
‘Westernizing’ solid waste management practices in Accra, Ghana - a case of ‘negotiated waste collection’

Martin Oteng-Ababio

Department of Geography and Resource Development, University of Ghana

Ebenezer Nikoi*

Department of Geography and Resource Development, University of Ghana

Corresponding Author

ENikoi@ug.edu.gh

Abstract

Managing solid waste in Ghana remains a critical challenge. To date, attempts to remediate the problem using ‘best practices’ prototype from Western countries have yielded elusive responses in low-income communities where such models are incompatible with local development trajectories. While city authorities remain defiant to this policy mismatch, the environmental and health implications associated with the practice are mounting in urgency. Using Accra, the national economic and administrative hub, as a case study, we argue that waste policy designed to reduce unsanitary conditions can be counter-productive if it ignores context-specific complexities. Contrary to popular wisdom, this paper argues that there is no ‘one size fits all’ answer for the quest for an efficient, effective, and affordable waste management system. Instead, each solution must be tailored to its specific social, cultural, and political context, with the direct involvement of service beneficiaries, and integrated with indigenously derived strategies. While not a cure-all ‘solution,’ the paper is optimistic that this kind of publicly engaged process can provide some understanding and create approaches for coping with waste management complexity.

Keywords:

Solid waste management;
Westernization;
Negotiated waste
collection; Accra, Ghana

Introduction

Most narratives on solid waste¹ perceive imperfect management practices in developing countries as compared to “best practices” in developed countries² (Bella & Vaccari, 2014; Lissah et al.,

1 Solid waste is useless, unwanted, and discarded non-liquid waste materials arising from domestic, trade, commercial, industrial, agriculture, as well as public services. Solid waste management (SWM) refers to collecting, treatment, and disposal of municipal solid waste.

2 Ghana’s waste situation is significantly and structurally different from the “best practices”: (a) smaller proportion of municipal wastes among total wastes generated; (b) substantially smaller ratio of reuse and recycling, except in hazardous wastes; and (c) significantly smaller proportion of incineration than the best practices average. These differences lead to a higher landfilling rate and a lower capacity for hazardous waste treatment through modern landfilling and incineration techniques.

2020; Nzeadibe & Ejike-Alieji, 2020). In Ghana, the waste challenge is soaring in urgency due to increasing ‘waste and wasting’ (Oteng-Ababio, 2017; Darkwah et al., 2018) and its glaring impact on the environment, health, and aesthetics (Gregson & Crang 2015).

As rightly noted by Oteng-Ababio (2020) the piles of uncollected waste in cities represent a source of embarrassment to cities and anger to the residents, and can create a huge political backlash (see Nzeadibe & Ejike-Alieji, 2020). The desperate quest for solutions has compelled city authorities to embrace developed countries “best prototypes”, which mimic western ‘technical rationalities’ (Ail, 2010; UNDP, 2010; Tacoli, 2012). This is in spite of the fact that studies (Oteng-Ababio, 2017; Amoah et al., 2018) caution that there are clear differences in waste management systems between developed and developing economies. While waste management practices in developed economies focus mainly on optimization strategies for resource conservation (Oteng-Ababio, 2020), approaches in developing cities are often underdeveloped (Mieza et al., 2015; Cobbinah et al., 2017), operationally inefficient, and inadequately managed, with limited knowledge and expertise to hand (Nzeadibe & Ejike-Alieji, 2020).

These distinct shortcomings make the wholesale adoption of the western prototypes perpetuate inequalities in local settings. Contrary to popular wisdom, this paper argues that such ‘one-size-fits-all’ policies, designed mostly at international and national levels, mask local specific realities, and make local authorities lose their freedom to optimize their operational schemes (Songsore, 2017; Oteng-Ababio, 2020). Recent studies (e.g. Mieza et al., 2015; Oteng-Ababio, 2020) show a myriad of local (bottom-up) workable solid waste management (SWM) approaches which are compatible with regional development trajectories and optimize economic and environmental scales. The challenge is therefore more of how to design localised waste management strategies that are economically viable, environmentally effective and socially acceptable (Hara & Yabar, 2012; Mukhtar et al., 2016).

According to some Africa urban scholars (e.g., Mieza et al., 2015; Cobbinah et al., 2017; Oteng-Ababio, 2017; Amoah et al., 2018; Grant & Oteng-Ababio, 2019; Nzeadibe & Ejike-Alieji, 2020), the unclear positionality of city authorities regarding the apparent policy mismatch (uncritical adoption of ‘best practices’) contributes to the unregulated urban environmental management across the sub region. Based on Accra’s experiences, this paper concedes that areas like Cantonments, Ridge, and Kanda have chalked some environmental management successes. However, in quantitative terms, Accra still has no clear ‘exemplar of good practice’ having adopted the western prototypes since

the late 1990s. Instead, the current SWM practices remains what Scheinberg et al. (2010) describe as “un-management” of waste, or what this paper terms a “*negotiated waste collection*”³, where a community’s socio-economic settings shape how waste is defined, integrated, and governed, and by extension, its level of management efficiency. Thus, uncritical adoption of ‘Western prototypes’ explains why Kumasi, a one-time Garden City of West Africa, is today christened ‘*a Garbage City*’ (Amoah et al., 2018), and Ghana dubbed the “7th dirtiest country in the World” (Songsore, 2017). on the preceding, and borrowing from the glocalisation of waste models, our paper raises two important issues with implications for our understanding of the economic viability of SWM

3 A negotiated waste collection, as used in this paper, refers to exhibiting a purposeful ignorance of generated waste or the prioritization and concealment of the gap between the ‘haves’ and ‘have-nots’ in the provision of waste collection services. It connotes a situation where the central business district and affluent communities in the city have near 100% coverage, while the low-income and illegal settlements often have none. In the circumstances, after waste leaves the curb, most people do not give it another thought; out of sight, out of mind, though the daily habit of throwing things away has a price, especially when there is no “away.”

options at the local level and aggregated results for regional or national levels. First, we demonstrate the importance of bringing regulatory institutions into an analytical framework for studying SWM at the local level. This includes analyses of people, everyday praxes, power relations, materialities, technologies, and spatialities. We argue that local characteristics

significantly influence SWM outcomes and costs. The optimal scheme, in our view, is one under which each local authority can implement its best-fitting mechanism while adhering to national guidelines. Thus, imposing strict national waste policies may be less efficient, unless some local flexibility is implemented. Second, the paper highlights how waste regulations are often prototypes that emerge from past principles of developed economies. Yet, such prototypes often do not work well or fit suitably with local scenarios, and therefore in adopting western-based models, city authorities must carefully consider their social, economic, environmental, and local political factors. This research is timely and contributes to the broader efforts to force a rethinking and revision of the theoretical frameworks addressing the Global South issues and decolonise the geography discipline (Parnell & Robinson, 2013; Lemanski 2014; Esson et al. 2017; Radcliffe 2017; Parnell 2020).

Glocalisation⁴ of solid waste management models

Waste is a “glocal” issue. It is locally produced, but its management involves a hybrid of global and local knowledge, economy, and governance processes (Swyngedouw, 2004; Latour, 2005). Studies indicated that if not adequately dealt with, waste, which has a direct link to the way society produces and consumes, can pose a threat to public health and the environment (Wilson et al., 2013; Yoda et al., 2014; Cobbinah et al., 2017). Additionally, waste is ‘directly related not only with people’s daily lives but also with the global changes and perspectives’ (ISWA, 2012: 17). For example, rapid urbanization, economic growth and increasing trade have also resulted in a marked escalation in quantities of waste generated, heterogeneity and complexity (Oteng-Ababio, 2017). Hence, though increasing glocalisation influences has reduced urban poverty in many emerging economies, it has at the same time removed production centers from consumption places and created remarkable waste (Attafuah-Wadee, 2017). ISWA (2012: 13) captures this scenario aptly thus, “the globalized

economy can create globalized externalities and reinforce global inequalities. [...] [but] the extreme lands then serve as the dumping sites of wastes that nobody wants in their backyard” (ISWA 2012: 13).

Suffice to add that glocalisation facilitates the spread of existing and new technologies while replacing existing ones, but the dynamics come at a cost to local solutions developed for local providers (Ali, 2010). This is because the complexity of waste makes the geographies of infrastructure for its management differ and change with time (Nicolli et al., 2012). This complexity is embedded in global discourses on competitiveness, material scarcity, and resource use (Gregson & Crang, 2015). The European Union (EU) for example, has incorporated the 5P’s concept – prevention, proximity,

⁴ Glocalisation’ refers to a twin process whereby, firstly, institutional/regulatory arrangements shift from the national scale both upwards to supra-national or global scales and downwards to the level of the individual body or local, urban or regional configurations and, secondly, economic activities and inter-firm networks become simultaneously more localized/regionalized and transnational (Swyngedouw, 2004: 25).

producer responsibility, precaution, and polluter-pays in its management policy. The efficacy of the EU model, which covers physical (hardware) elements and governance (software) aspects (Wilson et al., 2013), is contingent on the commodification of waste, its transformation into a resource, and the creation of a market for waste (Bulkeley et al., 2017). This model is underpinned by conscious efforts to internalise waste externalities and increase efficiency through technological innovations. This contrasts with developing country models beset with financial and infrastructural challenges (Oteng-Ababio, 2018:12). Table 1 presents the characteristics of SWM practices in low-, middle- and high-income countries.

Table 1: Global comparison of SWM Practices by Income Level

Activity	Low Income	Middle Income	High Income
Source Reduction	No organised programs, but reuse and low per capita waste generation rates are common	Some discussion of source reduction, but rarely incorporated into an organised program	Organised education programs emphasize on reduce, reuse, recycle. More producer responsibility & focus on product design
Collection	Sporadic and inefficient; limited to high visibility areas; wealthy and businesses willing to pay. High fraction of inerts and compostables impact collection – overall collection below 50%	Improved service; increased collection from residential areas. Larger vehicle fleet and more mechanisation. Collection rates varies between 50% and 80%. Transfer stations are slowly incorporated into the SWM system.	Collection rate greater than 90%. Compactor, highly mechanised vehicles transfer stations are common. Aging collection workers often a consideration in system design.
Recycling	Recycling is mostly by informal sector and waste picking, but rates are high for both local and international markets. Markets are driven by “middlemen”, unregulated and experience large price fluctuations.	Informal sector still dominates but some high technology for sorting and processing present. Recycling rates are still high. Materials are often imported for recycling. Markets are more regulated. Material prices fluctuate considerably.	Recycling rates higher & regulated, with high tech sorting and processing facilities and long-term markets. Informal recycling exists (e.g. aluminium) extended product responsibility common.
Composting	Rarely undertaken formally even though the waste stream has a high percentage of organic material. Lacks markets for, and awareness of compost	Large composting plants are often unsuccessful due to contamination and operating costs (no waste separation); Increasing use of aerobic digestion	Popular both backyard and large-scale. Source segregation makes composting easier. Anaerobic digestion increasing in popularity. Odour control critical.
Incineration	Not common, and generally not successful because high capital, technical, and operation costs, high moisture content in the waste, and high inert presence.	Some incinerators are used, but experiencing financial and operational difficulties. Lacks air pollution control equipment, no emissions monitoring. Facilities often costs prohibitive and driven by OECD countries' subsidies.	Prevalent in areas with high land costs (non-availability of land (e.g., islands). Have energy recovery system and regulate and monitor emissions. About three (or more) times the cost of landfilling per tonne
Landfilling/ Dumping	Low – technology sites usually open dumping of wastes. High polluting to nearby aquifers, water bodies, settlements. Often receive medical waste. Waste regularly burned. Significant health impacts on local residents and workers.	Some controlled and sanitary landfills with some environmental controls. Open dumping is still common. CDM projects for landfills gas are more common.	Sanitary landfills with a combination of liners, leak detection, leachate collection systems, gas collection and treatment systems. Often problematic to open new landfills due to neighbourhood concerns. Post closure use of sites increasingly important, e.g. golf courses.
Costs	Collection costs represent 80% to 90% of MSWM budget. Waste fees are regulated, but the fee collection system is inefficient. Only a small proportion of budget is allocated toward disposal.	Collection costs represent 50% to 80% of MSWM budget. Waste fees are regulated, more innovation in fee collection, e.g. electricity or water bills. Use of more mechanised fleets and disposal are higher than in low-income countries.	Collection costs is less than 10% of MSWM budget. Large budgets to intermediate treatment facilities. Up front community participation reduces costs and increases options available to waste planners (e.g., recycling and composting)

Source: Hoornweg & Bhada-Tata, 2012

From the table, it can be deduced that solid waste is inextricably linked to urbanization and economic development. As countries urbanize, their economic wealth increases. Hence, the generation and management of waste depends on what activities are going on in the society, and how these activities are controlled by public authority (van der Velden, Taylor, & Oteng-Ababio, 2019). As standards of living and disposable incomes increase, consumption of goods and services increases, which results in a corresponding increase in the amount of waste generated. Table 2 shows the character of waste generated in urban areas as well as collection and disposal rates. However, the per capita waste generation rates are highly variable across countries, between cities, and even within cities and so are the waste management practices and their outcomes, and this is the point of departure of this paper.

Table 2: Urban waste character, collection ratios and local finances

Variables	High-income	Middle-income	Low-income
Urban Solid Waste			
Total Urban Population	1 billion	3 billion	2.4 billion
TUP living slums	-	30%	65%
Urban waste/day	1.4 million tonnes	2.4 million tonnes	1.4 million tonnes
Urban waste/capita	1.4 kg/capita/day	0.8kg/capita/day	0.6kg/capita/day
Waste Character (%)			
Recyclable	45	25	15
Compostable	35	50	60
Moisture	25	50	60
Hazardous waste	Most excluded	Some excluded	Few excluded
Waste Collection and Disposal (% of waste-tonnes-handled)			
Collection	100	60	40
Safe Disposal	100	30	5
Available Local Finances (\$ billion)			
Gross Domestic Product (GDP)	34.5	8.5	1.4
Annual Per Capita GDP	34,500	2,833	583
Percentage of Good e	18	14	11
Expenditure per capita	6,210	397	64

Materials and methods

Study setting

There are many studies on SWM in Ghana (e.g., Nsiah-Gyabaah, 2004; Oteng-Ababio et al.; 2013; 2017; Attafuah-Wadee, 2017; Amoah et al., 2018). These studies show that the volume of waste generated is rising in tandem with increasing population density, economic growth, urbanization, and industrialization (Cobbinah, et al., 2017). They also indicate that SWM plays a significant role in combatting the health and environmental issues confronting local authorities and managers. This notwithstanding, evidence abound that solid waste's effective and efficient management is one of the biggest challenges local authorities face in urban settings (Okot-Okumu & Nyenje, 2011). Population growth and rapid urbanization have resulted in increased generation of waste across many cities, outstripping local authorities' ability to manage and dispose of them in a sanitary manner (Mieza et al., 2015; Cobbinah et al., 2017). This is in spite of the fact that most city authorities spend between 30 to 50 percent of their operational budgets on SWM, yet only collect between 50 and 80 percent of waste generated (Oteng-Ababio et al.; 2013; 2017).

The paper focuses on SWM practices in Accra, Ghana's administrative, economic and commercial capital, with a population of about 2 million (Ghana Statistical Service, 2014) and a total land area of 225.67 km². The city, which is the seat of Government, was selected for this study for several reasons, namely: (i) its rapid urban population growth; (ii) evidence of SWM challenges; (iii) mushrooming and predominance of informal waste management operators as well as visible haphazard development, depletion of ecologically sensitive resources and congestion; and (iv) available background data on the city. Studies (e.g., Oteng-Ababio et al., 2013; Oteng-Ababio, 2020) show that SWM practices are 'locally dependent' since there is no other space to have the same localized relationships. For example, the review of available literature revealed that while the affluent neighbourhoods are serviced through the house-to-house collection services, the low-income unplanned areas can only enjoy the communal container collection system (see Nsiah-Gyabaah, 2004; Oteng-Ababio et al.; 2019). The review also shows that spaces of dependence and spaces of engagement⁵ are not coterminous, and therefore a 'one-size fits all' approach can initiate what this paper describes as 'negotiated waste collection' system.

Research method

The fieldwork was carried out between August and November 2017. This was after we have reviewed relevant and related literature on SWM, financial and inherent challenges and opportunities at international and local levels. The international literature review centered on studies and publications on the concepts, theories, and usefulness of SWM by researchers and international development agencies. The local scale review focused on local management practices and knowledge, which included MLGRD (2010) environmental policies; UN-Habitat (2009) report on livelihoods; and Ghana Statistical Service (2014) reports on population dynamics in Accra. The review aimed at uncovering SWM practices and constraints in Accra. The document review provided an important pathway for establishing sustainable management services and understanding the available local management systems. It also offered an opportunity for identifying the key stakeholders in the

⁵ Spaces of dependence refer to areas in which social relations are forged to attain vital interests that cannot be realized elsewhere. On the other hand, spaces of engagement refer to the spaces at a larger scale, such as the global scale, where the politics of securing a space of dependence occurs (Cox 1998).

industry. As presented in Table 2, the researchers and their assistants conducted thirty semi-structured interviews with key informants from relevant waste management related agencies. The officials from each of the agencies mentioned in Table 3 were involved in the interview conversations, based on the objectives of the study.

Table 3: Interviews respondents

Agencies	Division/Units	Number of Respondents
Ministry of local Government and Rural Development (MLGRD)	- Urban Planning Department - Sanitation Unit	1
Ministry of Environment, Science, Technology and Industry (MESTI)	- Environmental Sanitation - Policy Planning Unit	2
Environmental Protection Agency (EPA, Ghana)	- Environmental Policy Unit	1
Accra Metropolitan Assembly	- Waste Management Department - Environmental Health Unit	2
Low-Income Community (James Town)	- An Opinion Leader/ Assembly member - Youth groups, and Service beneficiaries	2 9
Environmental Service Provider Association	- Private Service Provider/ employees - The Executive Secretary	6 1
Environmental Non-Governmental Organisation	- Leader of the ENGO	1
Faith-based Non-Governmental Organisation	- Leader of the FBO	1
Informal waste collectors (Kaya Bola)	- Waste collectors and the leaders of their association	4
Total		30

The interviews created an opportunity to explore the research phenomenon in details and offered adequate flexibility in engaging different agencies simultaneously, concentrating on similar themes of investigation (Cobbinah & Aboagye, 2017). The semi-structured interviews were conducted in English and centered on four key themes, namely: (i) current SWM policy, governance, and practice, and agency perception on its sustainability; (ii) the place of informal waste entrepreneurship in the existing architecture; (iii) some challenges emerging from current practices; and (iv) implications

of current policy directions on sustainable SWM. The qualitative analysis was essentially the description and explanation of SWM practices, challenges, and opportunities. Themes, codes, and categories based on the interview transcripts were developed using thematic analysis. Data from the interviews were triangulated, and the results were made available to the institutions that participated in the study through a validation workshop to address any gaps and inconsistencies that might have occurred and guarantee validity. Based on insights gleaned from the validated findings, a policy dialogue was organised to elicit and fine-tune our policy recommendations.

Results and discussions

Waste management legislative instruments and their implications

This sub-section analysis was based mainly on two critical pieces of waste legislation: The Local Government Act (Act 462) and the EPA Act (Act 490)⁶. These documents conceptualise waste collection as a public good: as a good [‘service’] so crucial that the laws require that it is provided for the benefit of the entire society, regardless of the interest of the market to supply it or the users’ ability (or willingness) to pay (Nsiah-Gyabaah, 2004; Oteng-Ababio, van der Velden, & Taylor, 2020). This conceptualisation of waste as stipulated in the two critical government legislations form the bedrock of the submission in this paper, and as rightly noted by Wilson et al. (2013: 58), “the key indicator here is for collection coverage to be 100%”. So far, achieving this statutory requirement in Accra remains highly elusive (Nsiah-Gyabaah, 2004; Miezah et al., 2015; Oteng-Ababio et al., 2017). Instead, the authorities are being subjected to incessant public ridicule for superintending over poor SWM due to ‘lack of proper planning and weak enforcement of existing legislation as well as weak institutional capacity’ (Napari & Cobbinah, 2014: 233).

Table 4 compares SWM practices in Accra, Kumasi, and Tamale – three cities in Ghana which offer both geo-ecological and economic balance. These three cities are the administrative and financial hubs in their respective zones. Still, the intensity of waste management activities fade away, and poverty levels increase as one moves out of the coastal savanna (Accra) towards the middle forest (Kumasi) and the northern savanna (Tamale) zones. From the table, the average municipal solid waste generation in Accra (in 2017) was estimated to be 0.74 kg per capita per day, which is much higher than the national average of 0.47 kg per capita per day. However, there is a sizable variation across the country, ranging from 0.60 kg per capita per day in Tamale to 0.75 kg per capita per day in Kumasi, owing to differences in waste accounting, consumer attitude, income level, and culture (Oteng-Ababio, 2017).

⁶ Act 462 mandates all district assemblies to initiate appropriate programmes to ensure sound environmental sanitation. At the same time, the EPA Act (Act 490) provides a supporting framework.

Table 4: Waste character and collection ratios in Accra, Kumasi, and Tamale

Variables	Accra	Kumasi	Tamale	References
Total Population	2,087,668	2,105,382	275,547	Ghana Statistical Service (2019)
Total Slum Population	759,000	N/A	N/A	Benzoni (2013)
Total Daily Waste Generated (metric tonnes)	3,000*	1,500**	291***	GhanaWeb (2017)* Daily Graphic (2017)** Ghana News Agency (2017)***
Waste Per Capital (Kg)	0.74	0.75	0.60	Meizah et al. (2015)
% of Recyclable Waste	20	N/A	N/A	Yusif (2019)
% of Compostable Waste	67	48.4	58.6	Meizah et al. (2015)
% of Waste Collection	73.3*	80*	50***	Today Online (2014)* Daily Graphic (2017)** Ghana News Agency (2017)***
% of Safe Waste Disposal	55*	80**	50***	Baah & Kharlamova (2018)* Daily Graphic (2017)** Ghana News Agency (2015)***

Studies (e.g. Attafuah-Wadee, 2017; Amoah et al., 2018) show that a significant part of the authorities' budget for SWM goes to waste collection, yet only about 73 percent of the estimated waste generated (3,000 tonnes) is collected. The collection coverage varies considerably between cities, from about 50 percent in Tamale to around 80 percent in Kumasi. We can infer that uncontrolled dumping remains the most common disposal practice, with Accra recording only 55 percent safe disposal of its total waste generated. Thus, it seems the value chain of SWM, as stipulated in the statutes, has not yet been well-structured nor has the financing of those services streamlined in such a manner as to facilitate efficient collection, haulage, and treatment before final disposal. For instance, the sanitation ministry reportedly owed private service providers an outstanding debt of eight hundred and ninety-two million Ghana cedis (Gh¢ 892,000,000) as at the end of 2018 (Oteng-Ababio, 2020), and for which reason the companies cannot sustain service delivery (Oteng-Ababio, van der Velden, & Taylor, 2020). This accounts for the garbage in open dumps left untreated, uncovered, and unsegregated in Accra, with little to no groundwater protection or leachate recovery (Napari & Cobbinah, 2014; Meizah et al., 2015). The rest of the section examines other significant flaws associated with current approaches to SWM captured during the key informant interviews.

The lack of empirical data and its implications

One major result of our interviews is that the successful adoption of SWM “best practices” is contingent on the availability of accurate data on the amount, source, and type of waste generated, and that these are essential for sound planning, managing, and monitoring services and infrastructure across the value chain. Yet, approximately 90 percent of the interviewees had reasons to question the empirical basis for policy formulation and adoption including the revision of the sanitation policy of 1999 in 2010 (see MLGRD, 2010). To them, engaging with accurate, community-based disaggregated data, including the type and volume of waste generation, the number, and location of waste producers and service costs – is critical for any successful waste policy, particularly with the inclusion of the private sector. A remark by a Senior Official of the Waste Management Department (WMD) sums up these concerns:

Getting up-to-date data on the volume and content of waste generated is an indispensable tool for shaping workable waste management policies. For the private sector, having access to accurate data is necessary for assessing investment decisions and options. [...] Technically, the commercial viability of a compost plant or waste-to-energy facility depends on the level of waste that could be collected and supplied to a particular facility [Personal Interview (PI) with the interviewee, October 2017]

The official from EPA, which administratively represents the Ministry of Environment, Science, and Technology, shares a similar opinion. He concedes:

[...] for public authorities, collating accurate and current waste data is essential for planning purposes since we would be better placed at determining what type of collection services would be appropriate, and help institute waste management services most attuned to the needs of both citizens and waste sector stakeholders [...]. In my view, to change the state of affairs regarding sanitation, the elevation of the collation of waste data to critical national importance is unequivocally imperative [PI with the interviewee, October 2017].

Most participants confirmed this storyline during the policy dialogue involving the key informants who collectively emphasised the positive relationship between the availability of accurate data and successful policy outcomes, as captured in the following statement:

[...] the introduction of waste data collation and tracking systems would enable agencies such as EPA to identify registered waste sector stakeholders [...]. The Government would also benefit from assessing the impact of its policies, especially policies aimed at reducing the generation of specific problematic waste materials [Participants in policy dialogue, September 2017].

While these comments interestingly highlight the importance of accurate data and its collation in the waste industry, they equally have significant policy implications. They elucidate that waste character and risk (emic risk) may influence public sector monitoring of waste flows along the supply chain. Indeed, available health data in Accra (see Songsore, 2017; Osei-Tutu & Anto, 2016) confirm a UN report which shows significantly higher rates of diarrhoea and acute respiratory infections for children living in households where solid waste is dumped or buried in the vicinity as compared to families in the same city that receive a regular waste collection service. The paper

argues that lack of disaggregated (accurate) data invalidates the sanitation policy. It compromises the Government's overall goal 'to develop a clear and nationally accepted vision of environmental sanitation as an essential social service and a major determinant for improving public health and quality of life in Ghana' (MLGRD, 2010:8).

The price for the misconception of waste

Aside from data paucity, most interviewees (85%) reported some discrepancies in the conceptualisation of waste regarding how waste is defined, interpreted, and governed. During the policy dialogue, a consensus on the subject was that the market value of materials underpins Accra's SWM practices. The interviewees recalled that wastage was minimal in earlier times when products were repaired and reused; when materials were recycled, and the organic matter returned to the soil. Such was when resources were few, money was very scarce, and people had more needs than they could meet. These dynamics, they regrettably noted, are entirely different today. A community leader from James Town, a low-income, indigenous communities, jokingly retorted:

[...] one man's food is another man's poison is not just about the marketization of waste; it is also about how waste is socially constructed [...]. Gone are the days when nothing got wasted; the days when it was difficult to tease out the disjunctions between formal and informal as extensive informal recycling systems flourished. [PI with the interviewee, October 2017].

A director of a private waste service provider engaged in plastic recycling re-echoed earlier observations:

[...] the understanding of waste and the values attached to it vary between places, societies, cultures, spaces, and times. [...] the type of infrastructure needed for managing waste reflects society's perception of waste. The so-called best practices from Europe have only displaced the tried and tested traditional methods and have consequently collapsed the recycling industry [PI with the interviewee, October 2017].

The Chief Executive Officer (CEO) of an environmental NGO corroborated this observation. She lamented:

One cardinal principle of any environmental regulation is to regulate the use of resources to ensure minimal impact on the ecosystem [...] as the economy grows and income rises, the increased demand for natural resources, and manufacturers' consumer goods naturally put strains on the environment. [...], due to our excessive consumerism, practicing the 3Rs [reduce, reuse, recycle] must be the norm, not an option as it is today [PI with the interviewee, October 2017].

There are concerns about the viability of current practices and how they have conditioned society to see "waste" as "nuisance materials" of little or no value from the preceding comments. Such a mindset strongly deprioritizes appropriate channels for managing waste from generation along the supply chain, contrary to developed countries' situations. Policymakers suffer blame for such policy mismatch as they have the penchant for seeking technical solutions which are mere copies of advanced countries' models but are incompatible with local development trajectories – a negotiated

waste collection. Section 41 (k) of Ghana's 1992 constitution spells out clearly that, 'it shall be the duty of every citizen to protect and save the environment.' Regrettably, both the constitution and the sanitation policy failed to explain how such corporate social responsibility can be achieved. Similarly, the police criminal code of 1960 (Act 29) also provides that 'whoever places or permits any refuse, or rubbish, or any offensive or otherwise unwholesome matter, on any street, yard, enclosure, or open space except at such places as may be set apart by the local authority health officer for that purpose commits a punishable offense', without defining what constitutes "waste". We submit that waste is systematic and complex in nature and character, and therefore its unambiguous definition is as imperative as its management.

The fallout of the current waste governance structure

During the policy dialogue, participants agreed that waste is not only a reflection of the society in which it is generated but somewhat 'intrinsically and profoundly a matter of materiality' (see Gregson and Crang, 2010:10). They also noted the importance of good governance in achieving this, conceding that 'governance is the creation of conditions for ordered rule and collective action, and should ensure accountability, participation, predictability, and transparency.' They opined that though city authorities are legally responsible for managing waste, they cannot accomplish this task without active participation of key stakeholders who have distinct roles and responsibilities. To them, inclusivity is indispensable since cities cannot provide full services to cover slums and informal settlements, to avoid "negotiated waste collection." They lamented how waste issues are politicised, with powerful interests competing for favours and 'lucrative contracts,' while industry players are side-lined and intimidated. An official from a private service provider unequivocally intimidated:

The waste crisis is political, with some private service providers being (mis)treated using the political lens as victims, villain or pawn [...] The continuous refusal and/or inability to pay the enormous debts owed to sector players has affected our ability to deliver our mandate in ensuring that waste is collected and managed effectively [PI with the interviewee, October 2017].

According to most interviewees (80%), lack of user inclusivity has resulted in improper adoption of the polluter-pays-principle, which mimics a neo-liberal framework, proclaims the resurgence of the market and compromises the public good⁷ nature of the service (thus reducing state provision and control). To them, per the current policy's tenets, a household may register and enjoy improved (approved) services at an agreed fee and time or find alternative means to dispose of its waste, which invariably ends up in open spaces and compromises environmental quality. The Assembly member for James Town concisely describes the situation thus:

Given the absence of appropriate legislation and any monitoring mechanism on the policy, services are severely deficient, accommodating unhygienic systems and creating severe environmental degradation. Because of poor services, uncollected waste—often mixed with human excreta—is dumped indiscriminately in drains, thereby contributing to flooding, breeding of insect and rodent vectors, and spreading diseases [PI with the interviewee, October 2017].

⁷ A public good is any good from whose enjoyment non-contributors cannot be excluded, such as law enforcement, fire protection, national defense. Public goods cannot quickly be supplied on the free market

A female leader of an ENGO lamented how the private sector involvement in waste management and its subsequent monetisation has virtually thrown the good public nature of waste ‘to-the-dogs’. She recounts:

[...] there is too much ‘monocracy’ under the cloak of private capital at the expense of our environment, which is often overlooked until a lapse in the care leads to serious health challenges before putting regulation gaps in the spotlight. Currently, most service providers cannot carry out their tasks, partly because of the huge ‘outstanding debt of ø892,000,000, which governments continuously delay in payments [PI with the interviewee, October 2017].

Most interviewees (70%) describe the private sector’s involvement as a “*lazy man’s option*” in the fight against filth, cautioning against its potential to nurture petty and high-profile corruption, which can undermine societal welfare. A remark by a spokesperson of a youth pressure group aptly sums up these concerns:

[...] corruption remains one of the most pervasive but least confronted challenges facing the [waste] industry. Though the policy unambiguously envisages that the ‘bulk of sanitation services shall be provided by the private sector [...], political cronyism and the assemblies’ inability to write and enforce workable contract compromise the three critical ingredients for public-private partnership success - competition, transparency, and accountability [PI with the interviewees, October 2017].

From the preceding, it is clear that Accra has failed in the search for an efficient institutional framework that prioritises improvement in public health for all. The barriers to extending service coverage to underserved areas are mainly related to “soft” governance issues – inclusivity – particularly where evidence abounds that financial sustainability is imperative. Apart from data paucity and wrong conceptualisation of waste, Accra’s waste crisis can also be attributed to poor governance underpinned by party political manipulations, which does not allow citizens to participate in democratically policy-making processes. The findings resonate with Schübeler et al. (1996), which suggests that sanitation issues are not influenced by the central government’s policy directions alone. From the on-going, this paper opines that Accra’s greatest challenge facing the waste industry is where political interests end, and professional ethics begin to successfully institute sound governance, institutional framework, and resource allocation.

Hybridization of waste management practices – a policy panacea?

Our study confirms that understanding the waste industry calls for a critical look at the scale, scope, and power relations within contemporary national and international environment. It is also a truism that the frustrations and desperations in handling increased waste volumes have made “good practices” from developed countries too alluring to resist (Wilson et al., 2013; Oteng-Ababio, 2018). This paper has however demonstrated that such tendency masks the fact that managing the complexity of waste requires adopting appropriate technical solutions, sufficient organizational capacity, and co-operation of all stakeholders within the waste architecture. To that extent, the paper argues that with a chronic funding crisis, poor (politically-tainted) governance

system, and non-enforcement of legislations, Accra is, technically, not managing waste but only selectively collects and “disposes” of waste (Oteng-Ababio, van der Velden, & Taylor, 2020). The paper describes such an approach as a reductionist one (not tailored to handle complexities), and is consistent with Seadon (2010) conclusion that the interacting systems - generation, collection, and disposal operations – are operated independently, disregarding its indispensable linkages.

Though the study confirms that Accra’s waste industry faces a grueling task of navigating its numerous crises (e.g., Amoah et al., 2018), it also cautions against uncritical adoption of “western-based best-practices,” which are usually underpinned by market principles and operationally are at variance with local circumstances. Instead, it affirms that waste management practices must be informed by each community’s socio-cultural, economic, and environmental characteristics. Thus, expertly engaging all key stakeholders, including the poor and marginalised is not a “dispensable option” but a necessary “node” for success. This gives weight to earlier studies (see Post, 1999; Nsaiah-Gyabaah, 2004), which revealed that “even in slum areas, people are normally willing to pay for appropriate primary waste collection services to keep their immediate living environment clean; – particularly when they are consulted on the service levels when the charging system is transparent, and when services are provided for locally acceptable prices” (Wilson et al., 2013:62).

The study shows that selectivity in service provision persists in Accra. This has created space for non-statutory actors to organise and gain local legitimacy as they provide residents with much-needed services. Though the city authorities occasionally provide slum and informal households with waste bins when they get registered, this mark of recognition has not been transformed into the systematic waste collection. The lack of official, regular, and organised collection means some household waste is dumped in open spaces, drains or alongside artery roads, or burnt. This poses constant health risks as exemplified in 2014 when poor sanitation and seasonal flooding contributed to what became Ghana’s worst cholera epidemic in 30 years, with over 17,000 confirmed and suspected cholera cases and about 130 deaths (see Stacey & Laud, 2016).

This non-inclusivity tendency (i.e., negotiated waste collection) accounts for our interviewees’ pessimism about the Government’s ability to make Ghana “one of the cleanest countries in Africa”. From the study, most interviewees justifiably remain sceptical of Accra SWM framework particularly when the urban poor continuously struggle against β. disguised misogyny ‘on the part of city authorities’ response to the waste crisis.’ A candid comment by a Planning Officer of AMA succinctly contextualizes the feelings of our interviewees:

[...] our history is replete with many policy changes; several strategic plans sceptically drawn; some service providers have been removed or get sanctioned for non-performance. The city has been re-zoned ostensibly to ensure efficiency, but in reality, only to accommodate [politically-inspired] cronies. In some cases, foreign partners have been sought at greater costs, including leveraging government-guaranteed finances, enacting light-touch regulations, and providing tax holidays, yet with no results to show [...] except filth, everywhere filth [PI with the interviewees, October 2017].

Such scepticisms from the interviewees call for sober reflections on the appropriateness of the policy choices for the waste industry so far. For example, we think even the term ‘waste management’ used in our sanitation policy is a misnomer in actual practice. Indeed, Accra’s current SWM practice (i.e.,

collecting ‘waste’ and disposing of) is a ‘reductionist’ exercise. Technically, the paper sees waste management as a process (i.e., involving collection, treatment, and disposal) and not an action, with several choices to be made. Hence, city authorities’ occasional use of flowering terminologies such as waste-to-energy as planned interventions is largely tokenistic and aspirational. The paper believes addressing Accra’s waste crisis demands managing both the physical (technical) elements - collection, disposal, recycling— and the ‘soft’ governance aspects-inclusivity, financial sustainability, sound institutions and pro-actors’ policies (Cobbinah et al., 2017). This means adopting an integrated approach that takes cognisance of the local context, capabilities, and capacities – or hybridisation. In our view, this is the most preferred, ideal, and an acceptable paradigm for Accra. Our optimism is premised because so far, most “proven best practices” experimented in Accra, without paying sufficient attention to the local context have failed. The City and Country Waste Limited⁸ (CCWL) Service contract with AMA in 1997 readily comes to mind (see Oteng-Ababio, 2018).

In concluding, the paper opines that adopting a neoliberal-induced policy, which compromises the good public nature of ‘waste’ produces an ideological trilogy of competition, deregulation, and privatisation, which is hostile to spatial regulation - urban planning, environmental and economic development policies (Chmutina et al., 2017). In Accra, any objective observer of the solid waste landscape, as demonstrated by our interviewees, will conclude that successive governments have been mostly inept at facilitating any radical transformation (Attafuah-Wadee, 2017; Grant, Oteng-Ababio & Sivilien, 2019). While the city authorities acknowledge that inequality and social injustice in service provision intensify an unhealthy environment, their policy interventions mimic the western-induced model, ignoring the fundamental principles underpinning any efficient SWM policy. (i.e., effectiveness equity, efficiency, good governance, and financial sustainability). Such systems are counter-productive underpinned by powerful political interests, favouring a complete reliance on the ‘free market.’ They create ‘parallel societies’ (negotiated waste collection system), where a (small) section of the affluent populace enjoys clean environmental services while the majority wallow in abject poverty and filth. The findings reminisce earlier works in sub-Saharan Africa (Nzeadibe, 2009; Adama, 2010; Bjerkli, 2016), which show that the wholesale adoption of “best practices” can incur collateral environmental penalties, needless loss of resources, and staggering adverse public health and safety.

From the results, the urban poor in Accra today typically live in hyper-visible insanitary neglected areas. They are also consigned to the waste crisis’s frontline, just as they are unjustifiably punished for their “poor attitude” (Kyere-Nartey, 2015; Yusif, 2019). The paper opines, such conversation

8 In 1997, AMA signed an SWM agreement with Country and City Waste Ltd. AMA also signed a deal with Groupe Chagnon to supply SWM equipment to AMA, which equipment was assigned to CCWL. This agreement operated for two years until the Government abrogated it in July 2001, seized the trucks and other SWM equipment even though they had not been fully paid for, and sold them at reduced prices to third parties. At the time the contract was cancelled, AMA owned the CCWL more than US\$10,000,000.00. Although, CCWL made all efforts to have this matter amicably settled, when AMA and the Ministry of Local Government refused to pay, CCWL sued in the High Court, which awarded it over US\$ 12,000,000.00 inclusive of cost and interest against AMA. While the High Court took the view that the award of the contract to CCWL breached the Local Government Law, it nevertheless reasoned that AMA could not use for two years the services of CCWL without complaining and then refuse to pay for those services. To allow AMA to benefit from the contract without performing its part of the bargain would amount to a case of unjust enrichment. When the case was appealed at the Supreme Court, the apex court upheld the judgment and further awarded CCWL interest from July 2001 to the date of the final payment of the judgment debt. By 2009 the unpaid judgment debt amounted to the US \$ 29,000,000.00 and the assets of AMA were being auctioned by the court order to pay the debt (The Informer, 2012)

must change, and SWM policies must rather reflect local conditions (Morrison, 2017) and avoid the wholesale adoption of foreign prototypes. It is worth-noting that it has taken decades for the management, efficiency, and reliability of SWM systems in high-income countries to evolve to the far from ideal states they are currently in (Coffey & Coad, 2010). Wilson (2007) describes the impracticality of current expectations for developing country SWM systems: “If there is one key lesson that I have learned from 30 years in waste management, it is that there are no ‘quick fixes’. All developed countries have evolved their current systems in a series of steps; developing countries can benefit from that experience, but to expect to move from uncontrolled dumping to a ‘modern’ waste management system in one great leap is just not realistic” (Wilson, 2007: 205).

Hence, adopting the 4Es’ framework - enable [make it easy for the people to ‘do the right thing’]; engage [getting all people involved]; encourage; [give the right signals], and exemplify [lead by example] (UNEP, 2015) can help extend waste collection services to low-income areas and reduce uncontrolled dumping. Although this is not a ‘cure-all solution,’ this kind of publicly engaged approach can create strategies for coping with SWM complexity (Waltner-Toews et al., 2008). For now, the more extensive, deeply discomfiting insanitary condition in Accra smacks of signs of things to come, but it remains in the shadows of those practically demonstrated prioritised policies. The paper is hopeful that the society can work towards real progress in beautifying the city, but first, solid waste researchers and decision-makers in developing economies will need to adopt a strongly participatory, contextually grounded complex, adaptive systems perspective; mand second, public officials must get the fundamentals right: that solid waste management is not an act but a process.

Reference:

- Adama, O. (2010). Beyond disfunctionality: recycling in Kaduna, in Annual Report 010. Uppsala: Nordic Africa Institute. Available at <http://nai.diva-portal.org/smash/record.jsf?pid=diva2:413279>
- Ali, A. (2010). Wasting time on solid waste in developing countries—*Waste Management*, 30: 1437e1438.
- Amoah, S. T., Owusu-Sekyere, E., & Angmor, E. N. (2018). Urban space renaissance of a developing country city, Urban Research and Practice. <https://doi.org/10.1080/17535069.2018.1467962>
- Attafuah-Wadee, K. (2017). Rubbish thoughts (Part 1) Available at: <https://www.myjoyonline.com/opinion/2017/December-19th/rubbish-thoughts-part-1.php>
- Bella, V. Di., & Vaccari, M. (2014). Constraints of solid waste management in Someliland. *Proceedings of the Institute of Civil Engineering, Waste and Resource Management*, 167 (2): 62-71. DOI: 10.1680/warm.12.00023
- Bjerkli, C., (2016). Questioning the role of international organisations in solid waste management in Addis Ababa.
- Bulkeley, H., Watson, M., & Hudson, R. (2017). Modes of governing municipal waste. *Environment and Planning A*, 39(11): 2733–2753.
- Chmutina, K., Meding J, V; Gaillard, J. C., & Bosher, L. (2017). Why natural disasters aren’t all that natural <https://www.opendemocracy.net/ksenia-chmutina-jason-von-meding-jc-gaillard-lee-bosher/why-natural-disasters-arent-all-that-natural>
- Cobbinah, P. B., Addaney, M., & Agyeman, K. O. (2017). Locating the role of urbanites in solid waste management in Ghana. *Environmental Development*, 24: 9-21.

- Cobbinah, P. B., Aboagye, H. N., (2017). A Ghanaian twist to urban sprawl. *Land Use Policy* 61, 231–241.
- Coffey, M., & Coad, A. (2010). Collection of Municipal Solid Waste in Developing Countries. UN-HABITAT, Malta.
- Cox, K. R. (1998). Spaces of dependence, spaces of engagement and the politics of scale, ore looking for local politics. *Political Geography*, 17(1): 1-23.
- Darkwah, R. M., Cobbinah, P. B., & Anokye, P. A. (2018). Contextualising urban resilience in Ghana: Local perspectives and experiences. *Geoforum*, 94: 12-23.
- Esson, J., Noxolo, P., Baxter, R., Daley, P., & Byron M. (2017). The 2017 RGS-IBG chair’s theme: decolonizing geographical knowledges, or reproducing coloniality? *Area*, 49(3): 384–388, doi: 10.1111/area.1237
- Ghana News Agency. (2017). [Tamale MCE community connect tour touches hearts of residents](http://www.ghananewsagency.org/social/tamale-mce-community-connect-tour-touches-hearts-of-residents). Retrieved from <http://www.ghananewsagency.org/social/tamale-mce-community-connect-tour-touches-hearts-of-residents-123599>
- GNA (Ghana News Agency) (2015). President Mahama launches national sanitation programme. (<http://www.ghananewsagency.org/health/president-mahama-launches-national-sanitation-programme-49091>) Published: 2012-09-13 10:24:38.
- Grant, R., & Oteng-Ababio, M. (2019) “Electronic-Waste Circuitry and Value Creation in Accra, Ghana.” In *Value Chains in Sub-Saharan Africa*, pp. 115-131. Springer, Cham.
- Grant, R., Oteng-Ababio. M., & Sivilien, J. (2019). Greater Accra’s new urban extension at Ningo-Prampram: urban promise or urban peril?, *International Planning Studies*, DOI: 10.1080/13563475.2019.1664896
- Gregson, N., & Crang, M. (2010). ‘Materiality and waste: inorganic vitality in a networked world.’ *Environment and planning A*, 42 (5): 1026-1032.
- Gregson, N., & Crang, M. (2015). From waste to resource: the trade in wastes and global recycling economies. *Annual Review of Environment and Resources*, doi: 10.1146/annurev-environ-102014-021105
- GSS (Ghana Statistical Service) (2014). Ghana living standards survey round 6 (GLSS 6) Main Report.
- Hara, K. & Yabar, H. (2012). Historical evolution and development of waste management and recycling systems—Analysis of Japan’s experiences. *J. Environ. Stud. Sci.*, 2, 296–307.
- International Solid Waste Association (ISWA) (2012). Globalization and waste management: phase 1- concepts and facts. https://www.iswa.org/index.php?eID=tx_iswatfg_download&fileUid=36.
- Kyere-Nartey R.A. (2015). Globalshapers: turning trash into treasures in Kumasi, Ghana. <https://www.coca-colacompany.com/stories/global-shapers-turning-trash-into-treasures-in-kumasi-ghana>
- Latour, B. (2005). Reassembling the social: an introduction to actor-network-theory. Oxford: Oxford University Press.
- Lemanski, C. (2014). Hybrid gentrification in South Africa: Theorising across southern and northern cities. *Urban Studies Journal Limited*, 51(14): 2943–2960.
- Lissah S., Ayanore, M., Krugu, J., Aberese-Ako, M. & Ruiter, R. (2020). Managing urban solid waste in Ghana: perspective and experiences of municipal waste company managers and supervisors in an urban municipality.

- Miezah, K., Obiri-Danso, K., Kádár, Z., Fei-Baffoe, B., & Mensah, Y. M. (2015). Municipal solid waste characterization and quantification as a measure towards effective waste management in Ghana. *Waste Management* 46: 15–27.
- MLGRD (Ministry of Local Government and Rural Development) (2010). Environmental Sanitation Policy (Revised 2009), Government of Ghana. Accra.
- Morrison, N. (2017). Playing by the rules? New institutionalism, path dependency and informal settlements in Sub-Saharan Africa. *Environment and Planning A*, 0(0) 1–20. DOI: 10.1177/0308518X17730581.
- Napari, P. N. & Cobbinah, P. (2014). Environmental sanitation dilemma in the Tamale Metropolis, Ghana. *International Journal of Environmental, Ecological, Geological and Mining Engineering*, 8(1): 228–233.
- Nicolli, F., Johnstone, N., & Söderholm, P. (2012). Resolving failures in recycling markets: the role of technological innovation. *Environmental Economics and Policy Studies*, 14(3): 261–288.
- Nsiah-Gyabaah, K. (2004). Urbanization processes; environmental and health effects in Africa. Panel Contribution to the PERN Cyber-seminar on Urban Spatial Expansion, Sunyani, Ghana, 29 November–15 December.
- Nzeadibe T. C. (2009). Solid waste reforms and informal recycling in Enugu urban area, Nigeria. *Habitat International* 33 (9): 3–9.
- Nzeadibe T. C. & Ejike-Alieji, U. P. A., (2020) Solid waste management during Covid-19 pandemic: policy gaps and prospects for inclusive waste governance in Nigeria, *Local Environment*, 25:7, 527–535, DOI: 10.1080/13549839.2020.1782357
- Oduro-Kwarteng, S., & Van Dijk, M. P. (2013). The effect of increased private sector involvement in solid waste collection in five cities in Ghana. *Waste management & research*, 31(10): 81– 92.
- Okot-Okumu, J., & Nyenje. R. (2011). “Municipal solid waste management under
- Osei-Tutu, B., & Anto, F. (2016). Trends of reported food-borne diseases at Ridge Hospital, Accra, Ghana: a retrospective review of routine data from 2009–2013 (March 24), *BMC Infect. Dis.* 16 139, <http://dx.doi.org/10.1186/s12879-016-1472-8>.
- Oteng Ababio, M. (2020) Unpacking Africa as a dynamic continent: Insights from contemporary development issues in Ghana. *Oguaa Journal of Social Sciences*, Vol. 27, No. 1, pp. 1– 14.
- Oteng-Ababio, M; van der Velden, M & Taylor M. B. (2020). Building Policy Coherence for Sound Waste Electrical and Electronic Equipment Management in a Developing Country. *Journal of Environment & Development*. DOI: 10.1177/1070496519898218
- Oteng-Ababio, M. (2017). New wines, old bottles? Cities in the global South and the Sustainable Development Goals. *Ghana Journal of Geography (Special Issue)*, 175–196.
- Oteng-Ababio, M., Melara, J. E., & Gabbay, O. (2013). Solid Waste Management in African Cities: Sorting the Facts from the Fads in Accra, Ghana. *Habitat International*, 39: 96–104.
- Parnell, S. (2020) The enabling conditions of post-pandemic city government. *Environment and Planning B: Urban Analytics and City Science*, 47 (7). 1143 – 1145.
- Parnell, S., & Robinson, J. (2013). (Re) theorizing Cities from the Global South: Looking Beyond Neoliberalism. *Urban Geography*, 33(4): 593–617.
- Post, J. (1999). The problems and potentials of privatising solid waste management in Kumasi, Ghana. *Habitat International*, 25(2): 201–215.

- Radcliffe, S. (2017). Decolonising Geographical Knowledges. *Transactions of the Institute of British Geographers*, 42 (3), 329-333. <https://doi.org/10.1111/tran.12195>
- Scheinberg A., Wilson, D. C., & Rodic, L. (Eds), (2010b). Solid Waste Management in the World's Cities. Earthscan for UN-Habitat, London, UK.
- Schubeler, P., Wehrle, K., & Christen, J. (1996). Conceptual Framework for Municipal Solid Waste Management in Low-income Countries. SKAT, St Gallen, Switzerland. UMP/SDC Collaborative Programme on Municipal Solid Waste Management in Developing Countries, Urban Management Programme (UMP) working paper series no. 9. See <http://www.skat.ch> (accessed 13/04/2012).
- Seadon, J. K. (2010). Sustainable waste management systems. *Journal of Cleaner Production*, 18(16-17): 1639 - 1651.
- Songsore, J. (2017). The Complex Interplay between Everyday Risks and Disaster Risks: The Case of the 2014 Cholera Pandemic and 2015 Flood Disaster in Accra, Ghana. *International Journal of Disaster Risk Reduction*, 26: 43 – 50.
- Stacey, P., & Laud, C. (2016). In a state of slum Governance in an informal urban settlement in
- Swyngedouw, E. (2004). Globalisation or 'glocalisation'? Networks, territories and rescaling. *Cambridge Review of International Affairs*, 17(1): 25-48, DOI: 10.1080/0955757042000203632.
- Tacoli, C. (2012). Urbanization, gender and urban poverty: paid work and unpaid care work in the city. international institute for environment and development, United Nations Population Fund, London, UK.
- Today Online (2014). The challenges of waste management in Ghana: EPA's perspective. Retrieved from <https://www.todaygh.com/challenges-waste-management-ghana-epas-perspective/>
- UNDP (2010). Regional human development report for Latin America and the Caribbean 2010. Costa Rica: United Nations Development Programme.
- van der Velden, M., Taylor, M. B., & Oteng-Ababio, M. (2019) Sustainable Product Lifecycles: A Systemic Approach to the Regulation of E-Waste. *Plate-Product Lifetimes and The Environment*. (18-20 September) https://www.smart.uio.no/publications/regulating_e-waste_plate2019.pdf.
- Waltner-Toews, D., Kay, J., & Lister, N. (Eds.). (2008). *The Ecosystem Approach: Complexity, Uncertainty, and Managing for Sustainability*. NEW YORK: Columbia University Press. doi:10.7312/walt13250
- Wilson, D. C., Velis, C. A., & Rodic, L. (2013). Integrated sustainable waste management in developing countries. *Proceedings of the Institution of Civil Engineers: Waste and Resource Management*, 166 (2): 52 - 68. <http://dx.doi.org/10.1680/warm.12.00005>.
- Wilson, D. C. (2007). Development drivers for waste management. *Waste Management & Research* 25 (3), 198–207.
- Yoda, R. M., Chirawurah, D., & Adongo, P. (2014). Domestic waste disposal practice and perceptions of private sector waste management in urban Accra. *BMC Public Health*, 14(697). 10.1186/1471-2458-14-697.
- Yusif, F. (2019). Accra needs more landfill site-Jospong Group. Citi Newsroom. Retrieved from <https://citinewsroom.com/2019/01/15/accra-needs-more-landfill-sites-jospong-group/>