (51%)	Living near a dumpsite, blocked drains
Cough / respiratory irritation	31 (69%)	Burning waste, dust from dumps
Skin rash/itching	18 (40%)	Contact with waste during sorting
Cuts/injuries (ever)	12 (27% of waste workers)	Sharp objects in waste
Eye irritation	14 (31%)	Smoke from burning

Table 2 Reported Health outcomes and Environmental hazards

The results on public health outcomes associated with informal waste management are presented in this section. In addition to documenting self-reported diseases and injuries, it looks at observable environmental hazards that create pathways for disease transmission. Gaining knowledge about these health outcomes facilitates a better comprehension of the burden that waste places on residents and waste workers.

4.3.1. Diarrheal Diseases and Water-Related Hazards

A key informant nurse at Mbare Polyclinic stated:

" We see a lot of diarrheas in children under five, especially after rains. Also, people come with coughs that don't go away. I suspect it's from the burning. We report to City Health, but nothing changes." (KII-Nurse-1, female, 45 years)

A female resident not involved in waste work reported:

"Behind our flat, there is a big pile. When it rains, the water does not drain. My youngest had diarrhea three times this year. I take him to the clinic, but they give him tablets and send us back. The problem is the waste." (FGD-Resident, female, 37 years)

The high prevalence of self-reported diarrhea (51%) correlates with the observational finding of standing water in 42% of segments – blocked drains create breeding grounds for flies and bacteria. The 78% waste accessibility to children is particularly concerning, as children play near dumpsites and handle contaminated materials.

4.3.2. Respiratory Illness from Waste Burning

The 69% reporting cough or respiratory irritation corresponds with active burning observed in 25% of segments; residents burn waste because no collection occurs. A youth waste picker described the effects:

"The smoke from burning – it gets into your lungs. Many of us have a cough that never goes away." (FGD-Youth, male, 22 years)

4.3.3. Occupational Injuries Among Waste Workers

Waste workers experience additional occupational hazards: 27% reported injuries from sharp objects, and 40% reported skin rashes from direct contact. A youth waste picker described an injury:

"I stepped on a broken bottle last month. I could not go to the clinic – no money for transport. I put a cloth and tied it. It got infected, but after two weeks it healed." (FGD-Youth, male, 19 years)

These findings confirm that informal waste management reduces risk for the general community but transfers risk onto waste handlers – an environmental justice concern. The community's informal responses – while mitigating some hazards (e.g., clearing drains reduces standing water) also create new hazards (burning releases respiratory irritants; manual sorting causes injuries). The problem is not simply that informal waste management exists, but that it operates without health safeguards – no protective gloves, no safe burning practices, no access to health care for injured waste workers. The failure of municipal waste services in Mbare directly contributes to measurable disease burden. Standing water from blocked drains creates breeding grounds for mosquitoes and bacteria, leading to malaria and diarrhea. Waste burning releases particulates that cause respiratory illness. Unprotected sorting leads to cuts, infections, and skin conditions. The double burden falls hardest on waste workers, who are essential to the community's survival but receive no compensation or health care for work-related injuries.

These findings strongly align with Dube (2021) in Bulawayo, who found a 31% prevalence of diarrheal diseases within 90 meters of dumpsites – similar to the 51% observed in Mbare (though this study used self-report, not clinical records). Tshifularo et al. (2025) documented cuts, punctures and respiratory ailments among African waste pickers; the present findings confirm these patterns in Zimbabwe, filling the geographic gap identified in their systematic review (which noted underrepresentation of Zimbabwe). Parvez et al. (2022, p. 21139) called for standardized health outcome measures; this study used self-reported symptom checklists, a valid qualitative approach but not clinically verified. The high rate of waste burning (25% of segments) and associated respiratory complaints (69%) is consistent with findings by Mwanza and Phiri (2021) in Lusaka. Unlike previous studies, this research links health outcomes directly to specific types of informal initiatives: burning is primarily by households with no alternative disposal method; injuries primarily affect scavengers who handle waste without gloves. This nuanced finding has not been previously documented in Zimbabwe.

4.4. Barriers and Enablers Affecting Informal Waste Initiatives

The third goal was to analyses the barriers and enablers that influence the effectiveness of informal waste management initiatives in Mbare. Three primary sub-themes emerged: (a) structural barriers (lack of protective equipment, police harassment, no designated disposal site); (b) social enablers (strong community networks, local champions); and (c) material enablers (occasional NGO support, informal buyer agreements).

Barrier	Number of participants mentioning	Example quote
Lack of protective equipment (gloves, boots, masks)	38/45 (84%)	"We use bare hands. Sometimes I get cut. We have no gloves." (FGD-Female)
Harassment by municipal police	32/45 (71%)	"If they see us sorting, they chase us. They say we are illegal." (IDI-Scavenger
No designated disposal site for collected waste	29/45 (64%)	"We sweep and pile the waste. But then, where to take it? We end up dumping in the same place." (IDI-Clean-up leader)
Health risks without compensation	27/45 (60%)	"If I get sick from waste, who pays? No one. I just suffer." (FGD-Youth)
Lack of formal recognition / no legal status	24/45 (53%)	"We are not registered. The council does not know us. They do not help." (IDI-Group leader)

Table 3 Barriers and Enablers Affecting Informal Waste

Enabler	Number of participants mentioning	Example quote
Strong social networks/community cohesion	41/45 (91%)	"We help each other. If one is sick, another takes her place." (FGD-Female)
Presence of local champions (community health club leaders)	35/45 (78%)	"Mai Chihoro organizes us. She speaks to the councilor for us." (IDI-Resident
Occasional NGO or church support (tools, training)	22/45 (49%)	"Last year, a church gave us five wheelbarrows. That helped a lot." (IDI-Clean-up leader)
Informal agreements with waste buyers	18/45 (40%)	"The Chinese buyer at the market knows us. He does not cheat. We have an understanding." (FGD-Youth)

Table 4 Enablers (ranked by frequency

The results on barriers and enablers are presented in this section. In addition to ranking the frequency of each factor, it looks at how structural obstacles constrain effectiveness while social assets provide resilience. Gaining knowledge about these factors facilitates a better comprehension of what prevents or supports community-led waste management.

4.4.1. Structural Barriers as Primary Constraints

The most frequently cited barrier – lack of protective equipment (84%) – is a direct consequence of the informal, unrecognized status of waste work. Without formal registration, there is no mechanism for providing gloves, boots, or masks.

A participant noted:

"We use bare hands. Sometimes I get cut. We have no gloves. We cannot afford them." (FGD-Female, waste picker, 34 years)

Harassment (71%) reflects the legal ambiguity: municipal by-laws criminalize scavenging, yet the same municipality fails to collect waste, creating a contradictory enforcement environment.

One scavenger argued:

"If they see us sorting, they chase us. They say we are illegal. Yet the council does not collect anything. What are we supposed to do?" (IDI-Scavenger, male, 24 years)

The lack of a designated disposal site (64%) means that even when clean-up groups collect waste, they have nowhere legal to deposit it, leading to re-dumping.

A clean-up leader stated:

"We sweep and pile the waste. But then, where to take it? We end up dumping in the same place." (IDI-Clean-up leader, female, 47 years)

Health risks without compensation (60%) deter participation and perpetuate poverty. A youth waste picker noted:

"If I get sick from waste, who pays? No one. I just suffer." (FGD-Youth, male, 22 years)

4.4.2. Social Enablers as Existing Assets

Enablers are predominantly social, not material. Strong social networks (91%) provide labor sharing, mutual support, and informal insurance.

A participant stated:

"We help each other. If one is sick, another takes her place. That is how we survive."
(FGD-Female, waste picker, 34 years)

Local champions (78%) act as bridges between the community and authorities.

Another noted:

"Mai Chihoro organizes us. She speaks to the councilor for us. Without her, we would have no voice." (IDI-Resident, female, 41 years)

Occasional external support (49%) – from churches or NGOs – provides critical but unsustainable inputs. A clean-up leader recalled:

"Last year, a church gave us five wheelbarrows. That helped a lot. But they haven't come back."
(IDI-Clean-up leader, female, 52 years)

Informal agreements with buyers (40%) stabilize income for recyclers. A youth scavenger explained:

"The Chinese buyer at the market knows us. He does not cheat. We have an understanding." (FGD-Youth, male, 23 years)

These findings reveal that the effectiveness of informal waste initiatives is constrained not by lack of willingness but by structural barriers that are entirely addressable through policy. The problem is not that communities are unable to manage waste – they are already doing so. The problem is that they are forced to do so without basic occupational health protections, legal recognition, or a proper disposal site. Conversely, enablers highlight existing assets: high social capital, local

leadership, and willingness to partner with external actors. These assets can be leveraged in future interventions. The ranking shows that the most severe barrier is a lack of protective equipment (84%), followed by harassment (71%). These two barriers alone account for most of the ineffectiveness. The presence of strong social networks (91%) suggests that if structural barriers were addressed, the community could rapidly scale up effective waste management.

These barrier findings align closely with Katusiimeh and Nambale (2024) in Kampala, who identified discriminatory bylaws and lack of legal support as key constraints. The 84% reporting lack of protective equipment is higher than Fagbo et al. (2025) found in Lagos (where protective gear availability was not directly asked). This difference likely reflects Zimbabwe's more severe economic decline, which limits even basic equipment. The enabler of strong social networks (91%) echoes Adjei-Mensah (2026), who noted that Accra, Cairo and Lagos demonstrated community leadership and social cohesion. This study provides ranked frequency data, which previous studies lacked, filling the gap identified by Kadungure et al. (2023, p. 1068), who called for systematic ranking of barrier severity. Unlike earlier studies that focused on either barriers or enablers in isolation, this research explicitly presents both in a single matrix, revealing that the same community that faces severe barriers also possesses strong enablers – a novel finding important for intervention design.

4.5. Chapter Conclusion

The chapter's findings raise serious concerns about the structural and social conditions shaping informal waste management and public health in Mbare. It highlights how municipal failure forces residents into informal initiatives that are effective at reducing some hazards but operate without health safeguards, creating new risks such as respiratory illness from burning and injuries from manual sorting. The high prevalence of diarrhea (51%) and respiratory complaints (69%) demonstrates that the health burden is substantial, and waste workers bear a disproportionate share of occupational injuries and skin conditions. The ranking of barriers shows that lack of protective equipment (84%) and police harassment (71%) are the most severe constraints, while the presence of strong social networks (91%) and local champions (78%) are powerful enablers that can be

leveraged. The problem is not that communities are unable to manage waste – they are already doing so with remarkable resourcefulness.

Chapter 5: Summary, Conclusions, and Recommendations

5.1 Introduction.

This chapter subsequently provides a synoptic view of the findings from the qualitative study of informal community waste management projects and public health-related outcomes in Mbare, Harare. It gathers research results from participatory mapping, interviewing, and fieldwork to understand the general findings in the context of the research's questions. The chapter is composed of three sections. The first section concludes with a summary report of the findings according to the three research questions: informal community-based waste management schemes, public health outcomes, and barriers and facilitators in this setting. The other section is an overview of any conclusions drawn from the results, their importance to the waste management systems in the area studied, and what this all means for public health. Based on the findings, the recommendations in the final section seek to improve waste management and cooperation between communities and involved actors in Mbare. This chapter reviews the key findings and contextualizes these findings within broader lessons for urban waste management and public health policy.

5.2 Summary of Findings.

We summarize the results of the study based on the objective of the research.

5.2.1 Informal Community-Based Waste Management Programs in Mbare.

In Mbare, the research determined that as a result of poor municipal waste collection services, residents had had to create and implement numerous informal waste management projects among citizens. Such activities have included cleaning up neighborhoods, scavenger-recycler groups, sorting of household waste and placement in market recycle bins. Neighborhood clean-up groups, overwhelmingly women, mopped up streets and cleaned blocked drainage systems. Youth, on the

other hand, were heavily involved in scavenger recycling, particularly for recyclable material collection and supply - especially on the railway line and Mbare Musika market. Household-scale waste segregation consisted of composting organic waste, whereas market waste reclamation is the collection of fruit and vegetable waste for animal feed production. A participatory mapping identified 23 waste-gathering hotspots with the highest density in Matapi Flats and Mbare Musika market. Our results establish that informal waste management is common, and organized around community need and economic resources.

5.2.2 Effects of Informal Waste Management on Public Health

The committee concluded that poor waste management practices in Mbare are a significant public health risk in the study; it was well established. More than half the participants experienced diarrhoeal symptoms within a period of four weeks, and about 70% had respiratory irritation that included symptoms such as cough and difficulty breathing. Observable data suggested large waste burning and direct exposure of children to uncontrolled waste, and a consistent presence of standing water, rodents and flies around waste-dumping sites. Such conditions increase the risks of communicable disease outbreaks, including those from diarrhea and cholera, as well as respiratory diseases. Among the workplace hazards for informal waste workers, which were reported is injury from sharp objects, skin rashes and longer exposure to poisonous waste products for a long time.

5.2.3 Obstacles and factors behind informal Waste Management Initiatives

The study revealed a number of barriers to informal waste management in Mbare. These obstacles include lack of means to carry safety equipment, police harassment, no site demobilization for waste disposal and no accreditation in local government in terms of the recognition of formalization and payment for health risks created due to waste disposal. However, some positive drivers were observed aside from the identified enabling factors that faced these challenges. These are important social networks (social ties), communal cohesiveness, regional leadership networks, local leadership structures, support from churches and not-for-profit organizations (NGOs) and the informal recycling markets that allow participants. The results also suggest that informal waste management relies on large amounts of voluntary engagement via community and neighborhood associations and extended family networks. Participants included women and youths and were

women working on their housework and cleaning and youths in waste collection and recycling for income.

5.3 Conclusions

5.3.1 Community-Based Informal Waste Management Projects

The study findings confirm that informal community-based municipal waste management programs have been initiated in Mbare in the context of low municipal waste collection services. Initiatives like these are community-driven, socially organized, and economically motivated, both in terms of survival and environmental management. The presence of multiple waste management structures indicates strong community adaptation to service delivery gaps.

5.3.2 Public Health Outcomes

The study showed that poor waste management is a major public health issue in Mbare. The waste pile-up, illegal disposal, and burning of refuse cause respiratory diseases, diarrheal illnesses, and injuries in residents and waste workers. Although informal waste control programs prevent certain environmental risks, open burning and other activities put people at risk of additional health hazards.

5.3.3 Barriers and Promoting Factors for Informal Waste Management.

The study concludes that the capacity to manage informal waste is less constrained by community opinion than by structural and institutional issues. Potential obstacles include a lack of legal recognition, inadequate infrastructure, and occupational risks. But vibrant community networks, leadership structures, and informal economic systems underpin enabling conditions. It is also highlighted that waste management in Mbare will be improved through the collaboration between local authorities and community actors. Municipalities alone cannot sustain waste management, but these initiatives also need to be supplemented by informal community initiatives in the areas.

5.4 Recommendations.

Identification and Registration of Informal Waste Organizations.

Harare City Council, along with Mbare ward councilors and community health clubs, should formally recognize and register existing informal waste management groups in Mbare. Registration should be easy, inexpensive, and done in a relatively short time frame. Waste workers will be issued identification cards, which will enable them to maintain legitimacy even further and reduce police harassment. Community health clubs should be registration centers since they are already active in the community. A pilot registration scheme might be first initiated in Matapi Flats where the bulk of waste initiatives are located.

Improved Occupational Health and Safety

The Ministry of Health and Child Care, through Mbare Polyclinic and the City of Harare Health Department, should establish a regular health monitoring program for waste workers. The programme will include free tetanus vaccinations, first aid training, and protective equipment including gloves, boots, and masks. It is also advisable that the Environmental Health Department prevents open burning of waste and establishes designated sites for composting and disposal. Health workers should be trained to report waste-related injuries, and free referral to health institutions should be established.

Challenges of Institutional and Operational Barriers Reduction.

Harare City Council with Zimbabwe Republic Police Harare Central District should adopt a policy that prohibits any harassment of waste workers registered in the municipality. Afterwards, the notice would need to be communicated to all police stations in Mbare, supported by a community monitoring programme that includes a station hotline through ward councilors' offices. At the same time, the council should put up at least one formally designated waste drop-off point nearby the Mbare Market waste transfer station. The site would require little infrastructure, including fencing and signage.

More Community and Policy Collaboration.

The findings of this study should be reported in community feedback sessions, reports in the Harare City Council Health and Housing Committee, and policy briefs in the Ministry of Local

Government and Public Works. The community-driven framework formed in this study should be the foundation upon which there is to be a memorandum of understanding between the council and the registered waste groups in the city. In this way, it would assist local authorities and community organizations in engaging in partnering with sustainable, health-conscious approaches to waste management.

Reference List

Adjei-Mensah, C. (2026). Solid waste management in informal settlements in Harare, Soweto, Cairo, Accra, Kinshasa, and Lagos: A review of challenges, impacts, and measures for improvement. Discover Environment, 7(95), 1–18.

Agyeman, J., Schlosberg, D., Craven, L., & Matthews, C. (2016). Trends and directions in environmental justice: From inequity to everyday life, community, and just sustainabilities. Annual Review of Environment and Resources, 41(1), 321–340.

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. M. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? Qualitative Health Research, 26(13), 1802–1811.

Chirisa, I., & Dube, N. (2019). African urban economies: Informality, waste and the everyday state in Harare. Journal of Urbanism, 12(1), 40–58.

Cinderby, S. (2020). How to conduct participatory transect walks. Methods in Ecology and Evolution, 11(2), 234–240.

Cisse, G. (2021). Urban waste management and environmental health in African cities: Challenges and opportunities. International Journal of Environmental Research and Public Health, 18(4), 1892.

Community Water Alliance. (2022, June 4). Multi-stakeholder meeting on green solutions held in Harare. Community Water Alliance News. https://www.communitywateralliance.org.zw

Dube, T. (2021). Spatial dynamics of illegal dumpsites and prevalence of diarrhoeal diseases in Makokoba Township in Bulawayo, Zimbabwe. Scientific African, 13, e00939.

Fagbo, E. C., Adebiyi-Abiola, B., Onaghise, A. L., Oyelakin, O. A., & Taiwo, A. M. (2025). Assessment of waste pickers' livelihoods and potential health challenges in Lagos State, Nigeria. Journal of Community Health, 50(5), 813–825.

Hagaman, A. K., & Wutich, A. (2017). How many interviews are enough to identify metathemes in multisited and cross-cultural research? Another perspective on Guest, Bunce and Johnson's (2006) landmark study. Field Methods, 29(1), 23–41.

Handelens Miljøfond. (2025, February 18). Local waste management creates solutions. Handelens Miljøfond Report. https://www.handelensmiljofond.no

Hassan, A. W., Zhang, D., & Ibrahim, M. (2024). Accessibility to WASH and waste management services in African urban informal settlements: A comparative analysis. Journal of Water, Sanitation and Hygiene for Development, 14(2), 91–112.

Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. Social Science & Medicine, 292, 114523.

International Growth Centre. (2024, May 22). Strengthening urban waste management by empowering waste pickers in Ghana. IGC Policy Brief. https://www.theigc.org

Kadungure, A., Machemedze, R., Malaya, W., Banda, N., Loewenson, R., & Sverdlik, A. (2023). Towards climate change resilience and informal workers' health in Zimbabwe: An action-research case study. Urban Climate, 47, 1055–1071.

Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. Journal of Advanced Nursing, 72(12), 2954–2965.

Kasinja, C., & Tilley, E. (2018). Formalization of informal waste pickers' cooperatives in Blantyre, Malawi: A feasibility assessment. Waste Management & Research, 36(4), 345–357.

Katusiimeh, M., & Nambale, K. (2024). Solid waste collection in the informal settlements of African cities: A regulatory dilemma for actors' participation and collaboration in Kampala. Urban Forum, 35(1), 1–22.

Kistan, J., Ntlebi, V., Made, F., Kootbodien, T., Wilson, K., Tlotleng, N., Kgalamono, S., Mathee, A., & Naicker, N. (2020). Health care access of informal waste recyclers in Johannesburg, South Africa. PLOS ONE, 15(7), e0235173.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2018). Paradigmatic controversies, contradictions, and emerging confluences revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), The SAGE Handbook of Qualitative Research (5th ed., pp. 108–150). Sage.

Minkler, M., & Wallerstein, N. (Eds.). (2019). Community-based participatory research for health: Advancing social and health equity (3rd ed.). Jossey-Bass.

Mmereki, D. (2024). A systematic review on informal waste picking: Occupational hazards and health outcomes. Waste Management, 175(1), 123–138.

Mohammed, A., Ahmed, M., & Ali, S. (2024). Prevalence of occupational injuries and associated factors among solid waste collectors in Jigjiga city, eastern Ethiopia: A cross-sectional study design. Frontiers in Epidemiology, 4, 1439038.

Moyo, T. (2023). Peacebuilding agency among the youth in the high-density suburb of Mbare, Zimbabwe. African Journal of Peace and Conflict Studies, 12(2), 1–18.

Muhammad, A. M., Gano, D. Z., Umar, Y. A., Jauro, U. A., & Auwalu, U. (2025). Analysis of solid waste management practices in Wudil Town, Kano State, Nigeria. International Journal of Research and Innovation in Social Science, 9(12), 233–245.

Muheirwe, F., Kihila, J. M., Kombe, W. J., & Campitelli, A. (2023). Solid waste management regulation in the informal settlements: A social-ecological context from Kampala city, Uganda. Frontiers in Sustainability, 4, 1010046.

Mwanza, P., & Phiri, C. (2021). The health effects of Chunga Dumpsite on surrounding communities in Lusaka, Zambia. MedRxiv. https://doi.org/10.1101/2021.12.21.21268110

Ndlovu, S., & Sibanda, M. (2023). Private sector participation in waste management in Zimbabwe: Progress and pitfalls. Journal of Sustainable Development in Africa, 25(1), 45–60.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. International Journal of Qualitative Methods, 16(1), 1609406917733847.

Noy, C. (2017). Snowball sampling: A purposeful method of sampling in qualitative research. Strides in Development of Medical Education, 14(3), e67670.

Nyumba, T. O., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. Methods in Ecology and Evolution, 9(1), 20–32.

Okonkwo, C., & Eze, P. (2025). Unregulated dumpsites, mosquito proliferation, environmental and public health risks in urban settlements. Journal of Environmental Health Research, 18(1), 1–12.

Ortlipp, M. (2019). Keeping and using reflective journals in the qualitative research process. In P. Liamputtong (Ed.), Handbook of Research Methods in Health Social Sciences (pp. 145–158). Springer.

Parvez, S. M., Asghar, Z., & Ali, M. (2022). Health risks and livelihood impacts of informal waste workers in developing countries: A systematic review. Environmental Science and Pollution Research, 29(15), 21134–21152.

Patton, M. Q. (2015). Qualitative research & evaluation methods: Integrating theory and practice (4th ed.). Sage.

Potts, D. (2019). The broken city: Urban governance and the everyday state in Harare. Zed Books.

Shezi, B., Mathee, A., Ndlovu, N., & Kunene, Z. (2020). Environmental checklist for informal settlement waste and health. South African Journal of Science, 116(5-6), 1–7.

Tshifularo, P. E., Du Plessis, R., & Van den Berg, U. (2025). Review of landfill impacts on informal waste-pickers and surrounding communities in Africa (2015-2022). University of South Africa.

Tsegaye, B., Assefa, Y., & Mekonnen, M. (2024). Prevalence and associated factors of work-related injury among municipal solid waste collectors in Hawassa City, Southern Ethiopia: A cross-sectional study. Scientific Reports, 14, 28874.

Wallerstein, N., Duran, B., Oetzel, J. G., & Minkler, M. (Eds.). (2018). Community-based participatory research for health: Advancing social and health equity (3rd ed.). Jossey-Bass.

World Health Organization. (2019). Environmental health and waste management: A framework for action. WHO Press.

Zamba, B. F. (2020). Community participation in solid waste management in Mbare, Harare: A follow-up study. Journal of Urban Environmental Studies, 12(2), 45–62.

Zimbabwe Human Rights Commission. (2026). Report on the conditions at Matapi flats, Mbare. Harare: ZHRC.

APPENDICES

Appendix 1: Semi-Structured Interview Guide (Waste Group Leaders & Key Informants)

Study Title: Exploring the relationship between informal community-based waste management efforts and public health outcomes in Mbare, Harare.

Interviewer: Wesley Mushunje (Researcher)

Duration: 45–60 minutes

Introduction:

"Thank you for agreeing to speak with me. I am conducting research to understand how residents of Mbare manage waste informally and how this affects health. Your participation is voluntary. Everything you say will be kept anonymous. May I record this conversation?"

Section A: Background and Waste Initiative Description

1. Can you tell me about the waste management activities you and your group are involved in?
2. How long has your group been operating?

3. How many members are there? (Approximate)
4. How do you organize your work? (e.g., roles, schedules, leadership)
5. Where do you mainly collect or sort waste? (Probe: specific streets, railway line, market area)

Section B: Health Outcomes

6. Have you or any members of your group experienced any health problems that you think are related to waste work?
    - *If yes:* What kind of problems? (e.g., diarrhea, cough, skin rash, cuts, eye irritation)
7. How do you handle injuries or illnesses? (Probe: home treatment, clinic, pharmacy)
8. Have you heard of other residents (non-waste workers) getting sick from waste in the neighborhood?

Section C: Barriers

9. What makes your waste work difficult?
    - *Probes:*
        - Do you have gloves, boots, masks?
        - Have you ever been harassed by police or council officials?
        - Is there a place where you can legally dump the waste you collect?
        - Do you worry about getting sick without compensation?
10. Does the municipality or any authority recognize your work?

Section D: Enablers

11. What helps you to continue this work despite the difficulties?
    - *Probes:*
        - Do neighbors or friends help each other?
        - Are there community leaders who support you?
        - Have any churches or NGOs provided tools, training, or other help?

- Do you have reliable buyers for recyclables?

Section E: Suggestions and Closing

12. What would improve your working conditions and health?
13. Is there anything else you would like to add?

Closing: *"Thank you very much for your time and honesty. Your insights are very valuable for this study."*

Appendix 2: Focus Group Discussion Topic Guide

FGD Composition:

- FGD 1: Female waste pickers (8–10 participants)
- FGD 2: Youth waste pickers (18–25 years, 8–10 participants)
- FGD 3: Non-participating residents (8–10 participants) **Duration:** 90–120 minutes

Introduction:

"We are here to talk about waste management in Mbare and how it affects health. There are no right or wrong answers. Please speak freely; everything will be kept anonymous. I will record the discussion to help me remember later."

Topic 1: General Waste Situation (All groups)

What is the waste problem like in your area?

- Where are the main dumpsites or blocked drains?

Topic 2: Experiences with Waste Work (FGD 1 & 2 only)

- How did you start collecting or sorting waste?
- Describe a typical day.

- What are the dangers you face?
- What do you do with the waste you collect?

Topic 3: Health Concerns (All groups)

- Have you or your family been sick because of waste? (diarrhea, cough, skin problems)
- Have you seen children playing near waste?
- Do you worry about diseases like cholera or malaria?

Topic 4: Barriers and Enablers (All groups)

- What stops people from keeping the area clean? (police, lack of equipment, no disposal site)
- What helps? (community help, church support, local leader)

Topic 5: Suggestions for Improvement (All groups)

What would make waste management better in Mbare?

- How can the community work better with the council?

Closing: *"Thank you for sharing your experiences. Your views will help shape recommendations for better waste management and health."*

Appendix 3: Environmental Observational Checklist

Date: _____ **Segment number:** _____ **Block:** Matapi / Hostels / Nenyere **Observer:** _____ **Start time:** _____ **End time:** _____

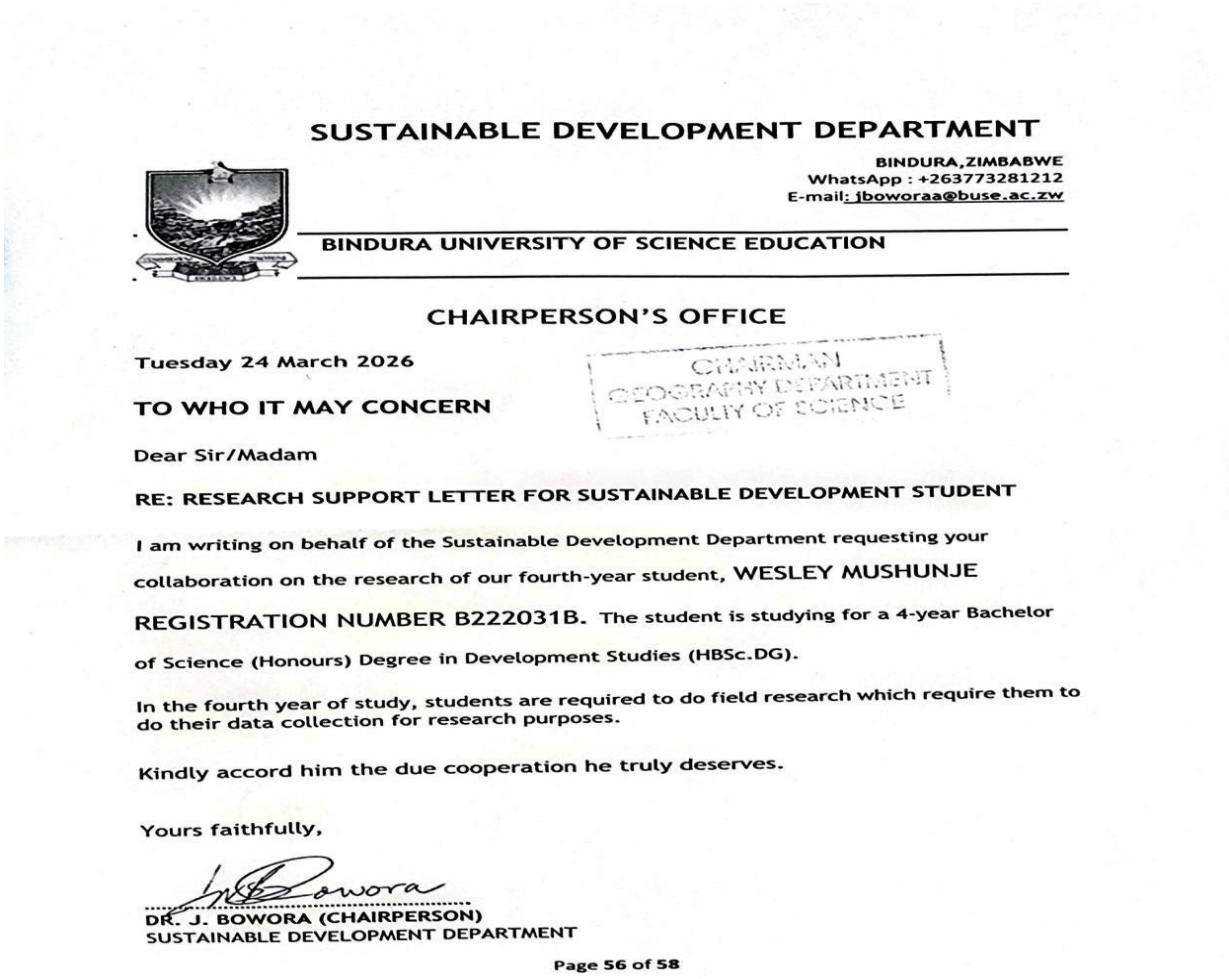
Instructions: Walk along a 100-metre segment and record observations. Tick one box per indicator.

Indicator	Yes	No	Notes (e.g., location, severity)
Standing water present	☐	☐	
Indicator	Yes	No	Notes (e.g., location, severity)
Rodent signs (droppings, burrows)	☐	☐	
Fly density (Low/Medium/High)	☐	☐	

Active or recent waste burning	☐	☐
Waste accessible to children (within reach, no fence)	☐	☐
Oduor intensity (Mild/Strong/Unbearable)	☐	☐
Presence of sharp objects (glass, metal, needles)	☐	☐
Waste blocking drainage channel	☐	☐

Additional observations (e.g., type of waste, recycling activity):

Appendix 4: Approval Letter from Bindura University of Science Education



SUSTAINABLE DEVELOPMENT DEPARTMENT

BINDURA, ZIMBABWE
WhatsApp : +263773281212
E-mail: jboworaa@buse.ac.zw

BINDURA UNIVERSITY OF SCIENCE EDUCATION

CHAIRPERSON'S OFFICE

Tuesday 24 March 2026

CHAIRMAN
GEOGRAPHY DEPARTMENT
FACULTY OF SCIENCE

TO WHO IT MAY CONCERN

Dear Sir/Madam

RE: RESEARCH SUPPORT LETTER FOR SUSTAINABLE DEVELOPMENT STUDENT

I am writing on behalf of the Sustainable Development Department requesting your collaboration on the research of our fourth-year student, WESLEY MUSHUNJE REGISTRATION NUMBER B222031B. The student is studying for a 4-year Bachelor of Science (Honours) Degree in Development Studies (HBSc.DG).

In the fourth year of study, students are required to do field research which require them to do their data collection for research purposes.

Kindly accord him the due cooperation he truly deserves.

Yours faithfully,

DR. J. BOWORA (CHAIRPERSON)
SUSTAINABLE DEVELOPMENT DEPARTMENT

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APPENDIX 5: Approval Letter from Harare City Council

CITY OF HARARE

All correspondence to be addressed to the
DIRECTOR OF HEALTH SERVICES

Director of Health Services
DR PROSPER CHONZI
MBChB, MPH, MBA

DIRECTOR OF HEALTH SERVICES
Rowan Martin Building, Civic Centre,
Pennefather Avenue, Off Rotten Row,
Harare, Zimbabwe

P.O Box 596
Telephone: +263 (242) 753326
753330/1/2
Fax: +263 (242) 752093

Ref:- .....

Your Ref:- ..... 1/30 .....

22 May 2026

Wesley T Mushunje

Std Number 10500

Highfield

HARARE

Dear Wesley Mushunje

RE: APPLICATION FOR PERMISSION TO CONDUCT A STUDY TITLED: COMMUNITY-BASED WASTE MANAGEMENT AND IMPACT ON PUBLIC HEALTH IN HIGH DENSITY AREAS, A CASE STUDY OF MBARE, HARARE.

I refer to the above subject matter.

Permission has been granted for you to conduct a study titled, **Community-based waste management and impact on public health in high density areas, a case study of Mbare, Harare.**

Please note that you will be expected to share your study findings with the City Health Department through the Director's office.

Do not hesitate to contact the Ethics committee for any assistance you may require.

Yours Faithfully

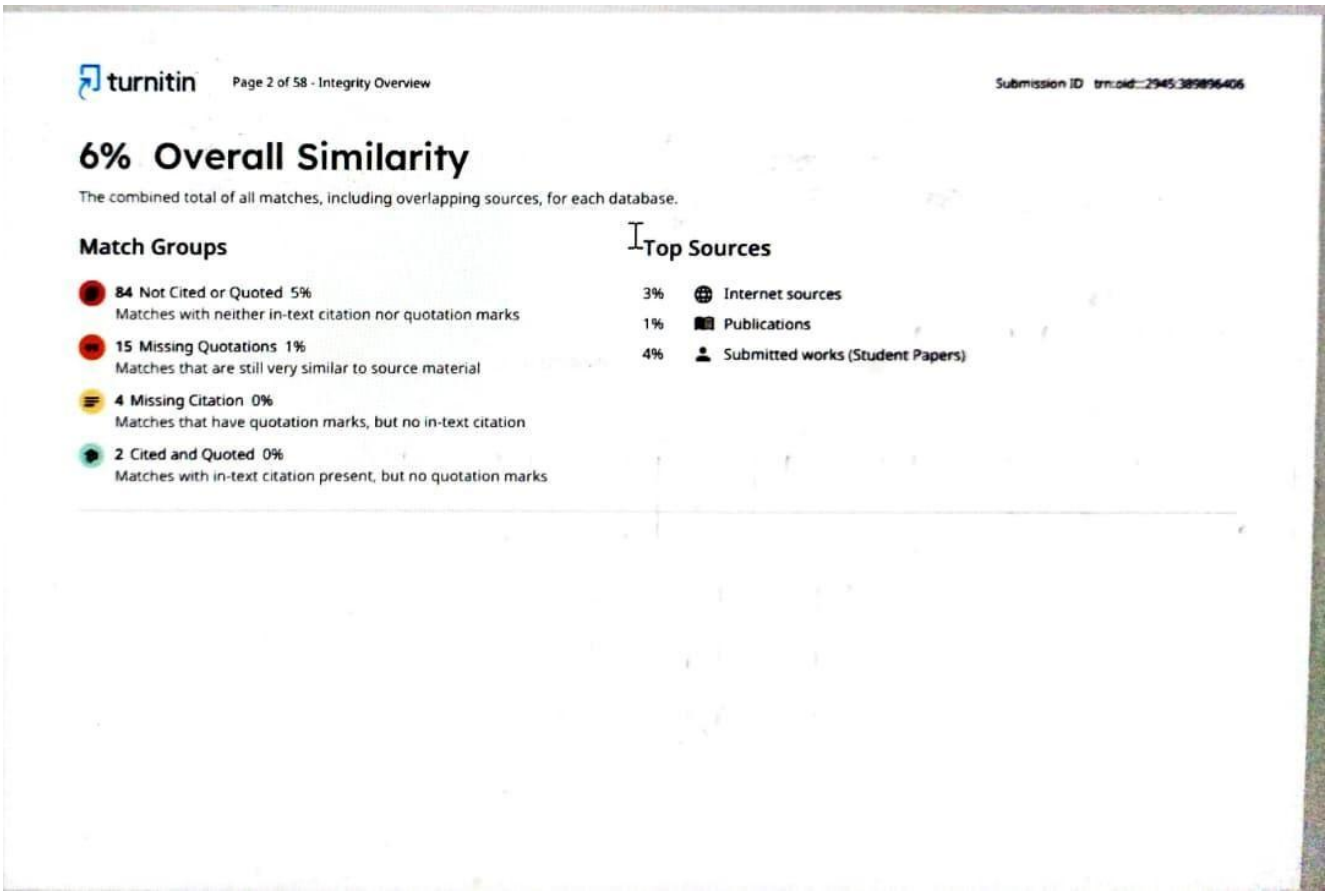
CHEALTH DEPARTMENT
ROWAN MARTIN BUILDING
P. BAG

22 MAY 2026

DIRECTOR OF HEALTH SERVICES

ed/

APPENDIX 6: Plagiarism Report



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