



Solid Waste Collection in the Informal Settlements of African Cities: a Regulatory Dilemma for Actor's Participation and Collaboration in Kampala

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Abstract

Formal and informal institutions exist to regulate actors providing solid waste collection services in African cities, yet collection coverage remains low. The study examines the role of institutions in enabling and/or constraining actors' participation and collaboration in solid waste collection in Kampala City. A qualitative methodological approach is employed by conducting in-depth interviews, focused group discussions, and reviewing documents. A dilemma in waste regulation manifests. Whereas regulations favour formal actors, informal actors predominantly provide waste collection services in poor neighbourhoods. Stringent requirements for participation and discriminatory bylaws are exposed. The interplay between formal and informal actors is vibrant but not legally supported. Therefore, it is prudent for effective planning to accommodate the operations of formal and informal actors and their interface to ensure smart cities. This might encourage participation and enable actors' collaboration, consequently reducing uncollected waste volumes and illegal waste disposal sites in the informal settlements.

Keywords Solid waste collection · Institutions · Participation · Informal settlements · SDGs

Introduction

Globally, access to solid waste collection services is limited but more so in developing regions, Africa inclusive. Almost half of the world's population is estimated to lack

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access to regular waste collection, while over 3 billion people do not have access to designated waste disposal facilities (UNEP, 2015). Irregular waste collection services and careless waste disposal practices are also prevalent (Bello et al., 2016; Rodić & Wilson, 2017; Wilson & Velis, 2015). In most developing countries, 30 to 60% of waste is uncollected from urban areas, while half of the urban centres cannot access reliable waste collection services (World-Bank, 2018). In Africa, only 25 to 70% of the generated waste is collected (UNEP, 2015), while in Sub-Saharan Africa alone, on average, 57% is collected (CSE, 2017). These statistics indicate that the desired level of waste collection coverage is far from being achieved. Without adequate waste collection services, waste generators may resort to illegal waste disposal, eventually polluting the environment and affecting the aesthetics. Consequently, the drive to achieve smart, clean, and safe cities as envisaged in the Sustainable Development Goals (SDGs)¹ may remain a grandiose dream. Hence, state and non-state actors in waste collection services are desired in most countries, including Uganda.

Historically, the burden of solid waste collection was a monopoly of the government of Uganda. According to Katusiimeh (2012), formal actors in waste collection services were dominant in urban centres, while all other actors were presumably informal. With the liberalisation policies, diverse actors came on board to supplement the government in providing waste collection services (Katusiimeh et al., 2012; Tukahirwa et al., 2013). Private firms in waste collection became popular with privatisation and decentralisation (Katusiimeh et al., 2012; Okot-Okumu & Nyenje, 2011; Tukahirwa et al., 2013). Over the years, the participation of more actors, including individuals, non-governmental organisations (NGOs), community-based organisations (CBOs), faith-based institutions (FBIs), private companies, and public–private partnership (PPP) arrangements, has been witnessed (Aryampa et al., 2019; Katusiimeh et al., 2013; Oates et al., 2019; van Niekerk & Wegmann, 2019). While some non-state actors are legally registered to venture into ‘wastepreneurship’ activities, the majority are unregistered. A few non-registered actors may still provide waste collection services with or without knowledge of the illegality of their actions. Regardless of the registration status, the activities of all actors require a guiding regulatory framework.

Adequate and effective policies can support and encourage non-state efforts in solid waste management. Agreeably, regulations should control the solid waste management chain, collection inclusive (Aparcana, 2017; CSE, 2017; van Niekerk & Wegmann, 2019). Scholars have concurred that regulations enable the participation of actors in supplementing the public sector efforts in waste collection (Hettiarachchi et al., 2018; Oates et al., 2019; Tukahirwa & Lukooya, 2015). Policy instruments also support the recycling efforts of various actors whose activities contribute to community waste collection status (Dlamini, 2016; Gutberlet et al., 2017; Wilson & Velis, 2015). However, policies may impede effective solid waste management, especially when sectorial policies are not harmonised (Haregu et al., 2016; Kubanza & Simatele, 2020; Ogotu et al., 2021). Nevertheless, if aligned and effectively enforced, policies play a vital role in regulating various actors’ activities and strengthening public–private institutional arrangements in the solid waste collection continuum.

¹ Proper waste management contributes to SDG 11-sustainable cities and communities, ensuring that cities are inclusive, safe, resilient, and sustainable.

Despite the significance of regulation in solid waste collection, policies targeting informal actors are missing in most African cities. Instead, there has been an attempt to ‘formalise’ informal solid waste collection actors in countries like South Africa (Godfrey & Oelofse, 2017), Morocco, Egypt, Senegal (van Niekerk & Wegmann, 2019), and Malawi (Kasinja & Tilley, 2018). In most African countries, for instance, Ghana (Mariwah, 2015), Kenya (Gutberlet et al., 2017; Oyake-Ombis et al., 2015), Tanzania (Kihila et al., 2021), and Nigeria (Mbah & Nzeadibe, 2017), urban policies have not integrated the activities of informal actors. In Rwanda, Rajashekar et al. (2019) note that it is even illegal to provide ‘free’ waste collection services. Since most African economies are predominantly informal, this may pose a challenge for regulating and managing waste collection in communities.

Scholarship on participation and collaboration of actors and regulation of solid waste collection is limited and varies in scope. Scholars seem to concur on legal hindrances to actors’ participation in public–private partnerships (Dlamini, 2016; Katusiimeh et al., 2012; Rajashekar et al., 2019; Tukahirwa et al., 2013). Missing regulations for informal waste collection are also highlighted by scholars (Dlamini, 2016; Gutberlet & Uddin, 2017; Tukahirwa et al., 2013). However, the scholars are not primarily policy-focused and therefore fail to examine specific enabling or constraining aspects of participation and collaboration between and among formal and informal actors. That notwithstanding, there has been a considerable amount of literature on policy issues in solid waste collection (Campos & Zapata, 2014; Haregu et al., 2017; Kubanza & Simatele, 2020; Okot-Okumu & Nyenje, 2011; Squire & Nkurunziza, 2022; Tukahirwa & Lukooya, 2015). Of these studies, only Campos and Zapata (2014) focus on institutions. However, their study analyses the contextualisation of global ideas in ‘new institutionalism’, not critical institutionalism.

This study is informed by critical institutionalism and is based on the recommendation from Muheirwe et al. (2022) of the need to investigate the relevance of regulation for actors in informal settlements. The solid waste regulatory framework for Kampala City, Uganda, is examined to understand what enables or constrains actors’ participation and collaboration in the provision of waste collection activities. This study contributes to the scholarship on critical institutionalism that has hitherto been limited in solid waste management studies. It informs policymakers and practitioners to recognise the complex formal and informal duality in informal settings and calls for adopting institutional interfaces for effective solid waste collection. In the next section, theoretical views that guided the study are expounded, followed by an explanation of the methodology used. After that, findings are presented, followed by a discussion. Lastly, conclusions drawn from the study and recommendations are provided.

Critical Institutionalism and Solid Waste Collection Paradox: a Theoretical Reflection

The theory of critical institutionalism lays a foundation for this study. The study uses the concept of institutions, as propagated by Hall et al. (2014) and Cleaver and De Koning (2015), that in society, there are rules that may hinder particular actions while enabling specific behaviour. According to Katusiimeh (2012), institutional

structures and rules may prohibit some actors from participating in a market-driven economy through legal expectations such as securing operational licences, acquiring contractual agreements, and paying taxes. Hall et al. (2014) note that institutions are established to not only regulate but also exclude some actors or actions. This is in congruence with Levi-Faur (2017) that regulatory constraints have specific rules which restrain particular actors from specific actions, in which failure to comply may lead to specified punitive measures. Covertly, institutions may sometimes empower and enable the participation of some actors while disenfranchising others.

In critical institutionalism, regulations for actors are dynamic, entailing diverse formal and informal rules. The former includes policies, laws, regulations, and other endorsed guidelines, while the latter refers to accepted values and norms that may determine the actions of various societal actors (Chisvert-Tarazona et al., 2018; Jones, 2015). A particular community recognises formal and informal regulations to control or regulate decisions and/or actions of both formal and informal actors operating in different contexts. This is the reason for growing advocacy for context-specific rules and regulations, particularly for actors in informal settlements (Gutberlet & Uddin, 2017; Kubanza & Simatele, 2015; Muheirwe et al., 2022; Muiruri et al., 2020; Omollo, 2019). It seems suggestive that informal rules may be as effective as formal rules when applied in relevant contexts.

The theory of critical institutionalism is relevant to this study because, in most poor neighbourhoods, both formal and informal actors are engaged in solid waste collection (Katusiimeh et al., 2012; Mukama et al., 2016; Tukahirwa et al., 2013). Solid waste collection entails picking waste from the generators and taking it to disposal sites. Informal actors, such as individuals and waste pickers, are engaged in collecting waste from households to community collection points, which may be skips, open roadside, or any other place of their choice. Formal actors include urban authorities or private operators who collect waste from residential areas and community transfer points to designated disposal sites or landfills (Bello et al., 2016; Kinobe, 2015; Okot-Okumu, 2012). However, the distinction between formal and informal actors in solid waste collection provided by the scholars does not reflect the collaboration and interface that other scholars have noted (Jiménez-Martínez, 2018; Katusiimeh et al., 2012; Oduro-Appiah et al., 2019; Tukahirwa et al., 2013). If it does not capture this interface, formal and informal actors' activities in providing solid waste collection services may be misguided.

The provision of solid waste collection services in informal settlements is as dynamic as the actors and collaborations. These may be between formal and formal, informal and informal, and formal and informal actors (Bjerkli, 2013; Godfrey & Oelofse, 2017; Katusiimeh et al., 2012; Oduro-Appiah et al., 2019; Simatele et al., 2017). Proponents of critical institutionalism suggest that different actors, whether competitors or not, should be able to collaborate and coordinate amidst institutional bricolage (Cleaver & De Koning, 2015; Wang et al., 2018). According to Whaley (2018, p. 139), 'institutional bricolage is a concept that attempts to capture the ways in which people both consciously and non-consciously patch together institutional arrangements from the social and cultural resources available to them'. However, in the absence of adequate context and content-specific regulation, actors may not smoothly collaborate amidst institutional bricolage.

Critical institutionalism is vital for understanding the enabling and/or constraining aspects for both formal and informal actors in the provision of solid waste collection services in informal settlements. For sustainable waste management, written and unwritten rules should be effective (Guibrunet, 2019; Martinez et al., 2019; Rodić & Wilson, 2017; van Niekerk & Wegmann, 2019), which espouses critical institutionalism. It is also important for institutions to be supportive of the roles played independently by both formal and informal actors and collaboratively in providing solid waste collection services in informal settlements. This is referred to as the 'hybridisation of formal and informal rules' by Jiménez-Martínez (2018). Notably, the absence of guiding regulation for actors' participation and coordination may determine community waste collection outcomes.

Methods and Materials

Study Approach and Setting

The study applies a qualitative approach. This is in accordance with Creswell and Creswell (2017) that the qualitative approach is suitable while exploring social or human challenges through understanding affected individuals or groups. In this study, the human challenge faced is waste management, and affected individuals and groups are the waste collection service providers. Thus, the approach was deemed suitable to understand the challenge of the existing solid waste management regulatory framework in Kampala City by exploring facilitating or constraining aspects for the participation and collaboration of actors engaged in providing solid waste collection services.

Kampala City was selected because it is the most populous city in Uganda, with over 4,500,000 residents generating high volumes of waste estimated at 60,000 tonnes per day but with only 60% being collected (KCCA, 2014). Although KCCA engages private actors (formal) to supplement the provision of waste collection services in the various city subdivisions, uncollected waste remains. Thus, high volumes of uncollected waste attract informal actors as a source of their livelihood. Consequently, both formal and informal actors provide solid waste collection services in the city. These diverse actors require a guiding framework in order to participate efficiently and collaborate effectively. Kampala City is acknowledged for having developed adequate regulation, albeit fragmented (Kinobe, 2015; Oates et al., 2019; van Niekerk & Wegmann, 2019). The city also shares a similarity of low solid waste collection rate and prevalence of informality with other Sub-Saharan cities (Kabera et al., 2019). Thus, Kampala City provides context for understanding the role of regulation in enabling and/or constraining participation and collaboration of actors in the provision of solid waste collection services in Sub-Saharan cities with similar characteristics.

The study setting is Makindye subdivision, one of the four divisions of KCCA that implemented a pilot refuse collection centre. The subdivision has residents with varying socio-economic statuses; thus, both formal and informal actors provide solid waste collection services to the divergent residents, making the interface between

and among actors more visible. Makindye subdivision was hence deemed suitable for providing adequate and relevant information to meet the study aim.

Participants of the Study and Sampling Procedures

Thirty-six people participated in this study, which included 15 key informants and 21 participants in focused group discussions. Key informants included formal actors such as officials from registered solid waste collection firms (2), National Environment Management Authority (2), Kampala City Council Authority (2), Ministry of Health (1), and local council authorities (4). Other key informants were informal waste collection actors, including community-based waste collectors (2) and waste reclaimers (2). Waste reclaimers roam in illegal and legal dumping sites in communities picking waste that can be recycled. They depend on waste picking as a source of livelihood. Unlike waste reclaimers, community-based waste collectors are engaged by households in their community to dispose of their waste at a fee when the need arises. They do not rely on waste collection as their source of livelihood. The criteria for informal waste collectors participating in the study included 2 years or more in waste collection activities. There was a need to engage participants who had experience in their 'trade' and were likely to be aware of the regulations hindering or constraining their activities.

Public institutions' officials were selected by virtue of their roles and responsibilities at their respective workplaces regarding solid waste management activities, policy formulation, or enforcement. Private firm officials, waste reclaimers, and informal community-based waste collectors were selected because of their contribution to solid waste collection in the communities. Thus, all key informants were purposively selected. In addition to purposive sampling, accidental sampling was also applied for waste reclaimers. The research team specifically walked to different legal and illegal dumping sites in the communities, looking for waste reclaimers eligible and willing to participate in the study. For community-based waste collectors, purposive and snowball sampling was applied. According to Bhattacharjee (2012), it is suitable when a sampling frame is unavailable or cannot be easily identified. It was used because some of the community-based waste collectors perform their tasks at night and in privacy and thus are not easily identifiable. Therefore, local council leaders assisted in identifying one or two of them and these identified their colleagues.

Data Collection Techniques

The study employed in-depth interviews, focus group discussions, and document reviewing to collect information. In-depth interviews and focus group discussions were chosen because of their potential to enable in-depth inquiry and interaction to understand a phenomenon in qualitative studies (Creswell & Poth, 2016). This enabled understanding solid waste regulation and initiatives and triangulating information from interviews and discussions. An interview guide was developed for each category of participants. The local council authority interview guide sought information concerning existing rules, regulations, and bylaws. The guide also

asked about actors engaged in waste collection services in their areas of jurisdiction and explored awareness and comprehension of community policies, enforcement, and compliance issues. Local authorities were interviewed at the community-local council offices. The guide for officials from the public sector covered information on prevalent waste management regulations and enforcement, as well as the selection of service providers. They were also asked about the state of informal waste collectors, collaborative strategies, and regulatory implications. Due to the COVID-19 situation, some officials preferred holding virtual conversations. The private sector actors were interviewed from their offices, and the interview guide covered issues related to the provision of their services, regulatory challenges, and collaboration. For informal waste actors, the interview guide focused on waste collection activities, collaboration with other actors, and knowledge about community waste bylaws and how these affected their activities. Community-based waste collectors were interviewed from community spaces, while waste reclaimers were interviewed at dumping sites. Some of the key informants' interviews were recorded with consent from participants. Interview sessions lasted between 30 min and 1 h.

Three focus group discussions were held and included 2 groups of informal community-based solid waste collection service providers in their working communities and local council leaders (1 group). It was deemed necessary to have the informal community-based waste collectors in a group discussion after realising from the in-depth interviews with local leaders and community-based waste collectors that they were categorised differently. Each group of community-based waste collection service providers had seven participants, and discussions were held in the community space to enable participants access and freedom to engage in familiar neutral territory. Discussions lasted for 1 h and 30 min. The discussion with community-based waste collectors centred on the coordination and collaboration of actors in solid waste collection, challenges encountered, and awareness of existing solid waste collection city laws and community bylaws. One group of 7 local leaders from the industrial area zone, identified by KCCA as a model village with solid waste management bylaws, were engaged in the discussion. The discussion focused on the existing bylaws, how they had been developed, how they were being implemented, and achievements accrued. These discussions lasted 2 h and were held at the local council office space.

To understand the existing waste management regulatory framework, documents such as the Local Governments Act of 1999, Kampala City Council Solid Waste Management Ordinance, 2000, KCC Strategic plan, 2014/15–2018/19, the Solid Waste Management Strategy of 2006, and the National Environment (Waste Management) Regulations, 2020, trading licences and bylaws, government and organisational reports, and journal articles were reviewed. This was following Creswell and Creswell (2017) that a literature review broadens the researcher's insight on what has been studied, enabling the researcher to delve deeper and critically at own ideas or beliefs.

Data Management and Analysis

Although the data collection tools were written in English, these were translated verbally during data collection to Luganda, the common language spoken in Kampala

City. Responses were, however, noted down in English. To avoid misinterpreting the participants' views, recorded interviews were transcribed verbatim. After transcribing, the researchers played back the recorded interviews, while checking the written text to minimise errors. Textual analysis of primary data (from interviews and group discussions) and secondary data (from the literature review) was conducted. For primary data, the textual analysis involved rereading the transcribed responses to familiarise with the data before interpreting it to derive meaning as Clarke and Braun (2013) explain. This enabled highlighting segments within the transcripts that spoke to the research aim of enabling and/or constraining actors to participate and/or coordinate. For secondary data, textual analysis involved reading documents and identifying sections that aligned with pre-determined codes that included (i) regulatory enablers and (ii) regulatory constraints. Rhetorical criticism and content analysis approaches were then applied. Hawkins (2018) explains that rhetoric criticism is significant for describing, analysing, interpreting, and evaluating text information. Leavy (2016) explains that content analysis facilitates providing meaningful data interpretation. In applying the two approaches, the researchers read and revised the transcripts. The researchers used inductive and deductive techniques in the coding process by relying on the data (inductive) and the researchers' intuition and reasoning (deductive). In inductive, the meaning embedded within transcripts was interpreted by the researchers in line with the study aim to ensure appropriate coding frames as Schreier (2012) advises.

A coding frame using Microsoft Excel was built; and for easy coding, summarised data from the transcripts deemed relevant to address the study aim was charted into the spreadsheet. Following the initial pre-determined codes of regulatory enablers and regulatory constraints, segments within the matrix that matched these categories were highlighted. The research team identified and discussed from the summarised data in the matrix how actors in solid waste collection had been hindered or enabled to participate and/or to coordinate. This led to the development of codes that were condensed to cover stringent requirements and higher expectations, coordination, and collaboration of actors vis-à-vis regulation, inadequate localised policies, and ineptness of the bylaws. Two other codes were added based on ideas from formal actors and review of policy instruments; these included public-private partnership institutional arrangement and regulatory backing and formal processes inclined regulations. The coded ideas which are presented as subthemes in the "Findings" section were not numbered but were selected based on their relevance to the pre-determined codes substantiating the major themes of regulatory enablers and/or constraints. A descriptive style of thematic presentation was sought fitting, since this was exclusively a qualitative study. Relevant narrations from the participants were identified as verbatim quotations to support the appropriate themes. Quotations were assigned numbers based on the number of participants or group discussions as explained in the "Participants of the Study and Sampling Procedures" section. The quotations selected were from interviews and focus group discussions. The group discussions validated the views from the interviews. Although the FGDs were assigned numbers, the participants in the discussion were not given codes. As an informal settlement, most participants had similar waste management experiences because of the openness and close interaction; thus, their views were generalised. Secondary data textual analysis was used to support the identified themes and the "Discussion" section.

Ethical Consideration

Creswell and Poth (2016) note that ethics in qualitative research, from data collection to analysis, ensure that participants are not marginalised, and that the site on which research is conducted is respected. Following this advice, verbal consent to engage with participants in the study was sought. An explanation was provided about the study's purpose to facilitate informed consent and voluntary participation. Participants' anonymity was upheld by not requesting names to enable the free voicing of opinions. This also enabled analysing of data critically without relating it to the participants. In group discussions, verbal consent allowed the literate and illiterate participants to feel equal and participate with no insecurities or complexes of superiority or inferiority respectively. This was to relate to the less intimidating non-executive informal settings in which the study was conducted to encourage participation. The study received clearance for field data collection from Ardhi University, KCCA, the local council administrative units of Kibuye 11, and the industrial area zone in Makindye subdivision.

Findings

This section presents the themes identified before and during data analysis, as explained in the “[Data Management and Analysis](#)” section which reflect the enabling and constraining aspects for actors' participation or collaboration in solid waste collection. These are stringent requirements and higher expectations; public–private partnership institutional arrangement and regulatory backing; formal processes-inclined regulations; coordination and collaboration among actors; inadequate localised policies; and ineptness of the bylaws.

Stringent Requirements and Higher Expectations

For actors to provide solid waste collection services, there are requirements to fulfil stipulated in guiding documents. The officials interviewed from KCCA revealed that only individuals or companies registered with the Uganda Registration Services Bureau (URSB) and have a tax identification number (TIN) from Uganda Revenue Authority (URA) are eligible to bid for a tender. One official from KCCA emphasised that to ensure effective and efficient provision of waste collection services, KCCA is diligent and strict in selecting service providers. The official further revealed that many companies had applied for the provision of solid waste collection services but did not qualify due to strict requirements saying:

KCCA requires that the applicant bidding for waste collection service provision has to prove the capacity to operate in terms of resources. The firm must have adequate human capital and equipment's such as waste-picking trucks to convince the bid evaluators that they will be able to provide effective and efficient services. [KCCA Official No.1]

In confirmation of this revelation, the official from the private firm that won the tender for the Makindye subdivision pointed out that the competition to get the tender was high because there were many bidders, but most companies did not meet the requirements. The official further affirmed that their firm has adequate workers, vehicles for waste collection, garbage skips, and other gadgets. Revealing further that stringent requirements hindered the participation of some actors in waste collection service provision; an official from KCCA indicated that they had received complaints at the headquarters and Makindye subdivision from disqualified companies lamenting the rigid criteria. The selection criteria in this perspective enable the participation of a few actors, while constraining others.

Moreover, it was revealed that for the company that wins the tender, various obligations must be fulfilled before commencing the provision of services. Approval is by two independent government authorities. For instance, the licence for operation is sought from KCCA, whereas that for transportation and storage of waste is from NEMA, which may be frustrating, as revealed by one official from the waste collection private firm.

...one has to keep moving between KCCA and NEMA offices to get all the required paperwork in order to start operating legally... [Waste collection private firm official No. 1]

NEMA has to provide a licence for the transportation and storage of waste because of its mandate of ensuring that the environment is safe from waste littering, while KCCA only offers a licence for waste collection. Some actors may thus be discouraged to participate in the provision of waste collection services because of reluctance to abide by the strict requirements from two bureaucratic government agencies (NEMA and KCCA).

In addition to the stringent requirements, for the firm that wins the tender, there are high expectations to be fulfilled. For instance, the official from the private firm revealed that the contractual agreement mandates the company to offer solid waste collection services in the entire Makindye subdivision, which is a large area for one firm. This is a very high expectation to be met by the service provider. In the interview with the officials from KCCA, they concurred that the area of coverage for service provision was big, yet KCCA expects effective and efficient delivery of waste collection services. Therefore, some potential service providers may be reluctant to apply for a tender for fear of failure to deliver as expected.

Other stringent measures revealed include the fact that the service provider must acquire a certificate from NEMA to dispose of waste at the landfill. More to this, the official from the private firm revealed that the firm is expected to pay 5 million Ugandan Shillings (approximately \$1500) per year to deposit waste at Kitezi landfill. Besides this amount, the firm is also expected to pay taxes to URA, in addition to the operating licence from KCCA. Notably, cost implications for legal and effective participation may not be affordable for most small companies or start-ups.

Public–Private Partnership Institutional Arrangement and Regulatory Backing

Public–private partnership (PPP) institutional arrangements in the provision of solid waste collection services were revealed in this study. The arrangements are legally

supported as stipulated in the KCCA strategic plan of 2014/2015–2018/2019 and confirmed by one of the officials from KCCA.

The public-private partnership framework of KCCA, 2014 gives KCCA the mandate to encourage the private sector to engage in the delivery of public services, including waste collection in the city [KCCA Official No. 1]

To this effect, a tender is advertised for interested parties to provide solid waste collection services in the specified locations in the city, the official further narrated. KCCA is supposed to supplement the service provider's efforts. However, the PPP arrangement is notably only between formal actors (private firms) and the formal entity (KCCA). In this regard, informal actors, though private, cannot be considered in this arrangement. This limits solid waste selection, particularly in informal settlements where informal actors predominately serve.

The PPP institutional arrangement is a complementary and supplementary initiative in the provision of solid waste collection services. During discussions with local leaders, it was revealed that KCCA trucks collect waste in the same division moving from one street to another or park at designated waste collection centres in the communities and call upon residents to bring waste to the truck. Participants also revealed that another private car picks up waste from particular residents in their community. As acknowledged previously in the “[Stringent Requirements and Higher Expectations](#)” section, the area of operation is too wide for one service provider to serve. Therefore, KCCA remains responsible for collecting solid waste in the poorest neighbourhoods. This does not imply that the PPP arrangement is not working at all but is a flexible arrangement to supplement and complement efforts of partners.

Formal Processes-Inclined Regulations

Regulations mandate non-state actors to engage in solid waste collection initiatives. These include the KCCA Ordinance Act 2000, part IV (17), which recognises the participation of actors such as agents or licenced collectors (private firms) in ensuring responsible solid waste collection from the point of generation to designated disposal sites. The ordinance confirms that only formal actors are catered for. For instance, Sect. 20 (b) of offences states that unless authorised by the council, actors are not supposed to remove, collect, or disturb solid waste in containers or remove solid waste from a container. In this perspective, the activities of waste reclaimers are illegal and, thus, discouraged.

Also, Sect. 20 (c) of the KCCA Ordinance Act 2000 states that only licenced actors are mandated to collect and dispose of solid waste, while Sect. 20 (e) emphasises that in order to collect, transport, remove, or dispose of refuse at a fee or other consideration, one must have a valid permit from the council. From the ordinance, engaging in solid waste collection activities is an offence if not legally endorsed by the responsible authority. The provisions in the section indicate that only formal companies are recognised. Formal-inclined regulations discourage the participation of informal actors, including waste reclaimers and community-based collectors and

CBOs. An official from KCCA concurred that the law had not been revised to incorporate informal actors, saying:

...We know that in our communities, especially in the informal settlements, there are individuals and some groups engaged in picking specific types of waste such as plastic bottles and polythene bags, while others help homesteads to dispose of their bulky organic waste, but the law is silent on these informal activities. [KCCA official No. 2]

However, in spite of the regulations supporting formal actors only, informal actors still participate in the collection of waste. Although, the formal actors concurred that the regulations have sidelined the activities of informal actors, the waste reclaimers interviewed did not even comprehend that their activities were illegal. For example, one of the waste reclaimers interviewed had this to say:

I have been collecting waste for a long time now moving from one community to another and nobody has ever intercepted me. I will continue picking waste because it is my source of livelihood until authorities stop me. [Waste reclaimer 2].

In the discussions held with informal waste collectors based in the community, participants exhibited the understanding that they were not registered but did not comprehend the significance of formalising their activities as this had not hindered them from providing services. However, they revealed knowledge about bylaws that seem to harass their efforts in the communities, and most of them agreed to sometimes stealthily providing services. In addition to informal actors not being aware of formal regulations, there are collaborations between the formal and informal, as further discussed in the following subsection. Thus, while regulations are inclined towards formal processes, this has not constrained informal actors from participating in solid waste collection activities.

Coordination and Collaboration of Actors vis-à-vis Regulation

Different actors participating in providing solid waste collection services coordinate and collaborate. For example, there are collaborations between and among the three government organisations closely involved in solid waste collection issues: KCCA, NEMA, and the Ministry of Health. While it is unavoidable for the Ministry of Health and KCCA to coordinate and collaborate with NEMA, on the other hand, it was not quite often that the Ministry of Health and KCCA coordinated. This was attributed to the mandates of the entities as embedded in the regulations. For instance, an official from the Ministry of Health argued that:

...You see, most of the regulations that we follow while executing environment-related activities have been developed by NEMA as a lead agency, of course, with us as stakeholders. So, you find that when you want to implement most activities, there must be consultations between the ministry and NEMA. [MoH Official No. 1]

However, it was revealed that the ministry has activities for strengthening linkages with other sectors through joint planning meetings, joint reporting, participatory policy development, and training on solid waste management. Notably, NEMA, KCCA, and the Ministry of Health have public sensitisation as activity components of solid waste management, yet each entity seemingly quite often conducts sensitisation campaigns independently.

NEMA and KCCA are main collaborators in waste management in Kampala City. As previously revealed, a licence for operation in waste collection activities is provided by KCCA, while that for transportation of waste is from NEMA. The national environment (waste regulation) of 2020 stipulates under Sect. 12 (1) that 'a person who intends to carry out the business of collecting, transporting, storing, treating or disposing of waste shall apply to the Authority for a licence' after officiating payments. Furthermore, Sect. 14 stipulates that consultations should be conducted between the lead agency and NEMA before granting a licence to manage waste, indicating coordination and collaboration between NEMA and KCCA. However, the operations of the private firms are under particular divisions within specific municipalities as local governments. In this aspect, KCCA, NEMA, and the municipalities ought to coordinate and collaborate on waste management issues.

Although there seems to be vibrant coordination and collaboration among key actors, there are regulatory constraints too. For example, according to the National Environment Act of 2020, NEMA is duty-bound to manage waste and prohibit littering and movement of waste. Also, under the section of offences in the KCCA ordinance, 2000, illegal waste management is an offence, yet KCCA is also duty-bound to ensure a clean and safe city. This appears like a duplication of mandates. In this vein, activities by respective agencies, if not well coordinated, can result in overlapping actions. Furthermore, the official from the private firm revealed that companies wishing to engage in the collection of solid waste management get the licence to transport and store waste from NEMA, and yet KCCA is the one responsible for supervising the activities of the private firm. NEMA and KCCA have direct coordination and collaboration with the private firm endorsed to collect waste in the Makindye subdivision with respect to their terms of reference in the contractual agreement.

Although informal actors are not licenced to provide solid waste collection services, per the existing regulations, this study revealed complex coordination and collaboration among actors, as depicted in Fig. 1. These were between formal and formal actors, formal and informal, and informal and informal. For example, the official from the private firm revealed that previously, they would hire (subcontract other service providers) to operate in some areas on their behalf in a private arrangement that KCCA did not need to be aware of. They no longer do so; however, the official further revealed that in emergencies like equipment breakdown, the private firm may still coordinate with another formal actor to assist in picking waste in particular areas in a separate arrangement that KCCA and NEMA are not aware of.

More so, KCCA, while picking waste, can indulge informal waste pickers in loading waste on their trucks. Informal actors also sort and pick recyclable waste types from the waste truck of either KCCA or the private firm. Informal actors may take waste to other formal actors (registered but not endorsed to pick waste in the

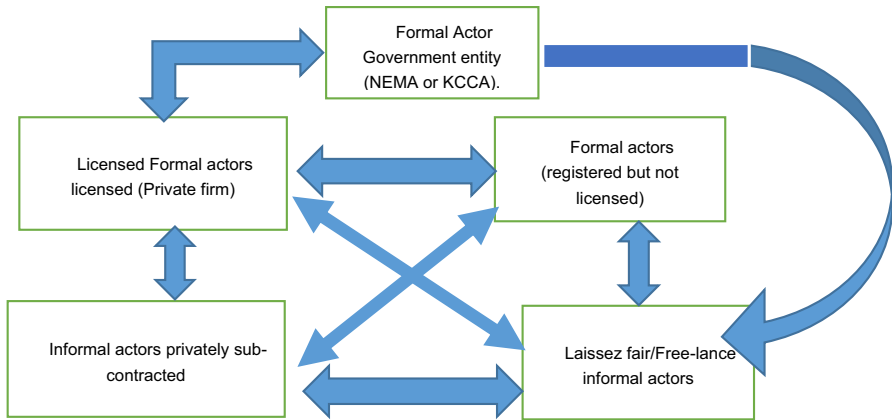


Fig. 1 Collaboration and coordination complexes in solid waste collection in Makindye

division), operating on a relatively large scale with a storage facility. In confirmation of this mode of collaboration, one of the informal waste reclaimers said,

I have been picking waste for almost five years now, and although I have nowhere to keep the waste, there is a company in Makindye with a store where most of us take our waste. You can choose to sell it to that company or keep storing and pay storage fees before taking to sell to the factories that recycle plastics. [Informal waste reclaimer 2]

The above quotation reveals that there are private firms registered and participating in the collection of waste but not legally endorsed by KCCA or NEMA to provide solid waste collection services in the community. These firms collaborate with unregistered individuals to collate the types of waste in need. Collaboration was also noted between and among informal actors. For instance, during focus group discussions with community-based waste collectors, it was revealed that they might pick waste and take it to other informal collectors operating on a relatively larger scale. These findings disclose collaborative efforts between formal and informal actors, which are not endorsed by any legal backing but occur and operate like ‘business as usual’ without any repercussions for engagement. In addition, collaborations among informal actors who are vehemently disowned in the existing regulations are also unveiled. This was summed up by one official from the private firm saying:

...although regulations only acknowledge registered and endorsed firms or individuals in the provision of solid waste collection services, sometimes we deal with unrecognised collectors to support us in our designated areas,. [Waste collection private firm official No. 1]

The dynamic and complex collaborations and coordinations revealed among actors are not regulated. This is a manifestation of non-compliance on the part of actors who may be aware that their actions are illegal. It is also revealing on how the

existing regulations have not captured the complex collaborative arrangements and interface between formality and informality.

Inadequate Localised Policies and Ineptness of the Bylaws

While informal rules are critical for regulating the activities of informal actors, the study reveals that only a few local authorities have developed these. From the interview with one official from KCCA, only one ward (industrial area zone) was acknowledged for having developed and executed informal waste management bylaws. When the research team visited the study area, these bylaws were not documented, true to the nature of 'informalness of rules' as they may be written or unwritten. In another local council area, it was revealed that community-based waste collectors (informal actors) had been categorised into two. The first category was those that carried waste using bicycles or wheelbarrows, while the second carried it on their head or using their hands. Carrying waste using any means of carrier is illegal in the community as one participant from the group discussion narrated:

When the local leaders find you with a bicycle or wheelbarrow carrying waste, they fine you because in this community it is illegal and yet this is what facilitates our work. [Participant from FGD 2]

To avoid being caught on the wrong side of the law, participants revealed they had resorted to carrying dirt-leaking waste on their heads to avoid being reprimanded by the local leaders or to collect waste in the night when the leaders have gone to their homes. There was disgruntlement among participants that this regulation had made their work difficult saying:

It is very difficult to collect waste without a wheel barrow or bicycle because some households call you with loads of smelly waste that is difficult to collect. So, sometimes I am called and when I see the state of the waste is bad, I refuse to collect it or I plan to do it at night with a wheel barrow when I am sure that I may not encounter the local leaders. [Participant from FGD 2]

The revelations indicate that, on the one hand, unlike the formal rules that most informal actors were not aware of, on the other hand the bylaws, which mainly were localised, were known. Probing to understand why this ambiguous by law was developed, one of the local leaders explained that waste collectors with bicycles pick a lot of waste from different homesteads than those carrying it. And because they collect a lot of waste which they have no designated place to deposit, they end up dumping it anywhere that is convenient for them. Thus, the bylaw was developed to reduce waste dumping in the community.

In general, the findings indicate that on one hand formal actors may be hindered to participate in waste collection services by formal rules, while informal community-based waste collection service providers may be constrained by informal rules. On the other hand, although the activities of waste reclaimers are illegal, they continue unabated, and since the culprits have not been halted, they are not even aware of the illegality of their activities.

Discussion

This study is aimed at examining the solid waste regulatory framework in Kampala City, Uganda, in enabling or constraining actors' participation and collaboration in solid waste collection in informal settlements. This section sheds light on how formal processes may enable or hinder actors' participation and/or how collaboration and coordination may be encouraged or constrained by formal-inclined regulations and inadequate localised policies or inept bylaws.

Formal-inclined regulations do not consider the status quo of the 'informalness' of the economy of African cities, as this study has shown. There is congruence that formal regulations do not acknowledge informal actors as vital partners in solid waste management (Katusiimeh, 2012; Kinobe, 2015; Oates et al., 2019; Tukahirwa et al., 2013). Emphasising the scenario in Uganda, Katusiimeh et al. (2013) note that regulations for the participation of non-state actors in the provision of solid waste collection services in Uganda were institutionalised, focusing on the formal actors. Notably, in most African cities, the regulatory framework does not support the activities of informal actors' especially waste reclaimers and middlemen (Bello et al., 2016; Dlamini, 2016; Gutberlet et al., 2017; Mariwah, 2015). When policies are inclined towards formal processes only, it may imply that informal processes are illegal and cannot be conducted. This is far from the truth, as informal actors and mostly waste reclaimers contribute to solid waste reduction in the community, although the significance of their initiative may not easily be quantified.

In the formal inclined stringent requirements, one notes the power of institutions to support the participation of formal actors while hindering the informal actors. For instance, in Kampala, the KCCA strategic plan indicates a rollout of the planned comprehensive waste handling and disposal system that should include the involvement of the private sector but still disregards the informal private actors (KCCA, 2014). In this perspective, Hall et al. (2014) conclude that institutions' major role is to include and exclude some actors. The conclusion by Hall is commensurate with what Levi-Faur (2017) indicated as the empowering and constraining role of institutions. As noted in the present study, in the first place, the expression of interest to offer solid waste collection services is only available to those companies or individuals whom Katusiimeh et al. (2013) note that they have 'principle legal existence by being registered with a public body'. This eliminates the participation of other actors not falling into this category, even when they may be passionate about providing solid waste collection services in the community. Hence, only a few non-state actors who meet the requirements may be endorsed to participate in providing solid waste collection services. According to Oyake-Ombis et al. (2015) and Dlamini and Simatele (2016), this discourages innovation in the waste recycling industry facilitated by informal actors because some potential actors may lack legal support. Ultimately, this hinders the participation of informal actors who may be aware of the illegality of their intended activities in solid waste collection services.

Despite criminalising informal processes, the activities of informal waste actors continue operating unabatedly in most cities. In reality, informal activities continue to exist alongside formal activities, as evidenced in this study. Revelations

in Uganda by Katusiimeh et al. (2013) conclude that the two sectors prevail in the 'business as usual phenomenon'. This is in line with the conclusion by Campos and Zapata (2013) that in most countries, the formal and informal are apparent in urban centres and cities, without regard to regulation hindrances. This seems to dispel the critical institutionalism idea that institutions should include and exclude some actors (Cleaver & De Koning, 2015; Hall et al., 2014; Levi-Faur, 2017). However, this may not imply that the initial aim of establishing the regulation does not hold value. As Hall et al. (2014) propagated, institutions should support specific actions while discouraging particular actions to achieve specific objectives. It is noted that some actors may operate both formally and informally (Axel et al., 2013; Guibrunet, 2019). Regularisation in this scenario may even be complex to cater for double-faceted actors in simultaneous situations as the yardsticks for enforcement may be challenging. Nonetheless, the role of institutions in encouraging participative strategies cannot be ignored (Hettiarachchi et al., 2018). Although formal processes may exist alongside the informal, it does not mean that formal or informal actors can participate or coordinate without any hindrances or constraints, especially if effective regulatory support is missing.

Besides the informal processes operating alongside the formal, there are complex interactions. As shown in the study, there are different interdependencies between formal and formal, formal and informal, and informal and informal. The evidence from this study is in congruence with previous studies in Uganda (Gutberlet et al., 2017; Katusiimeh et al., 2013; Okot-Okumu & Nyenje, 2011), who earlier on had noted the multiple interactions and inter-dependencies among actors engaged in the provision of solid waste collection services. In this perspective, Wang et al. (2018) caution that prevalent institutions may fail to encourage participation or empower actors under such complex scenarios. Additionally, unique collaborations are noted in Uganda by Oates et al. (2019), where KCCA is reported to collaborate with formal and informal actors by even providing financial and non-financial support to some actors, such as allocating land for collection and recycling. The presence of formal and informal actors, as well as multiple interactions without supportive policies, manifests that the regulatory framework is not adequate enough to accommodate the varying circumstances.

Due to the complexities embedded in the 'informalness' of activities, countries such as South Africa, Malawi, Tunisia, and Egypt have been prompted to embark on formalising the informal processes through the establishment of cooperatives (Godfrey & Oelofse, 2017; Kasinja & Tilley, 2018; van Niekerk & Wegmann, 2019). Formalisation processes, when undertaken, imply that informal actors lose their identity of 'informalness to formalness'. Axel et al. (2013) note that the transformation of the informal is only to a semblance of the formal. According to van Niekerk and Wegmann (2019), this is the apex of the marginalisation of informal actors. Besides losing identity, this raises several concerns. The first concern is whether such initiatives are sustainable, given the predominance of the informal economy in most countries. The second concern is the vulnerability of informal actors because formalisation confirms that informal processes are inherently weak and quite often overpowered by formal-inclined processes. This seems to concur with Cleaver and De Koning (2015) and Cleaver and Whaley (2018) that power plays a crucial role among actors and may influence decision-making. The third concern reaffirms the failure to establish

effective institutions based on the local context and the failure to integrate the informal sector that has been voiced (Cavé, 2014; Jiménez-Martínez, 2018; Marshall & Farahbakhsh, 2013). All in all, formalisation is a process of furthering formal-inclined regulations and confirms that informal rules may not be as effective as formal ones.

The existence of public–private partnerships in solid waste collection services, as has been revealed in the study, is also a reflection of formal inclined partnerships based on formal regulations. For effective partnerships, there has to be rules and regulations that partners have to abide by. Katusiimeh et al. (2013) inform us that regulations in Uganda were formulated to institutionalise the participation of non-state actors in the provision of solid waste collection services to strengthen partnerships between Kampala City and the private sector. This is also confirmed in the present study. The role of public–private partnership institutional arrangements in the provision of public services is not only a Ugandan phenomenon. Such legally supported partnerships in solid waste collection have been witnessed in other African countries (Alemu, 2017; Axel et al., 2013; Oyake-Ombis et al., 2015; van Niekerk & Wegmann, 2019). However, there is a contestation by critical institutionalists that partnerships may not be effective because of the influence of power and politics (Whaley, 2018). Axel et al. (2013) argue that this fosters inequalities that breed the exclusion of potential partners, thereby compromising service delivery levels. This situation may exist due to the absence of supportive regulations to engage informal actors in private–public partnerships. As confirmed by Haregu et al. (2017) a disconnect between policy frameworks and models of public–private partnerships to suit local contexts exists. In this regard, public–private partnerships have only benefited the formal actors because engaging the informal actors is encumbered by legal limitations.

The discussion has shown that formal-inclined regulations are inadequate to cater for non-formal actors. Also, regulations for informal partnerships are non-existent. However, this may be a fallacy, given the multiple collaborations and coordinations witnessed. Additionally, the formalisation of informal actors as a mandate to formalise informal actors indicates that informal rules may not be effective. The discussion has thus questioned the applicability of formal and informal rules as propagated by critical institutionalism as a school of thought, since the multiple collaborations seem not to be accommodated. More so, in informal economies, some actors may act formally and informally depending on the prevailing circumstances. In this situation, a formal actor is answerable to informal rules operating informally, but the informal actor can only be responsive to formal rules if they transform into formal actors.

Conclusion

In solid waste collection, activities of both formal and informal actors are regulated to ensure the effective provision of solid waste collection services. Regulation has been formal-inclined as reflected in the stringent requirements, formalisation of the informal actors, and formal-biased public–private partnerships. Notably, formal and

informal institutions do not address the interface between the formal and informal actors. Consequently, participation may be hindered, and collaborative strategies constrained. This manifests a regulatory dilemma for actors' participation and collaboration that affects planning in solid waste collection. There is a need for diversification in regulation to cater for the needs of multiple actors operating in dynamic processes and diverse contexts. Specifically, in Kampala City, KCCA and NEMA, in collaboration with local council authorities, should facilitate the development of bylaws which encourage the activities of both formal and informal actors. Instead of criminalising informal waste collection activities, clear coordinating and collaborating mechanisms should be established in communities to encourage participation in waste collection activities, including the recycling of organic waste. These would ultimately improve the status of solid waste collection in informal settlements. Further research on solid waste management practices of homesteads in informal settlements as waste generators is desired. It should uncover conformism to policies and how this may facilitate or frustrate solid waste collection efforts by service providers and other actors.

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Data Availability This study is part of a larger project that is still ongoing. However, the Authors are willing to share data sets upon request.

Declarations

Conflict of Interest The authors declare no competing interests.

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