

Factors for Poor Waste Management Performance in the Emerging Urban City of Ado Ekiti, Ekiti State

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ABSTRACT

The increasing challenges of waste management in urban cities within developing nations are intensifying daily. This study focuses on Ado Ekiti, exploring the effectiveness of its solid waste management strategies. We examine the types of waste generated, disposal methods, collection mechanisms, and the environmental impact of these practices.

Our research utilizes questionnaires, scholarly articles, newspapers, and on-the-spot observations. Descriptive and inferential statistics reveal a significant mismanagement of solid waste, contributing to environmental degradation and visual pollution. The study further made use of finished-untampered-with-data relevant to the paper as tertiary data. Descriptive and inferential statistics reveal a significant mismanagement of solid waste, contributing to environmental degradation and visual pollution. The findings from the final analysis revealed gross improper management of solid waste. According to the report, 96.3% agreed to the destruction of scenic beauty. 95.7% agreed to its environmental irritation. 96.9% of the respondents agreed there is indiscriminate waste disposal. Similarly, 95.7% of the respondents agreed that indiscriminate waste disposal as having horrible smell and visual pollution. The analysis is evident of the author's field observation of the unkempt environment of the city townscape and the road median of almost all the major roads in the city are having patches of solid waste deposit.

The paper hence, advocate for enhanced public awareness and stricter enforcement of waste disposal regulations to improve the urban environment. The paper further recommend formulation of policy mandating each household to

possess a waste disposal bin in their compound for sanitary purpose.

Keywords:-Waste Management, performance, Residential Neighbourhood,household, Emerging urban city

I. INTRODUCTION

Recent research by Adedara (2023) highlights an annual increase in municipal solid waste generation across sub-Saharan Africa, with projections indicating a steep rise in future waste volumes. In developing nations, solid waste collection coverage remains inadequate relative to generation rates, leading to uncollected waste accumulating in public spaces, obstructing roads, and clogging drains—a common sight in developing cities such as our study area. Solid waste, encompassing waste from human, animal, and industrial activities, poses significant environmental and health risks. Ineffective disposal and management practices, such as unregulated dumping and inadequate incineration, exacerbate these risks, contributing to land, air, and water pollution and presenting a direct threat to urban health and aesthetics (Pires, 2019; Carlos-Alberola, 2021; Mililo, 2021). The local government councils are unable to carry out their statutory responsibilities of managing municipal solid in the towns and cities which is a clear violation of the environmental sanitation edicts and regulation. These solid wastes have become threats to the health of the dwellers, beautification of the environment and it is no longer in doubt that Nigerian cities are overwhelmed with the challenges of improper solid waste disposal (Odonkor, 2021).

1.1 Background to the Study

Atikankan, an informal settlement in Ado Metropolis, is plagued by inadequate housing and poor environmental sanitation. This area features a mix of used structures, often developed haphazardly without proper planning. The local drainage systems are frequently clogged with refuse, exacerbating the area's solid waste disposal issues. Additionally, the presence of unregulated abattoirs contributes to the unpleasant conditions, with animal waste and litter pervading the environment. These conditions reflect the urgent need for comprehensive urban planning and environmental management interventions to address these sanitation challenges effectively, this is in consonance with the study of Ike et al. (2018) and Kadafa (2017), this needs the urgent attention of the government in other to avert epidemic or outbreak of diseases, as submitted in the study of (Ahmed 2017).

Similarly, inadequate solid waste collection and transportation system as well as unsaved final disposal are hampered by inappropriate choice of technology, as averred in the study of (Aliyu, 2017 and Carlos-Alberola 2021).

1.2 Problem Statement

The management of solid waste in Atikankan has become increasingly problematic, marked by an overwhelming presence of refuse in drainages and along road medians. This issue has been compounded by the rapid population growth following Ado Metropolis's designation as a state capital in 1996, which has spurred an influx of people and expansion of the informal economy.

The resultant poor waste management practices have led to unsanitary conditions, characterized by obnoxious odors and potential health hazards. Despite monthly environmental sanitation exercises, the persistent issues underline the need for a robust and sustainable waste management strategy to address the area's environmental challenges.

According to Ahmed (2017) and Jerumeh (2020), in a related study, the challenge of solid waste management resulted from the increase in the population of Ado metropolis, as it assumed the status of a State Capital in 1996. Since the assumption of the administrative status, the influx of people from different works of life has been on the increase. There has been also increase in the informal economy of Ado metropolis and been an unplanned area, it becomes impossible to have a proper control of solid waste disposal.

The effects of poor solid waste management are reflected in the unkempt and unsanitary condition of the environment. Obnoxious smell and putrefying odour from the surrounding and from the drains.

1.3 Objectives

This study aims to evaluate the impact of solid waste management on the aesthetics of Atikankan, Ado Ekiti. We will investigate the types of solid waste generated, the methods employed for waste disposal and management, and the consequent effects on the urban landscape. Additionally, the study seeks to propose viable strategies for sustainable environmental sanitation and enhanced waste management in the study area.



Fig 1 Ekiti State Map in Nigeria map
Source: Ministry of land and housing

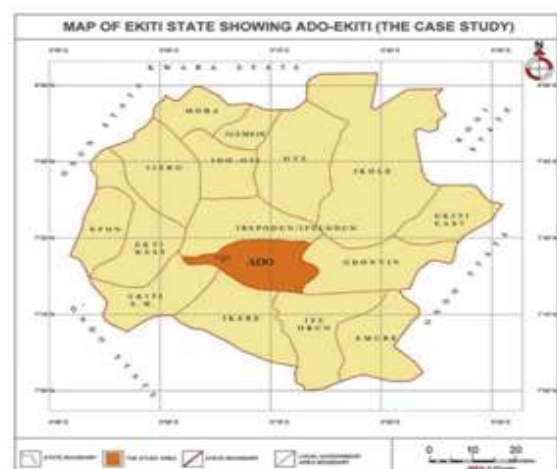


Fig. 2 Ado-Ekiti in Ekiti State Map
Source: Ministry of land and housing

II. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Concept of Environmental Sanitation

Environmental sanitation encompasses actions aimed at improving the environment's quality to mitigate health hazards arising from environmental degradation. According to the World Health Organization – European Center for Environment and Health (2000), these actions address factors such as stagnant water, waste proximity, and poor air quality, which can facilitate infectious disease transmission. Historical sanitary revolutions highlighted the importance of hygiene practices, such as handwashing and proper waste management, to prevent disease spread. Recognized by the United Nations and integral to the Sustainable Development Goals, environmental sanitation is vital for ensuring accessible, clean water and adequate sanitation for all by 2030 (Hutton & Chase, 2016; UN, 2018; Berridge, 2011). Mensah, (2019) & Prüss-Ustün et al., (2019), in his response to the imperatives of the SDGs goal 6.0 has however, realized that, the developing countries cannot actualize environmental sanitation Goal of the SDGs without recourse to a sound and practicable Environmental Sanitation Management (ESM) framework which can be translated into practice.

2.2 Literature Review

The management of solid waste remains a critical challenge in urban areas of developing countries, characterized by increasing waste accumulation on streets and other public spaces, (Diaz, 2017; Mlilo et al., 2021). This waste not only contributes to environmental degradation but also poses significant health risks by fostering conditions conducive to disease vectors, (Rodić, 2017; Odonkor, 2021). Studies indicate that traditional waste disposal methods in these regions are often inefficient and outdated, leading to uncontrolled dumpsites that exacerbate public health and environmental issues, (Adedara, 2023; Odonkor, 2021; Rodić, 2017).

One of the main aspects of concern is the pollution caused to the earth; be it land, air and water. According to Mbeng, (2013), Innocent, (2016) and Tassie, (2019), many cities in developing countries face serious environmental degradation and health risks due to the weakly developed municipal solid waste management system (Purkayastha, 2015 and Coffey, 2010). The conclusion from this and other studies has led to an increasing interest of researchers in the study

relating to environmental pollution as well as its effects on plant, (Miezah et al., 2015, Oyeboode, 2018, Hirpe, 2021). The ever increasing consumption of resources results in huge amounts of solid wastes from industrial and domestic activities, which pose significant threats to human health due to its uncontrolled disposal, (Sharma, & Jain, 2020). However, the ills of inappropriately disposed municipal solid wastes are quite numerous to be mentioned. Health deterioration, accidents, flood occurrences, and environmental pressures are just a few of the negative effects. In many developing countries. These areas become children's sources of contamination due to the incubation and proliferation of flies, mosquitoes, and rodents, Olukanni, & Oresanya, (2018). Addressing these challenges requires an integrated approach that combines technical, organizational, and educational strategies to enhance waste management efficacy and promote public health (Kumari & Raghubanshi, 2023; Pickering, 2019). The environmental sanitation and hygiene impact of solid waste transfer system are unsatisfactory from the environmental and social economic point of view, (Budge, et al. 2023 & Pickering, 2019). The role of health education in solid waste management in Nigeria cities has been emphasized by some researchers. Ifeoluwa, (2019), Calabrò and Komilis, (2019), Namlis and Komilis, (2019), ElSaid and Aghezzaf, (2018), & Sanjeevi and Shahabudeen, (2015), emphasizes the need for health education on proper management and recycling of solid-waste in Nigeria.

It was observed that a number of health hazards in Nigeria such as dysentery, typhoid, cholera, etc. have been associated with poor solid-waste management in Nigeria cities. He urges that policy makers should encourage health education in order to expose the dangers of improper disposal of solid waste that is rampant in our cities in consonance with the study of, (Nukusheva, 2023). Study the solid waste management in some Nigerian cities with the aims of finding effective solution to the problem. Uncollected wastes end up in drains, causing blockages which result in flooding and unsanitary conditions as averred in the study of (Wondimu, 2020).

The figure 3, replete of the various stages involved in the municipal solid waste, from the generation to the disposal stage of final treatment. The effect of solid waste management on the quality of human and ecological life in the community features in the figure 4 of this study.

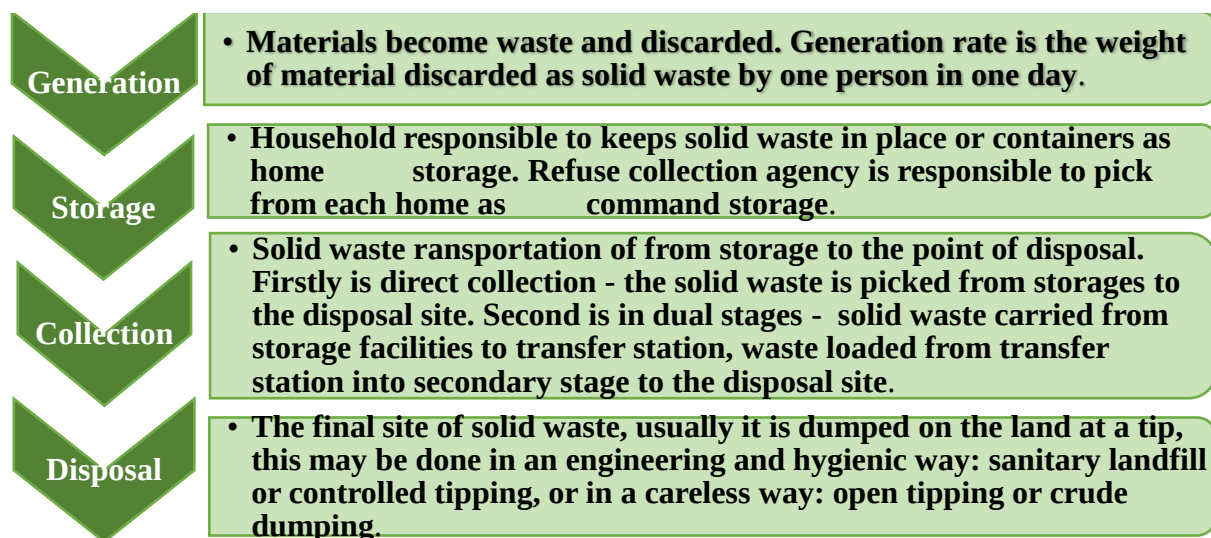


Fig 3: Various Stages involved in Waste Management

Source: Author's intuition (2024)

Environmental Implications: Poor solid waste management leads to the release of toxic (contamination to the atmosphere, soil and water, thereby endangering the local ecosystem). The Waste contamination causes severe problem for human and animal alike. Environment implications are; air pollution which include odor, smoke, noise, dust etc. It causes flooding, due to blocked drains and land degradation.

Heath Implications The contamination of waste to the atmosphere, soil and water, causes ecological distrupction, and severe problem for human and animal alike. the major environment effect include air pollution which include odor, smoke, noise, dust etc which impact on human heath. This includes flies which carry germs on their bodies and leg and also excrete them on human food. Also, mosquitoes breed in stagnant water has health implications.

Social Implications: The location of dumpsite around the neighbourhood is abhorred socially, This due to the people sentiment common thread that farther units peoples from across the globe is their sentiment on waste, they do not want them in their neighbor hoods. No body want to be associated with a dirty environment A city with a hazardous waste facility is now perceived as an undesirable place to live (Olayiwola,2000).

Economics Implications: the impact of solid waste on economics value has received limited attention, it is also presumed that its impact is a negative one, one economic effect of living near a hazardous waste site disposal may be increased taxes and when recycling or re use of this waste is not done. It tends to bring a handicap to the economic revenue in that aspect. If solid waste is properly handled and managed it can lead to economic revitalisation of a nation. In term of waste to wealth.

Fig 4: The Effect of Waste Management on the Quality of Life in the Community

Source: Author's intuition (2024)

2.2.1 Causes of Improper Waste Management

From studies been made before it was conclude that the Lagos State management authority state, they include:-vegetable matter, putrescible, paper, textile, metal, plastic, glass, grits, miscellaneous, inert, tire etc. The fore going composition of waste mostly generated and collected in Ado local government area for example fall under domestic, municipal, industrial, animal and vegetable matters.

Cause of improper solid waste management in developing countries can be thus summarized as under the factors, including: financial constraints, that is, governments not being able to adequately withstand the financial burden.

Again is rapid population growth without commensurate measure or strategy for control. Also, among this is inadequate or poor infrastructure facility for collection and disposal solid waste. Besides is non-existence of or improper waste segregation. In addition is, limitation or no recycling measure, coupled with the prevailing behavioral and cultural challenges, and finally lack of understanding of the factors that affect the entire handling solid waste management system. Figure 3 displayed how the ideal solid waste management should be but hampered by the above challenges and factors leading to the environmental implications.

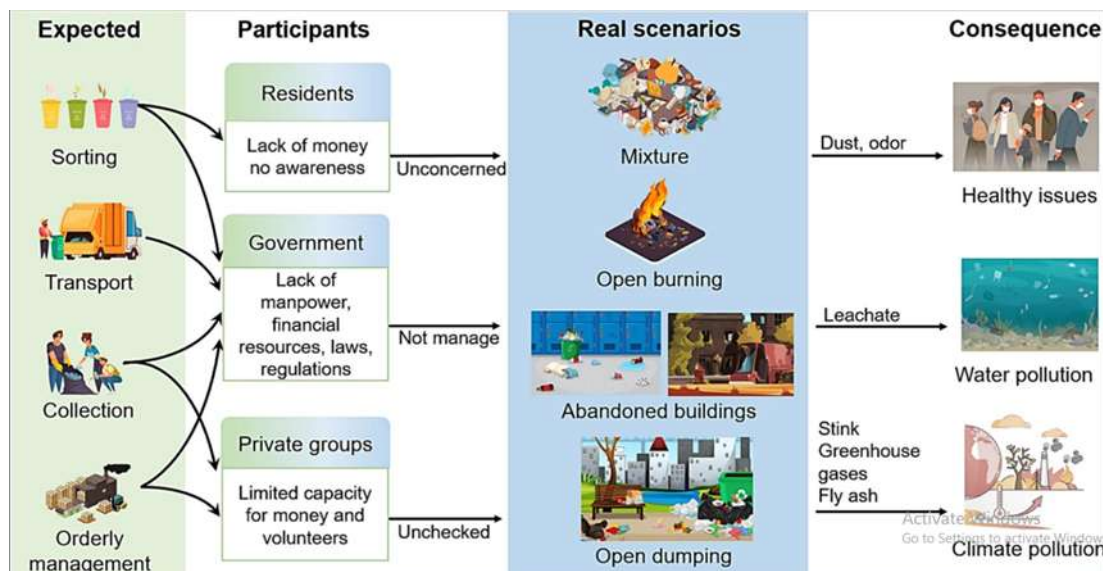


Fig 3: Solid waste inappropriate treatments with its environmental implications

Source:Diagram directly adapted fromZhang, et al. (2024)

2.2.2 The Research Gap

As far as this research is concerned many of the studies on solid waste management has not looked into poor layout and haphazard planning, development of illegal and informal structures as some of the factors inhibiting the imperative of physical planning andneighbourhood designation to proper and effective management of solid waste in our cities in Nigeria.

III. METHODS AND THE METHODOLOGY

3.1 Empirical research

The study adopted a quantitative approach, employing a combination of reconnaissance surveys, direct observations, and structured questionnaires to collect data. These

tools allowed for a comprehensive assessment of the current solid waste management practices in the Atikankan area of Ado Ekiti.

3.2 Materials and Equipment

Due to the unavailability of exact population figures from the National Population Commission, a house counting strategy was employed. We utilized the number of buildings within the core area of Atikankan as a proxy for population estimates. The structured questionnaires were designed to elicit detailed information from residents, focusing on their waste management practices.

3.3 The Study Population

The study encompassed approximately 300 buildings within the Atikankan area,

characterized predominantly by mixed-use structures that combine residential and commercial uses.

3.4 The Study Sample frame and Size

The sample frame included all 300 structures identified during the survey phase. From this, a sample size of 169 was derived using the Krejcie and Morgan's table (1970), ensuring a

representative mix of residential and commercial properties for data collection.

IV. ANALYSIS OF DATA AND PRESENTATION OF RESULTS

This section discusses the types of waste generated, the participants involved in waste generation, and the methods employed for waste disposal, as revealed through our survey data.

Table 1: Types of waste generated

Types of waste generated		Frequency	%	Valid %	Cumulative %
Valid	Garbage	90	55.2	55.2	55.2
	wooden item	20	12.3	12.3	67.5
	Tin, Aluminium and metal	7	4.3	4.3	71.8
	Glass and Bottle	22	13.5	13.5	85.3
	Paper and cotton cloth	24	14.7	14.7	100.0
	Total	163	100.0	100.0	

Source: Author's field survey, 2023

The survey indicated that the majority of the solid wastes are in refuse form. Notably, 55.2% of the waste was categorized as garbage, with other significant categories including wooden items

(12.3%), glass and bottles (13.5%), and paper and cotton cloth (14.7%). This distribution reflects the mixed-use nature of the area, combining residential and commercial activities.

Table 2: Those involve in waste generation

Those involve in waste generation		Frequency	%	Valid %	Cumulative %
Valid	Farmer	48	29.4	29.4	29.4
	Trader	91	55.8	55.8	85.3
	Civil servant	18	11.0	11.0	96.3
	Student	5	3.1	3.1	99.4
	Factories worker	1	.6	.6	100.0
	Total	163	100.0	100.0	

Source: Author's field survey, 2023

The breakdown of waste generators shows significant contributions from traders (55.8%) and farmers (29.4%), underscoring the mixed-use

characteristic of Atikankan. This insight is crucial for targeting specific waste reduction strategies to these groups.

Table 3: Method of wastes disposal

Method of wastes disposal		Frequency	%	Valid %	Cumulative %
Valid	By burning	33	20.2	20.2	20.2
	Open Dumping	98	60.1	60.1	80.4
	Collection point/ centers	20	12.3	12.3	92.6
	Waste vendor	5	3.1	3.1	95.7
	Others	7	4.3	4.3	100.0
	Total	163	100.0	100.0	

Source: Author's field survey, 2023

The prevalent methods of disposal include open dumping (60.1%), which is the most common, followed by burning (20.2%). These

methods contribute to environmental issues such as air pollution and blockages in drainage systems.

Table 4: Where wastes are disposed

Where wastes are disposed		Frequency	%	Valid %	Cumulative %
Valid	Gutter	85	52.1	52.1	52.1
	In front of House	48	29.4	29.4	81.6
	Collection Point	18	11.0	11.0	92.6
	Waste Vendor	8	4.9	4.9	97.5
	Other	4	2.5	2.5	100.0
	Total	163	100.0	100.0	

Source: Author's field survey, 2023

The survey shows that 52.1% of waste disposal occurs in gutters, with another 29.4% in front of houses. These practices highlight the need for improved waste management systems and public awareness campaigns to reduce environmental impact

Empirical Analysis on the Effects of Solid Waste Management

The empirical analysis reveals significant environmental impacts due to poor waste management practices:

Table 5: Factors Considered on the effect of indiscriminate waste disposal

s/n	Factors Considered on the effect of indiscriminate waste disposal	Sample size	Respondent	%	Remarks
1	Environmental dirtiness	163	155	95.1	
2	Blight Scenery		159	97.5	
3	Littering of the surroundings		158	96.9	
4	Hamper surrounding beauty		157	96.3	
5	Irritating Environment		156	95.7	
6	Horrible smell and pollution		156	95.7	

Source: Author's field survey, 2023

The effects of poor waste management are widely acknowledged by the study's respondents, with over 90% citing negative impacts such as environmental dirtiness, blighted scenery, and

irritating odors. These issues not only degrade the aesthetic quality of the area but also pose health risks to the community.

Poor Waste Management from the Physical Planning Perspective

Table 6: Urban Planning and Waste Management

s/n	Factors considered from the urban planning perspective	Sample size	Respondent	%	Remarks
1	Poor street layout	163	150	92.1	
2	Unplanned area		154	94.5	
4	Street layout help waste disposal		149	91.4	
5	Designated neighbourhood		146	89.5	

Source: Author's field survey, 2023

The findings reveal critical shortcomings in the physical planning of Atikankan, which contribute significantly to the waste management challenges:

1. **Poor Street Layout:** Over 92% of respondents identified poor street layout as a key factor

impeding efficient waste collection and disposal.

2. **Unplanned Area:** Approximately 94.5% of participants noted that the lack of a structured, planned environment exacerbates waste management difficulties.

3. **Role of Street Layout** in Waste Disposal: More than 91% emphasized that properly designed streets could enhance waste management efficiency.
4. **Designated Neighborhoods:** About 89.5% highlighted the absence of designated neighborhoods and waste zones as a significant obstacle.

These findings underscore the need for better adherence to urban planning principles and the enforcement of development control measures. Effective physical planning is vital to establishing an organized environment conducive to efficient waste management practices.

Behavioural Orientation on Proper Waste Disposal

Table 7: Enlightenment, Education, and Publicity among others

s/n	Enlightenment, Education, Publicity among others	Sample size	Respondent	%	Remarks
1	Need behavioural orientation	163	156	95.7	

Source: Author's field survey, 2023

A majority of respondents (95.7%) agreed on the necessity of public enlightenment, grassroots education, and widespread publicity to improve attitudes toward waste management. Behavioral change remains a critical factor in addressing the challenges of solid waste disposal in Atikankan. Key recommendations include:

- **Public Education Campaigns:** Implementing community-driven initiatives to raise awareness of proper waste management practices.
- **Incentives for Compliance:** Introducing financial or social incentives to encourage participation in waste management programs.
- **Community Engagement:** Empowering local leaders and influencers to advocate for sustainable waste practices.

Behavioral reorientation can foster a collective sense of responsibility, enhancing participation in waste management initiatives and compliance with established regulations.

V. 5.0 SUMMARY OF FINDINGS RECOMMENDATIONS AND CONCLUSION

5.1 Summary of Findings

The study highlights significant issues in solid waste management within Atikankan, revealing that garbage and paper constitute the major fractions of waste generated. This suggests that interventions aimed at reducing these waste types could be particularly effective. The analysis further indicates that the primary waste generators are farmers and traders, which points to agricultural and commercial activities as key areas for targeted waste reduction initiatives. The adverse effects of indiscriminate waste disposal, such as

environmental degradation and public health risks, are broadly recognized by the community.

5.2 Conclusion

The study conclusively shows that the current waste management practices in Atikankan are insufficient and often lead to significant environmental and public health issues. The irregular and inefficient collection of refuse exacerbates the problems of urban waste management. This research underscores the critical need for an integrated approach that combines physical planning, behavioral change, and robust governance to enhance the overall effectiveness of waste management systems. Achieving this will require concerted efforts from local authorities, community members, and other stakeholders to implement the recommended strategies effectively.

5.3 Recommendations

Based on the findings, several strategies are recommended to improve waste management in Atikankan:

1. **Enhanced Physical Infrastructure:** Develop and implement a comprehensive urban planning strategy that includes well-defined waste collection points and improved street layouts to facilitate more efficient waste management.
2. **Public Awareness Campaigns:** Conduct ongoing education and awareness programs to inform residents of the health and environmental impacts of improper waste disposal and the benefits of adherence to waste management regulations.
3. **Strengthened Policy Enforcement:** Apply stricter enforcement of existing environmental regulations and introduce penalties for non-compliance to deter improper waste disposal practices.
4. **Community-Based Initiatives:** Encourage community participation in waste management

solutions, such as community clean-up days and recycling programs, to foster a sense of ownership and responsibility.

5Technological Integration: Leverage technology to improve waste collection logistics and recycling processes, potentially through the development of mobile applications that can track waste collection routes and schedules.

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