Municipal Solid Waste Management in Ghana: An Unmitigated Challenge to Environmental Sustainability?

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Abstract

This study examines solid waste management practices in selected municipalities in Accra, Ghana, where waste management remains a major challenge with significant environmental and household impacts. Guided by functionalism theory, the study investigates how current waste management practices affect environmental sustainability in a developing country context. Data were collected through face-to-face interviews with 54 participants, including 42 household representatives across seven municipalities, five garbage collectors, and one key municipal official from each municipality. Documentary evidence was also reviewed to complement the interview data. The findings reveal that waste management practices in the municipalities largely deviate from local by-laws and internationally accepted standards. Although some households rely on private waste collection contractors, many still engage in indiscriminate dumping and burning of waste. Factors such as weak monitoring of contractors, inadequate public education on waste management, and the perceived high cost of waste collection contribute to ineffective waste management. Overall, the study provides empirical evidence that poor municipal waste management undermines environmental sustainability and poses risks to public health and property.

Key Words: Solid Waste Management; Municipalities; Environmental Sustainability; Developing Country; Ghana

Introduction

Solid Waste Management (SWM) appears an unmitigated problem across most developing and low-income countries globally (Bundhoo, 2018; Ziraba et al., 2016). It has become a canker to public health and environmental sustainability in Africa and most developing countries with no real solutions in sight (Mahajan, 2023; Abubakar et al., 2022). Consequently, SWM has become a matter of global concern, receiving great attention in the Sustainable Development Goals (SDGs). Target 11.6 set out to reduce the per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management by 2030. Definitions of solid waste (SW) vary in substance and context across the globe

(Ghanbarzadeh et al., 2024; Sharma et al., 2020). For this study, SW is defined as all solid waste generated in an area by households, businesses and organisations which is discarded (Vinti et al., 2021). It may sometimes include debris from construction and demolished buildings, and waste materials that may go into the waste stream. This does not exclude wastes described as hazardous if they do not enter the waste management stream in a particular area (Singh & Yadav, 2022). In many developing countries, it is not uncommon to see solid waste materials littered across cities, communities, villages and households. These materials often include organic materials, plastic bags, metal, glass and other solid waste materials (Krishna, 2024; Esteban & Quesada, 2022). This situation presents both environmental and human health challenges in uphill proportions. The increasing amount of solid waste materials across communities places a significant constraint on the capacity of the local government authorities to what they can practically do to solve the problem.

In light of the above, the president of Ghana pledged to make Accra, the capital city of Ghana, the cleanest city in Africa in April 2017 (graphic.com.gh, April 24, 2017), a declaration which was deemed an energised approach toward national environmental improvement practice as a policy position. This declaration didn't appear to have influenced policy or attitudes towards SWM and, by extension, environmental sustainability in Ghana. But the push from the government didn't stop there. The Greater Accra Regional Minister followed the president's pronouncement with a similar one launched in October 2021, code-named an "operation clean your frontage", described by the Minister as "a response to concerns about filth engulfing most parts of Accra" (ama.gov.gh/news, February 2, 2022). The idea was to mobilise households to clean the frontage of their homes. However, the management of solid waste continues to be a daunting challenge in every nook and cranny of the Ghanaian society, from residential to commercial centres.

This has exacerbated the growing concern about poor solid waste management and its attendant implications for life and the environment in Ghana. While the government, other policymakers and Ghanaians, in general, have realised the imperative to make the city of Accra as clean as it can be, the fight against all the inappropriate ways of disposing of solid waste in the communities across the city is humongous and daunting. This has enormous implications for policy and practice. Several studies on SWM in Ghana have focused on one municipality or two, and their collection and management practices. However, none of these studies set up a robust framework that details the issues in a broader context, looking at several municipalities in the city of Accra and provides a detailed account of the issues more comprehensively and coherently. This study, therefore, is important for several reasons; (1) it brings out some of the inappropriate solid waste management practices across several households and communities in the city of Accra more comprehensively that gives a deeper understanding of the issues (2) It draws attention to the ineffectiveness of solid waste management companies in the communities and what policy options may be advised (3) It provides insight as to what filth does to any country that fails to adopt global best practices for SWM and how it hinders the global effort to achieve the SDGs on the environment (4) it provides policy guidelines as to how to make private waste management companies more effective and committed to the task of solid waste management in the municipalities and (5) It presents the way forward for improving solid waste management practices in the city of Accra which could provide lessons for other regions and settings within the developing country context. In the main, the study seeks to find answers to the following research questions; (1) Why is solid waste management within households and communities across the city of Accra problematic and challenging? (2) How effective are the waste management companies for managing waste in these

communities? (3) What is the way forward to effectively deal with solid waste management in the city of Accra?

The rest of the sections focus on the relevant literature reviewed for the study, the theoretical framework, methods of data collection and analysis, results, discussion, implications of the study to policy and practice and the conclusion.

Literature Review

Environmental sustainability has become a dominant issue in the discourse of human health and livelihoods across major cities and communities in the world. The city of Accra is one of the major cities in Africa that is a major destination for many tourists and the business community around Africa and the rest of the world (Amoako et al.,2022; Preko, 2020), but suffers from the effects of environmental degradation as a result of poor waste management practices (Kumari & Raghubanshi, 2023; Cobbinah, 2017). This literature review explores waste management practices generally and across various communities in Ghana.

Challenges of Solid Waste Management in Ghana

In Ghana, just about 10% of all solid waste generated is collected and managed (Oteng-Ababio, 2017). This situation is exacerbated by a continuous population increase and poor attitudes to waste management at the community level. The waste management conundrum in the municipalities is mostly the result of ineffective collection and management, due partly to a lack of effective supervision and monitoring (Cobbinah et al., 2017). Challenges associated with the management of solid waste in Ghana's municipalities appear insurmountable and daunting as local government authorities continue to grapple with ways to manage this growing and compounding problem. These municipalities and waste management companies are often

overwhelmed by the high volumes of solid waste generated regularly (Lissah et al., 2021). This challenge is often exacerbated by the lack of well-planned and efficient strategies for managing solid waste, especially by the municipal authorities (Saja et al., 2021; David et al., 2020; Serge & Simatele, 2020). The budgets of the municipalities are often overstretched, with about 50 to 70% of the estimated amount earmarked for managing and disposing of waste (Lissah et al., 2021). Again, Local Government Authorities in Ghana are said to be spending about GHc 6.7 million (US$ 3.45 million) every year to manage solid waste, and GHc 550,000.00 (US$ 0.28 million) every month to pay waste contractors and for landfill maintenance (Lissah et al., 2021). Indiscriminate dumping and improper disposal of solid waste are said to cost Ghana $290 million every year, the equivalent of 1.6% of the country's Gross Domestic Product (Abalo et al., 2018). There are some key factors militating against the proper management of solid waste in Ghana's municipalities. They include rapid population growth, urbanisation, inadequate supply of waste bins, lack of waste transportation systems, low public awareness of the health implications of poor waste management and weak enforcement of environmental regulations (Kosoe, 2024). Besides, urban residents' poor behavioural practices toward SWM are reflected in littering the streets and water passageways as well as other public spaces (Nguyen et al., 2023; Raghu & Rodrigues, 2020). Low technical know-how on proper solid waste management processes by waste management companies further contributes to the challenges regarding solid waste management in the cities (Lissah et al., 2021; Appiah-Effah et al., 2019).

Dangers of Inappropriate Solid Waste Management in Ghana

The effects of indiscriminate and improper disposal of solid waste, mostly into open drains, water bodies, gutters, streets and around households through burning in open places often contribute to flooding and disease outbreaks (Chireshe et al., 2023; Ozoh et al., 2021). The

dangers of poor SWM in the cities and communities in Ghana not only threaten life and property but are also a potential hindrance to Ghana's efforts to contribute meaningfully to the achievement of Goal 15 of the Sustainable Development Goals (SDGs). Ghana's National Environmental Sanitation Policy, which has been in existence since 1999, takes a wider view of sanitation, covering food hygiene and solid waste and excreta disposal, but does not appear to have been effectively deployed to address the problem. Its decentralised approach reflects Ghana's intentions and broader commitment to developing decentralised forms of government.

There have been some initiatives to empower local government authorities to effectively regulate solid waste management and private sector participation in waste control in the municipalities, but the challenges in managing waste in many of these municipalities in Ghana persist (Lissah et al., 2021). For example, the human excreter management mix is 21%, basic sanitation, 45% limited sanitation, 13% unimproved and 22% open defecation (Appiah-Effah et al., 2019; GSS, 2018). Again, the basic sanitation level is 25%, limited sanitation 56%, unimproved, 8% while open defecation is 11% in these urban municipalities (Appiah-Effah et al., 2019). Other challenges, such as inadequate waste management infrastructure, limited equipment, and insufficient funds for the operations of the municipalities to support waste management activities, still abound (David Jr et al., 2020); Breukelman et al.,2019).

Managers and supervisors of waste companies are important stakeholders in municipal waste management. Their views are crucial in decisions regarding proper waste management and the application of local by-laws and global standards (Lissah et al., 2020). They are also expected to supervise general waste management activities in the municipalities and ensure compliance with existing legislation and by-laws. They are also expected to engage regularly with the public and find ways of handling the concerns that may arise from the public, and take measures

to investigate claims and reports on indiscriminate and improper disposal of solid waste in the municipalities. With these multiple roles, they are in a good position to share experiences on the strengths and weaknesses of SWM in the local Ghanaian context. Despite the important roles these managers and supervisors play in the management of solid waste, maintaining sufficient skills and expertise is a problem for waste companies (Lissah et al., 2021). The work of managers and supervisors in Ghana is hampered by many factors, including cost considerations, time constraints, and the complex nature of managing different locations within a municipality and across several municipalities. In Ghana, views and perspectives on waste company managers and supervisors are still generally inconclusive on how they manage municipal waste across the country.

Waste Management in Greater Accra-A Historical Perspective

Accra has an unenviable challenge for maintaining good sanitation and ensuring efficient SWM practices as a microcosm of the wider problem nationwide. The history of sanitation management in the country illuminates the disturbing sanitary situation confronting the country. Attempts to ensure sound environmental sanitation are hampered by consistent increases in the population of Accra and the resultant increases in waste production and the challenges of SWM thereof (Martin-Moreau & Ménascé, 2020). Greater Accra's total population has seen a consistent increase since 1911. It has grown from 18,574 in 1911 to 5, 455,692 in 2021(Oteng-Ababio, 2020; GSS, 2021). The consistent population increase over the years has posed further challenges to solid waste management efforts. Consequently, some policy initiatives were made by the government in response to the need to comprehensively address sanitation management problems. The first policy reforms created the European and traditional or native towns with two extreme conditions (Songsore, 2017). With this segregation, the European towns enjoyed household collection services while waste bins were

placed in the Native towns. There were also environmental health inspectors who conducted house-to-house and community monitoring to ensure compliance with approved waste management practices and prescribed punishment for culprits (Songsore, 2017).

This problem dates as far back as 1929. From only a few incinerator services then, these services became overstretched after independence, leading to a complete breakdown of the only incinerator by 1970. This led to the indiscriminate dumping of waste, which has not seen better improvement in modern Ghana (Oteng-Ababio, 2020). The second consistent effort at addressing SWM in Accra was witnessed in the early 1970s. During this period, the planned areas had hand wheelbarrows collecting waste from house to house at a fee, while in the unplanned areas, residents were to dump their waste at designated places at no cost. The financial demand for effective collection and disposal of solid waste was more than most local government authorities could handle, and this scenario is still prevalent in Ghana's municipalities. The inability of local government authorities to mobilise sufficient revenue to meet the high financial obligations to effectively manage solid waste led to a pile-up of refuse in low-income areas (Oteng-Ababio, 2020). The third effort was enhanced by international funding to support the waste management effort in Ghana. The grant favoured a public-private partnership in the management of solid waste so that local authorities could benefit from the financial strength of the private sector to better manage solid waste in Accra. Officially, this arrangement remains the policy position for dealing with the waste management challenge, but the problem persists (Aning-Agyei et al., 2024; Ishawu et al., 2020). Historically, the public sector has provided or regulated public services for or on behalf of the public, while the private sector has increasingly partnered in the provision of these services on a profit-making basis (Asiedu-Ayeh et al., 2023; Abalo et al., 2018). This background provides the basis for understanding current SWM practices in selected municipalities in Accra.

Functionalism: A Theoretical Perspective

The theory of functionalism has been used in several studies (Harvey, 2014; Mahner & Bunge, 2001; Kingsbury & Scanzoni, 1993; Fletcher, 1956). It views society as a structure made up of interrelated parts designed to meet the needs and expectations of the people and their communities. The theory, which developed from the works of Herbert Spencer (1820–1903), identified similarities between society and the human body. He noted the functioning of the various organs of the body, explaining how they work together to keep the body functioning and likened that to the various parts of society and the need for them to work together to keep society also functioning (Spencer, 1898). The theory of functionalism has been used in several similar studies in the past and in recent times (Prima, 2025; Izadi et al., 2020; Elster, 2003; Kingsbury & Scanzoni, 1993; Block, 1982). Management of solid wastes in households and communities is a function of all those involved to make it work. It includes individuals, the communities, the local government authorities and the private companies contracted to collect and manage solid waste across the communities. Failure on the part of any of the players who are expected to participate effectively to make it work has the power to derail the effectiveness of the effort towards environmental cleanliness and, by extension, environmental sustainability.

Methodology

Research Design

The research employed the descriptive design (Doyle et al., 2020; Siedlecki, 2020; Turale, 2020) to explain the views of respondents on solid waste management practices in the selected municipalities in the city of Accra. This provided the basis for a careful description and explanation of the views of respondents on solid waste management practices in a developing

country context. Personal face-to-face interviews (Schober, 2018) were held with respondents who were members of households and residents in the selected municipalities at the time of the study, as well as officials/workers of some waste management companies and an official from each of the selected municipalities. This design offered the opportunity for broader-based views and for the participants to freely express themselves by dispassionately responding to issues as much as they could (Villamin et al., 2025; Turale, 2020). It also allowed the researchers to probe further with follow-up questions to enrich the data for an in-depth discussion of the issues of solid waste collection and disposal in the selected municipalities. This allowed for a closer interaction between the researchers and interviewees for probing the complex questions of "why" and "how" in solid waste management within the developing country context. It provides grounds for explanation of complex issues to the interviewees for appropriate responses. With the above, therefore, the issues of solid waste management were fully discussed in appreciable detail.

Sampling Technique and Data Analysis Procedures

The data were collected using personal face-to-face interviews with forty (42) interviewees from different households. These households were selected across seven municipalities in the city of Accra, using the convenience sampling strategy. The households were selected based on access and availability for participation. The purposive sampling strategy was then used to select individuals for interviews. The residents, made up of homeowners, tenants and other home occupants, met the criteria for selection as interviewees if they were deemed to have rich knowledge of the issues and were willing to participate. The selected municipalities are mostly underdeveloped and congested. They are also hubs for all kinds of structures, with many of them unauthorised. These municipalities are also largely unplanned, with challenges of accessibility and lack of essential facilities compared to the more developed and planned

communities. They are the Ga West Municipality, Ga East Municipality, Nsawam Adoagyiri Municipality, Ablekuma West Municipality, Ga South Municipality, Ga Central Municipality, and Weija-Gbawe Municipality. Because these municipalities are poorly planned with all kinds of structures, six (6) households were conveniently selected in each community, with one person also purposively selected and interviewed in each household. Five (5) garbage collectors and one key staff member of the municipalities were interviewed using semi-structured interviews. Data reached saturation at various stages in each municipality, where views no longer varied significantly. However, other available individuals were still interviewed to ensure that there was equal representation of views and households, and those who needed more time to make up their minds were given the opportunity. A semi-structured interview guide was used to conduct the interviews (Karatsareas, 2022; Adeoye-Olatunde & Olenik, 2021). Open-ended questions were used in which respondents were required to demonstrate their understanding of the issues of solid waste management in the municipalities (Jayaratne & Jayatilleke, 2020; Weller et al., 2018). Interviewees were allowed to express their views without any interjections. However, follow-up questions were asked where necessary but avoiding all leading questions. All interviews were conducted with interviewees around their homes and office premises. Each interview lasted between 25 and 40 minutes (Maxwell et al., 2022; Okediran et al., 2020). However, towards the end of the interviews, interactions lasted 10-15 minutes when responses were no longer different. All interviews were conducted in English as questions were framed to meet the comprehension capacity of interviewees without compromising meaning, precision, clarity and alignment with the research objectives. The interview time and venue were scheduled for the convenience of the participants (DeJonckheere & Vaughn, 2019). All the interviews were conducted between September 5 and November 19, 2022. This was combined with personal observation, field notes and analysis of some secondary data. These data sources were compared and contrasted through triangulation,

in search of convergences and divergences to identify and consolidate themes. It helped to find common themes, deal with inconsistencies and validate or challenge outcomes. These multiple data sources also allowed for a synthesis of the data for a better understanding of the issues.

Households made up of people living in their own homes and caretaker residents (squatters) were purposively selected within the municipalities on the understanding that every household generates solid waste in some ways (Datta, 2022; Mathioudakis et al., 2021), and that its disposal is of interest in this study. Respondents answered questions on the nature of solid waste, mostly generated daily, the mode and frequency of disposal, cost of waste collection, alternative means of disposal to contain possible delays in waste removal or collection, the efficiency of waste collection and the willingness of residents to pay for waste collection. Interviews were recorded and later transcribed. Transcripts were read over and over again to gain a deeper insight into the meanings respondents attached to the issues (Cruz & Tantia, 2017). The transcripts were then coded through a careful line-by-line reading and assigning a word or phrase that aptly depicted the meaning of the data (Adu, 2026; Rogers, 2018). The data were then analysed thematically, where similar views were put in the same category to make sense of SWM practices in the selected municipalities and their implications for environmental sustainability. The discussions drew extensively from the views of respondents and were supported by personal observation of the researchers, as well as field notes during interactions with respondents, which had direct relevance to the issues of SWM. The discussions also benefited from secondary materials that showed linkages and also provided impetus in the demonstration of relevance to the understanding of the issues of concern in the study. Waste generated in Ghana is primarily composed of organic matter (50–70%) and plastics (14–19%), totalling over 6,500 tonnes of municipal solid waste (MSW) daily, with >70% coming from

households. Other common waste includes paper, inert materials (ash, sand), glass, metals, and textiles (Fosu-Mensah et al., 2024; Gyabaah et al., 2023)

Results

This section presents the study's findings. The study set out to discuss the challenges of solid waste management in Ghana in a developing country context, focusing on selected municipalities in the capital city of Accra. The findings described solid waste on themes such as food/kitchen waste, papers and boxes, cans and metals, bottles and glasses, polyethene bags and plastics, diapers and napkins and sanitary solid materials. Respondents were asked questions relating to the methods of garbage collection, the frequency or regularity of collection, the cost of collection, the willingness of residents to pay and what other alternative means of waste disposal mechanisms are available, among others.

Methods of Garbage Collection/Disposal

The main approaches to garbage collection and disposal emanating from interactions with respondents in the communities include collection by private contractors hired by the Municipal Assemblies, indiscriminate dumping and burning of SW, and irregularity of collection, among others.

Burning/Indiscriminate Dumping of Refuse

> "*Do you see how rubbish is scattered along the bushes around? It is because people dump their rubbish at dawn and night when nobody is watching. The collection truck that comes here is not regular and always gives excuses that the truck has broken down. So, people find other ways to dispose of their garbage, otherwise, their houses will be smelling"*. (PI, Manheam)
>
> *"It is serious! Sometimes they don't come at all. So, my father takes the waste out and gets it burned*". (PI, Amanfrom)
>
> *"Anytime there is a heavy downpour, you come here and see for yourself. This place, even the highway will be flooded, and the rubbish will be choked everywhere. People just dump their garbage anyhow".* (PI-Weija-Gbawe)

Frequency/Regularity of Collection

Timely collection of refuse is important to prevent the decomposition of rubbish and stench in households as this attracts scavengers and house flies with its attendant ramifications. It is a concern that most often, garbage trucks do not attend to household collections on schedule, and this leaves them stranded and frustrated as it pushes them to find alternative, albeit mostly unapproved means of disposing of their trash.

> "*Sometimes it takes far longer than the scheduled periods for the garbage trucks to show up for collection. When you call them, they will say they are coming, and it takes another week or more for them to come. That is why some people do not even want to pay for their services but rather find other means of handling their waste"*. (PI, Asofaa)

> *"We usually pack them in large plastic bags when the bin is full and we can have so much waiting, sometimes for close to two months. Anytime I call the one who is in charge, she tells me they will come no matter how long they delay but will be insisting that I pay every month. How can I be paying when I do not get the service? That is the challenge we have with waste disposal here. It can be very frustrating!"* (P-I, Ablorma)

> *"Sometimes the collection delays and that makes people find other ways of disposing of their waste".* (PI-Agbogba)

Cost of Collection

Some people explained that they pay for rubbish collection but do not get the needed services in return. This, they hinted, discourages other residents from contracting these waste collectors.

> *"My husband agreed with this company to collect our rubbish. They said we should pay forty Ghana Cedis each time they collect our rubbish and that they would come every two weeks. Sometimes they come and there is not much rubbish in the dustbin, but they will still collect forty Ghana cedis. I thought this was expensive"*. (PI, Kwashiebu)

> *"We pay them Ghc50 a month for collection, but they do not come regularly. This makes it expensive because you pay and still must find a way of handling your waste because of the way they delay sometimes".* (PI-Nsawam Adoagyiri)

> *"I think that Ghc 50 a month is too much because they don't come. If they were coming regularly, we can manage, but because they don't come, paying them that money is too much*". (PI-Agboba)

Willingness to Pay for Garbage Collection

Respondents appeared more willing to pay, but on the condition that the waste collection companies would attend to them more regularly. Members of some households, however, indicated that they were unable to engage the services of the waste collection companies because they simply do not see the need for it when they can handle their waste by other means.

> "*Can you imagine that we pay forty Ghana cedis a month, but end up disposing of our rubbish by other means? How is that going to encourage others to also do the right thing? Look at all these houses here, they generate rubbish but how do they dispose of it since they have no rubbish bins in the house? Some time ago, my neighbour and I decided to put our dustbins outside so that the truck could pick them up when we were not at home. The people in the area would pile up their rubbish there at dawn and times when we were not around. Within a short time, the whole place would be full and spilling over. That's because they don't want to pay for the services*". (PI, Ablorman)

> *"When we pay the come only once a month. Even with that, you have to call them several times before they will come. Sometimes, too, they don't come at all*". (PI, Asofaa)

> *"Some of the collectors working with the companies have set up their own collection businesses using "aboboyaa". So, they deliberately don't come. If you call them, they give you the number of the "aboboyaa" driver to call them. When you call them, they also charge. So, it is frustrating"*. (PI-Amanfrom)

> *"I will pay if only they will come every two weeks as they always say. But the truth is that they will not come. So why should I pay and end up disposing of my rubbish by myself?"* (PI-Weija-Gbawe)

Access to Homes and Collection Points

From the point of view of the waste collection agencies, access to collection points and homes, especially during the rainy season, has been challenging. To them, low subscriptions from residents have also raised the cost of collection.

> *"In some places, there are very few customers. So going there frequently costs us. In that case, we manage how many times we go there to maximise the fuel we use. It is very expensive to run the trucks regularly when the subscribers are few"*. (PI, Rural Waste Services Limited)

> *"Sometimes the trucks break down due to the nature of the roads, and it takes a longer time to repair, depending on the nature of the problem. Sometimes, too,*

when the driver is new, it takes time for them to get to know the places well". (PI, Tropical Waste)

"The roads to some of the places are bad. Some of the people also don't put their bins outside. When we go, and we cannot access the house to clear their bins, we cannot keep going back because it costs us to go there". (PI-Zoomlion Ghana Ltd)

The way forward to making waste collection efficient and effective

"From where I sit, I think that we need more supervision and monitoring. The waste management companies take the contracts to do the work. So, if the work is not being done and people are complaining, there is the need for re-enforcement in supervision and monitoring to ensure that the work is done". (PI-key staff)

"The trucks often break down, and there are also a few of them. That should not be an excuse, but unfortunately, it is capital-intensive. If the drivers handle the trucks well, we will be able to do more, but they report constant breakdown of these trucks. So we need new trucks to replace the old ones " (PI-Key staff)

"The drivers are not paid well. So, they are not motivated to work for the companies. There are senior officers who also own their own waste collection companies on the side. So that contributes to the problem of poor service. We need to pay the drivers well and also improve the collection schedules. We need better trucks as well". (PI-Worker)

"We need more public education on sanitation and refuse management. There is too much ignorance of the health implications of poor refuse management in the communities". (PI-Key staff)

The above views represent a cross-section of the sampled opinions expressed by the respondents in the communities of the selected municipalities in the Greater Accra Region. The following is a detailed discussion of the views blended with the personal observation of the researchers and documentary evidence, as may be necessary to ground the discussions on SWM and environmental sustainability in the selected municipalities in the Greater Accra Region.

Discussion and Implications

Solid waste management across cities in developing countries is particularly challenging and poses substantial challenges to life and the environment. The situation is compounded in fast-growing cities, including the city of Accra, the capital of Ghana, which has gained the reputation of being a major tourist destination in sub-Saharan Africa because of the country's

relative political stability and peace (Asongu et al., 2023; Opare-Addo, 2020). The objective of this study was to discuss the management of solid waste in selected municipalities in the city of Accra and its implications for environmental sustainability in the developing country context. The study is guided by the theory of functionalism, which views society as a structure made up of interrelated parts designed to meet the needs and expectations of the people and their communities. The theory explains how the various parts of society need to work together to keep society functioning. In the management of solid waste, there is the imperative for effective coordination between the private solid waste management companies, the municipalities playing effective monitoring, supervision and oversight responsibilities, and the communities and households also effectively playing their roles to make the management of solid waste effective. The discussion is situated within the context of a developing country but mirrors some global best practices while pointing to suggestions for policy and practice. The complaints by residents that the management of solid waste in the municipalities by private companies is ineffective and unreliable resonate with earlier studies (Afful et al., 2024; Lissah et al., 2021; Ishawu et al., 2020). These perceptions are not unfounded, as it is commonplace to observe indiscriminate dumping or littering on the roads, bushy areas, uncompleted structures and burning around households, and in front of shops in the communities. The views expressed by residents pointed to disappointment with the current arrangement for SWM in the municipalities. Over the years, the practice of these municipalities has been to provide SWM services to public institutions and public places such as market centres, schools, lorry parks and hospitals, among others, while services for households are outsourced to private SWM companies. This approach, which underpins the practices in the municipalities of the city of Accra, has, over the years, proven ineffectual for SWM in the municipalities due to the inefficiency of waste collection in the communities by the private SWM contractors, culminating in residents' waning confidence in the work of those contractors. One other factor

exacerbating the challenge of SWM in the municipalities is the lack of adequate waste dumping sites. This is a well-known issue in the Greater Accra Region. As part of the efforts to address the challenge, the government set out in the 2022 budget under the Greater Accra Resilient and Integrated Development (GARID) project, to "construct an engineered sanitary landfill and a material recovery facility in the Ga West Municipality" (The Budget Statement and Economic Policy of the Government of Ghana, 2022, p.170). This pronouncement is yet to be accompanied by the needed effort for the actual construction of the dumping site. The improper disposal of solid waste is not only a threat to environmental sustainability and the global effort for attaining the SDG on the environment, but also to livelihoods, as it causes filth and flooding in some of these already poorly planned municipalities.

Public-private partnership for SWM has been the approach to managing solid waste in the municipalities. While some have argued that the involvement of private waste management companies is the most effective way of dealing with municipal waste management (Olukanni & Nwafor, 2019), evidence on the ground suggests that the management of solid waste under this arrangement is a fundamental challenge that calls for a deeper re-look into the whole concept/model and the strengthening of supervision and monitoring of these companies to ensure that there is some level of commitment and efficiency in SWM. Most metropolises, municipalities, and districts in Ghana share similar arrangements for SWM at the local government level, even though some may be more efficient and reliable than others. As a result, it is not uncommon to see all kinds of plastic bags, kitchen waste materials, bottles, and plastic containers, among other solid waste materials, littered across the municipalities and the country. This situation hurts the health of the people and the environment, especially in the absence of clean and potable water in some of these municipalities. As more people depend on borehole water supply using water tankers, wells and hand-dug cisterns, living in areas with

mostly chocked waterways, disease-carrying insects are likely to transmit infectious diseases to humans, compromising the health of the people in some of these municipalities. This is against the backdrop of the finding that some of these selected municipalities have one of the highest numbers of cases of cholera and malaria in the city of Accra, as 72% of households in Ghana are commonly infected with cholera and malaria disease (Dongdem et al., 2025; Kungu et al., 2025; Apenteng et al., 2023). Indiscriminate littering, burning and inappropriate disposal of solid waste also have the effects of polluting the sources of water and generally posing health risks in various ways to residents (Tweneboah-Kodua et al., 2020).

Even though some residents in these municipalities showed some willingness to pay for the services of the private waste management companies, dissatisfaction with their services appears to compel the people to settle on alternative ways of disposing of their solid waste. This brings to question the capacity of these companies and the monitoring role of the assemblies to ensure that SWM contractors carry out their responsibilities effectively to households in the communities (Lissah et al., 2021). While some residents are reasonably aware that the municipal assemblies are in charge of SWM in the municipalities, they appear to be in limbo as to how and where to report their dissatisfaction or frustrations when these contractors fail to live up to expectations. Sometimes, some residents manage to complain to the offices of these private contractors, but not much is achieved in addressing or ameliorating the situation. There appears also to be little education as to the expectations and reporting lines of these contractors and the households they serve, as well as the responsibilities or obligations of these companies to the communities. The regulatory role of the municipalities to ensure that private waste management companies render efficient services to the communities is not seen as effectively enforced. Households pay for their services, as was the claim by some residents for regular collection of solid waste, but the collectors turn up only once a month and

sometimes once in two months, but this is not accompanied by a reduction in the charges to compensate for the lost days in collection. This compels some residents to adopt practices such as burning or indiscriminate dumping at the nearest bushy areas since the municipalities are still underdeveloped and largely unplanned. This illegal dumping and burning of solid waste constitute a breach of prescribed global SWM disposal practices and also present an imminent disaster for human health and environmental hazards (Tsheleza et al., 2019) in these municipalities. It is not uncommon to see plastic bags, cans, bottles and other solid waste materials either partly burnt, being burnt, heaped to be burnt, or kept in rubbish bins in front of homes and shops for several days and weeks without collection. They can also be seen dumped around homes, uncompleted structures, shops, pathways, gutters and the bushy areas around the communities. Without the enforcement of sanitation laws (Urban Sanitation Research Initiative Ghana, 2017-2020) to punish offenders, for example, these practices have become generally axiomatic and seemingly acceptable, so that perpetrators do not feel the need to be discreet about burning, except for indiscriminate dumping. This often happens in the dark of the night or dawn along the bushy areas on the shoulders of the roads and uncompleted structures.

Poor SWM practices are not without some peculiar consequences, depending on the health vulnerabilities of residents due to the kind of environment in which they live. Data from the Ghana Statistical Service suggests that 47.4% of households' solid waste is collected, 26.8% are disposed of through burning, and 1.9% of households dump solid waste indiscriminately (GSS, 2010). Burning of solid waste and indiscriminate dumping is inappropriate and pose health risks to lives in these already disadvantaged communities of the Greater Accra Region. This, notwithstanding, accurate and reliable national data on waste generation and composition are argued to be still largely absent in Ghana (Kusi-Appiah et al., 2025), given the frequency

of daily generation of such waste material and modes of disposal at the household level. Available data, however, provides a fair guide and a sense of the enormity of the real problem in the country. However, the case where solid waste, especially plastic waste, is found in heaps and on roads and corners around households, and littered amid burning in these communities, paints a picture of the level of urban development, new settlements, and the generally poor waste disposal and management challenges faced by these municipalities. Studies have also shown that the burning and indiscriminate dumping of solid waste have consequences and other implications, including respiratory health challenges and environmental pollution (Vinti & Vaccari, 2022; Zohoori & Ghani, 2017). Other dangers include its congeniality for breeding pathogenic organisms, the spread of infectious diseases, choked drainage systems and the presence of houseflies in the kitchen during cooking (Tweneboah & Asomanin 2020). This exposes the communities to diseases, the common ones being malaria, cholera, Buruli ulcer, tuberculosis, yaws and schistosomiasis (Aninagyei et al., 2020). The presence of these diseases in the selected municipalities is explained in part by the nature of their waste management practices. Poor management of solid waste is dangerous to life and undermines the efforts toward environmental sustainability (Chireshe et al., 2023; Somani, 2023) and the attainment of the SDGs on the environment. As a flood-prone area, with poorly planned and poor or inadequate drainage systems, the rainy season usually comes with so much spread of indiscriminately dumped solid waste materials around the municipalities, coupled with the erosion of roads, rendering them worse for motorists, businesses and residents. The net effect of these practices is an environmental health burden on residents and the communities (Oteng-Ababio et al., 2013), which makes an already bad situation worse.

Implications of the study

There are practical implications of the study. First, there is an increasing risk of exacerbating the already flood-prone areas of Accra, Ghana, as solid waste is dumped indiscriminately on

waterways, including gutters, and in the drainage systems. Second, the danger of deepening the already bad health conditions of residents is palpable, as poor sanitation conditions provide a haven for the breeding of mosquitoes and other insects capable of carrying all kinds of diseases that could worsen the health situation of residents. Third, it is a potential jeopardy to the official declaration by the President of making Accra the cleanest city in Africa, since littering, indiscriminate dumping and burning hinder the effort toward effective environmental protection and management.

Ensuring environmental sustainability calls for a global effort, but State responses are crucial for achieving global goals. The SDGs on the environment cannot be achieved until individual countries play their part effectively and aggressively, starting from the household and community levels. The President of Ghana's declaration to make Greater Accra the cleanest city in Africa may be described as overambitious and unattainable, at least in the short term, if the practice of SWM at the household and community level continues to pose dangers to the achievement of national, sub-regional and global aspirations and remains out of touch with recommended SWM practices. For the Greater Accra Region of Ghana to play an effective role in the effort toward environmental sustainability and by extension, achieving SDG goals on the environment, there is the need for a renewed effort to ensure timely collection and proper disposal of solid waste in Accra, especially the vastly underdeveloped and unplanned communities of the city. Dumping sites should be made available and accessible. This effort should be enhanced by a collective effort of all the metropolises, municipalities, and districts, by being more proactive and effective in ensuring that SWM practices, especially collection and disposal, are timely, efficient, effective and affordable to residents. There should also be effective supervision of the work of private SWM contractors and effective application of the laws governing SWM practices in the communities to ensure that these communities are safe

for life and property, and help the effort to address the bigger issue of environmental sustainability. Also, to reduce the impact of plastic solid waste, there should be effective policy measures and implementation strategies to reduce, reuse and recycle plastic waste. There should also be more education on SWM and its implications for life and the environment to raise awareness among community residents as part of the efforts to ensure compliance and reduce self-destructive and unsustainable environmental practices.

The way forward for improving municipal solid waste management

Beyond the global best practice of reduce, reuse and recycle strategies (David et al., 2019; Rhein & Sträter, 2021; Mohammed, 2021), there is a way forward to effectively deal with solid waste management in Accra, Ghana, which can provide lessons for other African and developing country settings. These include public education on the rights of community members and households to demand regular and timely services from private waste management contractors, effective enforcement of contract terms and agreed-upon sanctions for default on collection and disposal of solid waste. There is also the need for close supervision of waste management companies by the local government authorities and severe punishment for inappropriate disposal of solid waste in the communities. Efforts should be made to prioritise contract awards to companies according to their capacity, ability, and willingness to deliver based on rigorous assessment. Contracts should also be awarded to companies residing within or close to their areas of assignment or service. Currently, it is the case that some waste management companies are either based in areas far removed from their areas of operation or won contracts based on influence rather than capacity, ability, and willingness to deliver. Compliance enforcement is also weak, with waste management companies hardly turning up for waste collection. This makes it difficult for households and community members to report the waste management companies in times of default. Lack of or weak application of sanctions

allows these private waste management companies to renege on their duty and go unpunished. To address these issues comprehensively, there is the need for strong and well-defined waste management policies and compliance rules well communicated to all parties, effective supervision and monitoring of collection and disposal activities of waste management companies and the application of the right and affordable fees to individuals, households and communities.

Limitations and Directions for Future Research

This study focused on the management of solid waste in selected municipalities in the Greater Accra Region of Ghana. Inasmuch as the selected municipalities amply reflect the general situation of solid waste management practices in Ghana and most developing countries, the continued growth of solid waste and poor management practices present serious health and environmental consequences in the communities. While some communities are more conscious of the dangers of this menace, awareness is low in other communities, allowing the debilitating effects of inappropriate and unconventional disposal of solid waste to negatively affect lives, livelihoods and the environment. This research was conducted in selected municipalities in Greater Accra, where rapid population growth presents serious challenges to the management of solid waste and the dangers it poses to the environment. A comparative study of solid waste management practices in other regions of Ghana could have provided some peculiar and deeper insights for knowledge advancement. This provides the basis for future research, which could explore a larger sample across other regions to quantitatively analyse the generation and management of solid waste and how to ameliorate its effects on lives and the environment. A comparative study of two or more developing countries could have provided deeper insights into the management of solid waste in developing countries and practical and more efficient management approaches to dealing with the phenomenon. There is also the need for further

studies into the behavioural and institutional factors that contribute to poor solid waste management in developing countries, which could enrich the debate on the management of solid waste in the developing country context.

Conclusion

This study set out to address three important research questions. The first question sought to find out why the management of solid waste within households and communities across the city of Ghana problematic and challenge. The evidence suggests that SWM practices continue to be a challenge for most households in the communities, a situation which is not seen to be ameliorated by the involvement of waste management contractors who are believed to be mostly unreliable and inefficient. The second question sought to address the issue of how effective waste management companies are in these communities. Beyond claims of their ineffectiveness, these private waste management companies are also perceived to be expensive relative to the services they provide. This has influenced residents' choices to adopt other means of solid waste disposal, including burning and indiscriminate dumping. It has also resulted in a reduction of existing clients and discouraged potential customer subscriptions for waste collection. This renders the cost of collection high for these private contractors. The inability of some local government authorities to enforce the by-laws on sanitation management from the side of the contractors and in the communities has also contributed to the poor collection and compliance regime, rendering these communities vulnerable to practices that are inimical to the environment and detrimental to the health, lives and property of residents. The third question deals with how to effectively deal with solid waste management in Accra in a developing country context. The right policies for waste management, combined with public education on their rights and compliance behaviour is important. The findings broadly and effectively advance the theoretical understanding of functionalism by demonstrating how

private waste collectors, municipal assemblies, communities and households can work together to effectively manage municipal waste and preserve lives and the environment. Effective monitoring and supervision of private waste management contractors, proper application of rules and by-laws on solid waste management at all levels, effective management of the cost of collection, and public education are among the pillars as the search for measures to effectively deal with municipal solid waste management in developing countries continues.

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