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Repurposed lives: shipping containers as contested sites of urban citizenship in Accra

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Abstract. This study investigates how shipping containers are repurposed as architecture in Accra, Ghana. The study reveals the spatial factors shaping the emergence of these adaptive structures. Rather than being randomly situated, containers cluster in strategic locations enabling access to livelihoods while also avoiding eviction threats. Their positioning highlights contradictions between top-down urban planning favouring elite interests and the needs of marginalised residents. The repurposing of containers represents creative grassroots placemaking, transforming discarded industrial artefacts into vital communal infrastructure. However, their proliferation also stems from state-led displacements and lack of affordable housing, reflecting broader exploitation of the urban poor. As such, container structures constitute spatial innovations that represent attempts to resolve the failures of neoliberal urban governance. But they equally crystallise emerging inequalities and conflicts over the right to the city. This research ultimately discusses containers as fluid sites that embody both resistance and precarity. Their ambivalent characteristics call for more radical visions of planning in pursuit of spatial justice.

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1. Introduction

Cities in the Global South are sites of both investment and inequality (Obeng-Odoom, 2015). The scarcity and commodification of urban space generate high rents and profits for landlords and investors (Harvey, 1974). Consequently, the urban poor are marginalised and excluded from adequate housing and basic services, resulting in the proliferation of slums and informal settlements (Aliu, 2022; UN-HABITAT, 2006; 2016). As a result, the Sustainable Development Goal (SDG 11) of making cities inclusive, safe, resilient and sustainable is far from being achieved. Furthermore, the neoliberal turn since the 1980s has intensified the spatial and social inequalities in low-income countries by producing postcolonial capitalist regimes that undermine planning, governance, and housing provision (Ardayfio-Schandorf et al., 2012; Gillespie, 2016; Grant, 2009; Owusu, 2008; 2012). A comparable pattern has been observed in Central and Eastern Europe, where socio-spatial polarisation has deepened during the post-socialist transition (Szirmai, 2016; Węcławowicz, 2002; 2016).

The emergence of container urbanism has radically transformed the spatial and social configuration of many cities, especially in the African and Asian countries. The reuse of shipping containers has become a popular form of urban development strategy in recent years to overcome the crisis of urbanisation. Shipping containers offer an economical, environmentally friendly, adaptable, and durable option for urban development. Moreover, efforts in the last decade to promote a circular economy and attain net-zero carbon emission goals have resulted in the reuse of shipping containers in the area of sustainable building practices, as evident with the construction of the Ras Abu Aboud Stadium for the FIFA World Cup Qatar 2022 (Al Sholi et al., 2023; Kucukvar et al., 2021; Spanos et al., 2022). Yet the accelerated uptake of container retrofits in Accra also foregrounds a suite of environmental challenges – from embodied-carbon accounting to neighbourhood micro-climates – that have so far remained under-examined in the Ghanaian policy arena. Positioning containers within the broader pursuit of SDG 11 therefore requires viewing them not only as adaptive artefacts of informal ingenuity but also as emergent components of an urban material cycle whose sustainability hinges on life-cycle performance, thermal efficiency, and infrastructural integration (UN-Habitat, 2023; Ministry of Works & Housing, 2022). The traditional housing market is unable to meet the growing demand for adequate and affordable housing, especially for low-income and marginalised groups. Contrary to the traditional construction industry, container urbanism creates new spaces of production, consumption, and social reproduction (Dietz & Nadarajan, 2006). Container urbanism also creates more diverse and inclusive communities through the emergence of creative container communities (Klose, 2015; Parker, 2013; Dietz & Nadarajan, 2006; Farley & Roberts, 2011).

Container urbanism emerged in the 1960s through the visionary projects of Archigram and the Metabolism movement, whose concepts revolved around modular and mobile structures that could adapt to the evolving needs of urban dwellers (Schwarzer, 2013).

Recent African scholarship deepens understanding of container urbanism beyond its technical virtues. Taleb et al. (2019) demonstrate in Aswan, Egypt that passive design measures such as green roofs can cut annual container-dwelling energy loads by 13 percent, highlighting climate-specific design constraints. Mfamadi et al. (2024) show that interior apparent temperatures in a seven-storey Johannesburg container block routinely breached health-risk thresholds, with insulated units still 2–9 °C hotter than outdoors. Dziwornu (2024a) documents rising NIMBY ("not in my back yard") opposition to what residents call the "container menace" in Accra, linking protests to fears of environmental degradation and loss of open space. Institutional perspectives likewise reveal a neoliberal tolerance that normalises containers as a "better-than-nothing" housing fix while leaving regulation incoherent (Dziwornu & Coletto, 2023). Together with Dziwornu's (2024b) broader synthesis of Global Container Urbanism, these studies highlight the tension between grassroots ingenuity and systemic precarity that frames our Accra findings.

Despite a wealth of literature recognising container urbanism as an emerging and alternative urban development strategy, much of the literature appears to focus on technical and structural components and environmental and sustainability dimensions of shipping container architecture (Bernardo et al., 2013; Giriunas et al., 2012; Islam et al., 2016; Trancossi et al., 2020; Taleb et al., 2019; Vijayalaxmi, 2010; Zha & Zuo, 2016). For instance, Giriunas et al. (2012) provided insights into the structural guidelines for ISO (International Organization for Standardization) shipping containers repurposed for non-shipping applications – specifically, exploring the engineering considerations, foundations and connections for shipping containers used in building applications. Islam et al. (2016) also investigated and evaluated the constructability and life cycle environmental impacts of reusing shipping containers for home-building purposes using a life cycle assessment (LCA) approach. They found that reusing shipping containers reduces the need for most new materials in conventional

construction, and successful cases of converting containers to various types of buildings are rising globally (Islam et al., 2016). Other studies have explored the application of shipping containers in emergency and disaster situations (Haque et al., 2022; Ling et al., 2019). Similarly, other bodies of work have examined the role of the container in politics, health, art and crime (Andres et al., 2021; Boyle, 2016; Klose, 2015; Parker, 2013; Pugliese, 2009; Sorkin, 1996). There is, however, relatively little research on the wider social and spatial dialectics of container architecture. More specifically, this study explores how container urbanism influences the public space, quality of life, safety, density, mobility, flow, and self-expression of marginalised groups. This article seeks to explain how and why shipping-container structures have proliferated across Accra and what this reveals about contested urban citizenship.

2. Conceptualising containerisation of urban space

This study uses Henri Lefebvre's theory of the production of space to examine the socio-spatial dynamics of container urbanism. Lefebvre (1974 and 1991a) proposed a triadic model of space as perceived, lived and conceived (Schmid et al., 2014). His work was groundbreaking in exploring the dialectics of everyday life and urban space. However, it took a long time for his ideas to influence urban studies (Schmid, 2014; Stanek, 2008). Gottdiener (1994) argues that space is essential for social life and community. Lefebvre's theory of space integrates urban and spatial processes at different scales (Schmid et al., 2014; Schmid, 2008). Soja uses the term "socio-spatial dialectic" to describe the interdependence of people and places (Borden et al., 2000; Soja, 1980). He also clarifies some misunderstandings of Lefebvre in the Anglo-American context (Smith, 2008). Lefebvre (2009) claims that the production of space gives meaning to society and life. His theory involves three elements: material production, knowledge production and meaning production (Schmid, 2008).

Such a dialectical reading can be productively extended through urban political-ecology, where the circulation of materials, wastes and energy is theorised as constitutive of socio-spatial inequality (Heynen et al., 2006). Container retrofits literally relocate a global surplus material – the ISO steel box – into Accra's housing metabolism, altering not only patterns of dwelling but also the aggregate ecological footprint of construction. Bringing these insights to Lefebvre's triad clarifies how "perceived" space (the box), "conceived" space (planning discourse) and "lived" space (daily habitation) co-produce new environmental textures whose sustainability is unevenly distributed across classed and gendered bodies.

According to Lefebvre (1991b), space is not a static or neutral entity, but rather a dynamic and political product of society. He criticised the neoliberal view of space as a commodity that can be controlled and exploited by capitalist and state forces. Lefebvre proposed a unitary theory of space that integrates the physical, mental and social dimensions of space. He also distinguished various types of space, such as absolute, abstract, dominated, appropriated and differential spaces, each with its own set of characteristics and contradictions. Lefebvre (2009) proposed the right to the city as a radical transformation of space through collective action and social needs. He saw space as an important factor in the development of capitalism and social change. Some of Lefebvre's insights on the production of space and its relationship to social justice were shared by Harvey (1973). He also looked into how space becomes absolute once it transcends matter.

According to Harvey (1973: 13), space is not defined by abstract concepts, but by human activities. He suggested that we should examine "how different human practices create and use different conceptualizations of space" instead of seeking a universal definition of space. Lefebvre (2009: 172) also advocated for studying social practices rather than formal and logical understandings of space. Harvey (2005) distinguished between absolute, relative and relational spaces. Absolute space is fixed and based on Newtonian and Cartesian traditions. It also reflects the accumulation and rationalisation of private property and territorial boundaries (Harvey, 2005: 94; Lefebvre, 1991b: 85). Relative space is non-Euclidean and associated with Einsteinian physics. It depends on whom and what is being relativised (Harvey, 2005: 95). Capital is an example of relative space production (Smith, 2008: 113). Absolute space is essential for understanding spatial production (Smith, 2008). It also produces relative space (Smith, 2008: 113). Spatial activities are identified by their scale (Smith, 2008: 118), which is determined by the relationship between absolute and relative spaces (Smith, 2008).

According to Lefebvre (2009), space is not a neutral or natural entity, but a product of social relations and practices. He argues that space has ideological, historical, strategic and political dimensions and that it is shaped by human creation and activity (Lefebvre, 2009: 173). Space is also a means of production that influences and is influenced by the production of things (Lefebvre, 2009; Gottdiener, 1994). Therefore, space is a social construct that requires a unitary

theory that integrates the physical, mental and social aspects of space (Lefebvre, 1991b; Borden et al., 2000; Schmid, 2008; Stanek, 2011).

Lefebvre (1991b) suggested a tripartite model of space, which Schmid (2014) explained as follows: spatial practices are the material aspects of everyday life in the city; representations of space are the mental images and concepts of space; and spaces of representation are the symbolic and emotional meanings of space. Lefebvre's dialectical approach to space was influenced by Hegel, Marx and Nietzsche (Schmid, 2014; Stanek, 2008). According to Lefebvre (1991b), representations of space are shaped by professional groups such as planners, scientists and urbanists (p. 38) and by social relations that dominate spatial practices (p. 50). Representations of space also have a symbolic and aesthetic dimension that is consciously codified by the mode of production of society (Lefebvre, 1991b: 42; Borden et al., 2000: 7). Representational spaces are the spaces of lived experiences, images and symbols that reflect the meanings and values of the inhabitants and users (Lefebvre, 1991b: 39). They are influenced by the representations of space, which are the dominant spatial concepts and ideologies imposed by planners, experts and authorities (Zieleniec, 2018). Representational spaces can also be sites of struggle, resistance and liberation against the dominant spatial order (Borden et al., 2000). Lefebvre (1991b: 42) described representational spaces as dynamic, experiential, alive and fluid. They are not only perceived but also imagined (Lefebvre, 1991b; Borden et al., 2000; Schmid 2008; 2014; Stanek, 2011; Smith, 2008). From a phenomenological perspective, social space is not just a physical abstraction but also a lived reality (Schmid, 2008: 41). However, Lefebvre's three-dimensional theory of space has been subject to some confusion and ambiguity in interpretation. Schmid (2014: 41) identified some core "dialectical confusions" related to the conceptualisation of Lefebvre's theory and showed how some influential scholars such as Harvey, Soja, Shields and Elden have misinterpreted it.

This paper examines how urban space is produced and transformed by container urbanism in Ghana, using Lefebvre's theory of space as a framework. Lefebvre (1991b) argues that space is not a thing or a container, but a product and means of production that reflects human relations. According to Lefebvre (1991b), the appropriation of space involves the creation of new spaces that challenge the existing order, such as container urbanism. Gillespie (2016) shows how entrepreneurial governance strategies in Accra, Ghana have resulted in the commodification of urban space and the displacement of working-class residents from the formal land market. However, he also observes how these residents resist and subvert the hegemonic practices by using containers as alternative spaces to assert their right to the city. This paper explores how container urbanism reveals the socio-spatial dialectics in the production of urban space in Ghana.

3. Materials and method

The study took place in six municipalities within urban Accra, Ghana (see Fig. 1). Accra is Ghana's political and commercial capital, located on the Gulf of Guinea, and covers about 139.7 km². Accra became the British colonial administration's capital in 1877 and served as a major port for resources from the hinterland (Gillespie, 2016). The AMA was founded in 1898 and contributes 25% of the GDP and 80% of all foreign direct investment in Ghana (Cities Alliance, 2016; GSS, 2014; World Bank, 2016). Rapid urbanisation and expansion in the last twenty years have resulted in challenges such as slums and informal settlements at the fringes of the city (Doe et al., 2022). The population of the AMA has grown significantly from 338,396 in 1960 to 1,665,086 in 2010 (GSS, 2014; Spio, 2011). This growth has been driven mainly by rural–urban migration and the informal economy (Gillespie, 2016). However, this growth has also created an unequal geography of infrastructure, housing, services and job opportunities. Moreover, the formal housing market has not matched this growth rate, creating a housing crisis and the normalisation of alternative urban processes such as container urbanism. In 2010, 6.2% of all occupied dwellings in urban Accra were improvised homes (containers/kiosks) (GSS, 2014). Nationally, the number of people living in improvised homes has increased from 1.4% in 2000 to 1.8% in 2010, to an estimated 20% in 2021 (GSS, 2013; Frimpong, 2021).

The administrative geography of Accra underwent significant restructuring around the period of fieldwork. East Legon forms part of the Ayawaso West Municipal Assembly, while subsequent administrative reorganisation placed Adabraka within the Korle Klottey Municipal Assembly and Kotobabi within the Ayawaso Central Municipal Assembly. Korle Gonno, New Fadama and North Kaneshie remain within the Accra Metropolitan Assembly. Because these administrative changes occurred over time and some took effect during or shortly after the fieldwork period, the term "urban Accra" is used throughout this article when referring collectively to the six study neighbourhoods. References to the Accra Metropolitan Assembly (AMA) are retained only where they refer

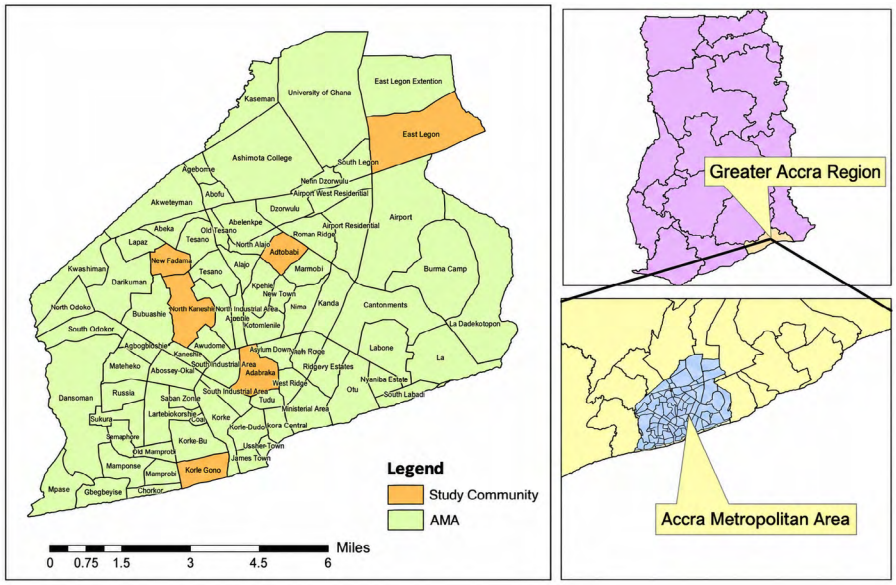


Fig. 1. Map of the study area
Source: own elaboration

specifically to that local-government jurisdiction or to historical statistics compiled according to the administrative boundaries applicable at the time of data collection.

The study adopts a diverse and comprehensive sampling and methodology to examine the heterogeneous practices of container urbanism in Accra, Ghana. Consequently, the study employed a quantitative survey to analyse the spatial and temporal dynamics of container urbanism in Accra, Ghana. Respondents were container operators from neighbourhoods across income levels – low-income informal settlements and middle-income and high-income areas. The survey of container users from different communities across the city reveals the varied reasons and locations of their containers as a spatial strategy. A total of 502 respondents were selected through purposive sampling and surveyed across six neighbourhoods – Kotobabi, Korle Gonno, Adabraka, New Fadama, East Legon and North Kaneshie (Table 1). The survey was carried out by six trained assistants with in-depth knowledge of the study communities. Selection criteria for the six survey assistants included the duration of local residency in the neighbourhoods. The survey used KoboToolbox, a free open-source software for large-scale field data collection that enables an interdisciplinary approach. The survey asked respondents about the location of their container and key concerns. The results provide data on the distribution and concentrations of containers in particular neighborhoods and on how container improvisation affects users of different backgrounds across the study communities. Data were collected from October 2018 to February 2019.

This study also gathered spatial data from the questionnaire survey and drone to analyse the socio-spatial dynamics of container urbanism in Accra. Spatial data can help in making evidence-based decisions (O'Brien, 1992) and in examining urban patterns with geographic information systems (Shen & Guo, 2014). Mapping alternative urban processes such as container urbanism can also reveal the factors and differences involved in adopting new forms and practices (Parker & Asencio, 2009). The study also used Unmanned Aerial Vehicles (UAVs) to capture high-resolution images for assessing container urbanism. Despite some controversy, UAVs are useful for land use planning, cityscape visualisation, and environmental mapping and monitoring (Lucieer et al., 2014). UAVs can also optimise sampling procedures with different spatial resolutions and sensor types (D'Oleire-Oltmanns et al., 2012; Lucieer et al., 2014). There is a growing interest in using drones for environmental monitoring in Ghana (Owen, 2016). For example, Appeaning Addo et al. (2018) and Appeaning Addo (2016) used a drone to monitor coastal areas. This study used a DJI Phantom 4 Advanced drone to collect aerial photos in the study areas between April and May 2019.

Researchers must balance their curiosity for knowledge and respect for individual privacy. Yin (2003: 94) argued that researchers often "assume positions or advocacy roles contrary to the interests of good scientific practices". Using UAVs in populated areas also raises ethical issues. The low altitude and noise of drone flights annoyed some residents, who

Table 1. Summary of the questionnaire sample frame

Site	Residential Category	Number of Participants (Container Operators)
East Legon	High Income	62
North Kaneshie	Middle Income	85
Adabraka	Middle Income	94
Korle Gonno	Low Income	47
Kotobabi	Low Income	46
New Fadama	Low Income	168

Source: own elaboration based on field survey

felt their privacy was invaded. The study tried to minimise this by flying higher and focusing on buildings and vegetation.

4. Results

4.1. Profile of the respondents

Table 2 summarises the demographic characteristics of container users. The respondents had diverse demographic backgrounds in terms of gender, age and ethnicity. Most of the respondents (65%) were females and the rest (35%) were males. This matches the overall gender profile of the urban Accra. The female container users outnumbered the male ones in all six neighbourhoods sampled, with an average of 65%. The neighbourhoods of Korle Gonno and New Fadama had the highest percentages of female respondents (81% and 70%, respectively). The majority of the respondents (80%) were between their mid-20s and mid-40s. Regarding education, only 5% of the respondents had no formal education. Most of the container users had primary/basic (22%) or secondary school education (44%), which is expected, since the urban Accra has one of the highest literacy rates in the country.

The majority of the respondents (88%) were informal sector workers, such as petty traders, food vendors, beauticians, tailors and seamstresses. Only

Table 2. Demographic profile of container users in Accra

Key Attribute	Adabraka		North Kaneshie		New Fadama		Korle Gono		East Legon		Kotobabi	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Number of respondents	94	19	85	17	168	34	47	9	62	12	46	9
GENDER												
Female	54	57	51	60	118	70	38	81	34	55	32	70
Male	40	43	34	40	50	30	9	19	28	45	14	30
AGE												
16-24	1	1	7	8	14	8	0	0	4	6	1	2
25-34	31	33	45	53	76	45	18	38	28	45	15	33
35-44	44	47	24	28	63	38	23	49	18	29	16	35
45-54	17	18	9	11	13	8	5	11	11	18	11	24
55-64	1	1	0	0	2	1	1	2	1	2	3	7
EDUCATION												
No Education	8	9	1	1	10	6	0	0	0	0	6	13
Primary/ Basic	24	26	18	21	40	24	3	6	6	10	19	41
Secondary	35	37	41	48	81	48	18	38	38	61	10	22
Tertiary	13	14	12	14	22	13	14	30	13	21	3	7
Vocational Training	14	15	13	15	15	9	12	26	5	8	8	17
MARITAL STATUS												
Divorced/widowed/separated	1	1	0	0	2	1	0	0	0	0	3	7
In a relationship	7	7	4	5	6	4	2	4	5	8	4	9
Married	72	77	51	60	97	58	28	60	40	65	32	70
Single	14	15	30	35	63	38	17	36	17	27	7	15

Source: own elaboration based on field survey

a small fraction (12%) of the container owners belonged to the formal sector, reflecting the prevalence of the informal sector in urban Accra. According to the 2010 population and housing census (GSS, 2014), about 74% of all workers in the city were in the informal sector. Most of the respondents had been working in the informal sector for more than four years.

4.2. Does the diffusion of containers in Accra exhibit any spatial structure?

Container structures are more common in low-income and informal areas of Accra (Table 1). These areas, such as New Fadama, have small and irregular buildings that are often overcrowded and have narrow pathways (World Bank, 2017). A container hotspot analysis reveals that New Fadama has the highest concentration of container structures, followed by Adabraka. In contrast, no container hotspots were found in high-income areas like East Legon, which have planned residential buildings and low housing density. The spatial arrangement of containers, often aligned with labour and mobility flows, reflects urban functional fragmentation, comparable to the development and organisation of worker districts in Polish cities during the socialist period, although expressed through different built forms (Marcińczak & Bartosiewicz, 2024).

The study examines the spatial pattern of container units in Accra using average nearest neighbour (ANN) analysis. ANN analysis calculates the average distance from each point to its closest point and compares it to a random pattern. Figure 2 shows that, within each of the six neighbourhoods, container units are spatially clustered (R=0.14; z-score=−37.59; p-value=0.00). This matches the respondents' perceptions of the importance of location near roadsides, markets and other containers. The spatiotemporal analysis also shows an expansion diffusion of container units from north to south in North Kaneshie between 2009 and 2019 (Fig. 3).

Table 3. Residential and income profile of respondents

Key Attribute	Adabraka		North Kaneshie		New Fadama		Korle Gono		East Legon		Kotobabi	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
REGION OF ORIGIN												
Ashanti	16	17	27	32	40	24	6	13	28	45	8	17
Brong Ahafo	0	0	2	2	6	4	2	4	0	0	0	0
Central	3	3	9	11	24	14	7	15	2	3	1	2
Eastern	3	3	8	9	41	24	8	17	4	6	1	2
Greater Accra	53	56	21	25	14	8	13	28	15	24	7	15
Northern	4	4	2	2	10	6	1	2	1	2	10	22
Upper East	1	1	3	4	7	4	1	2	1	2	6	13
Upper West	0	0	1	1	4	2	1	2	0	0	0	0
Volta	13	14	10	12	19	11	4	9	11	18	13	28
Western	1	1	2	2	3	2	4	9	0	0	0	0
LENGTH OF RESIDENCE IN ACCRA												
Over 4 years	35	37	50	59	123	73	19	40	37	60	35	76
2-4 years	8	9	10	12	24	14	10	21	12	19	0	0
1-2 years	0	0	5	6	5	3	11	23	0	0	2	4
6-12 months	0	0	1	1	3	2	1	2	0	0	0	0
Under 6 months	0	0	1	1	6	4	0	0	0	0	4	9
This is my hometown	51	54	18	21	7	4	6	13	13	21	5	11
ANNUAL HOUSEHOLDS INCOME												
GHS 40,000 or more	0	0	0	0	0	0	0	0	9	15	1	2
GHS 10,000-30,000	21	22	28	33	26	16	12	26	20	32	4	9
GHS 6,000-9,000	58	62	39	46	75	45	15	32	32	52	6	13
GHS 2,000-5,000	15	16	18	21	67	40	20	43	1	2	35	76

Source: own elaboration based on field survey

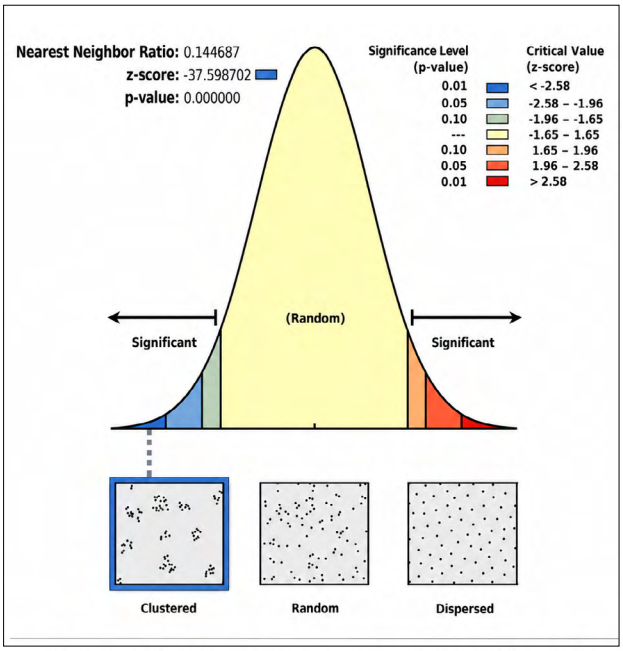


Fig. 2. Nearest neighbor analysis of container distribution
Source: own elaboration based on field survey

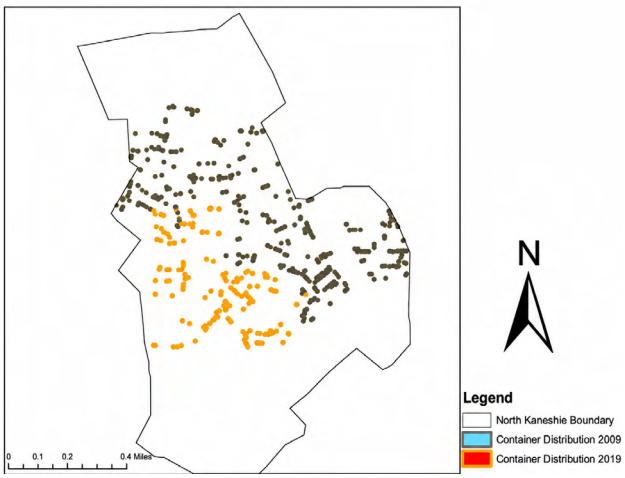


Fig. 3. Container distribution in North Kaneshie
Source: own elaboration based on field survey

4.3. Does the adoption of containers affect urban social interactions?

Container design, location and social context influence human interaction in the study areas (Lindsay, 2014). Social interaction among container users and residents is vital for sustained use. The study revealed a relationship between the container size and the level of conviviality. Notably, owners of small containers (10 ft) preferred to cluster their units near other containers (59% agreed on the importance of proximity), while owners of large containers (20 ft) tended to isolate their units from others (75% strongly disagreed on the need for clustering). At the neighbourhood level, owners of small containers in Adabraka (18% agreed) and East Legon (17.1% agreed) also favoured close localisation of their units. However, owners of small containers in New Fadama (37.7% neutral) showed no clear preference for the location of their units relative to other containers. The study found that smaller containers in residential areas and clusters of containers near other social groups enhanced social interaction. These strong social ties also helped the users of small containers stay in their neighbourhoods and avoid eviction or prejudice. Moreover, users of small containers participated in community activities such as funerals, churches and mosques to foster social bonds. However, the container's limited space and high occupancy reduced privacy and self-expression. Unlike traditional housing, the container lacked the luxury of solitude.

4.4. Container urbanism and de-pedestrianisation

The Ghana National Urban Policy Revision Guideline aims to promote safe pedestrianisation (GUTT, 2019). However, urban space is increasingly occupied by containers along roads and markets (Figs 4 and 5). This reduces the sidewalks and affects pedestrian mobility, traffic and road safety. Children in inner cities face greater risk of road accidents and injuries. Road traffic crashes in the AMA rose from 68% in 2018 to 77% by April 2019 (AMA, 2019). Speeding was a major cause of these crashes (AMA, 2019).

Many container users in some neighbourhoods prefer to place them near the roadside. This reduces the space for pedestrians on sidewalks. Most of these users are in East Legon, Kotobabi and North Kaneshie (Fig. 6). Sixty-two percent of the respondents agreed that it is important for a container to be located near the roadside (Fig. 7). It is very important especially for users in East Legon and Kotobabi.

4.5 Container urbanism and fear of crime

Safety and security were major concerns for almost half of the respondents (42%), who feared their container being burglarised. This fear varied by gender, previous victimisation and location. For example, women were more worried than men, and New



Fig. 4. Drone image of container localisation and de-pedestrianisation in Korle Gonno
Source: own elaboration



Fig. 5. Drone image of container localisation and de-pedestrianisation in Kotobabi
Source: own elaboration

Fadama residents closed their containers earlier than others. Moreover, 34% of the respondents believed that using the container increased their risk of victimisation. Mobile money operators in the city faced the highest risk of container burglaries, especially from armed robbers. One such case resulted in the murder of an occupant at Asylum Down in 2018 (Awiah, 2018). Due to these risks, most container users closed up early, around 8 p.m., especially in New Fadama, where special security measures are installed (Fig. 8). This differed from historical accounts of street vendors selling late into the night in Adabraka (Sanjek, 1982), suggesting security has deteriorated and containers provide more valuable targets.

4.6. Container improvisation and accessibility to essential services

The accessibility of essential services such as police, fire and hospital for respondents varies greatly by location. We used Thiessen polygons to measure this variation. These polygons assign all locations in space to the closest point in a set of points (Yamada, 2017). The results show that most of the container users, except those in Adabraka and North Kaneshie, were far from essential services in case of emergencies (Fig. 9). We also used multiple ring buffer analysis to show how the distance from these services affects

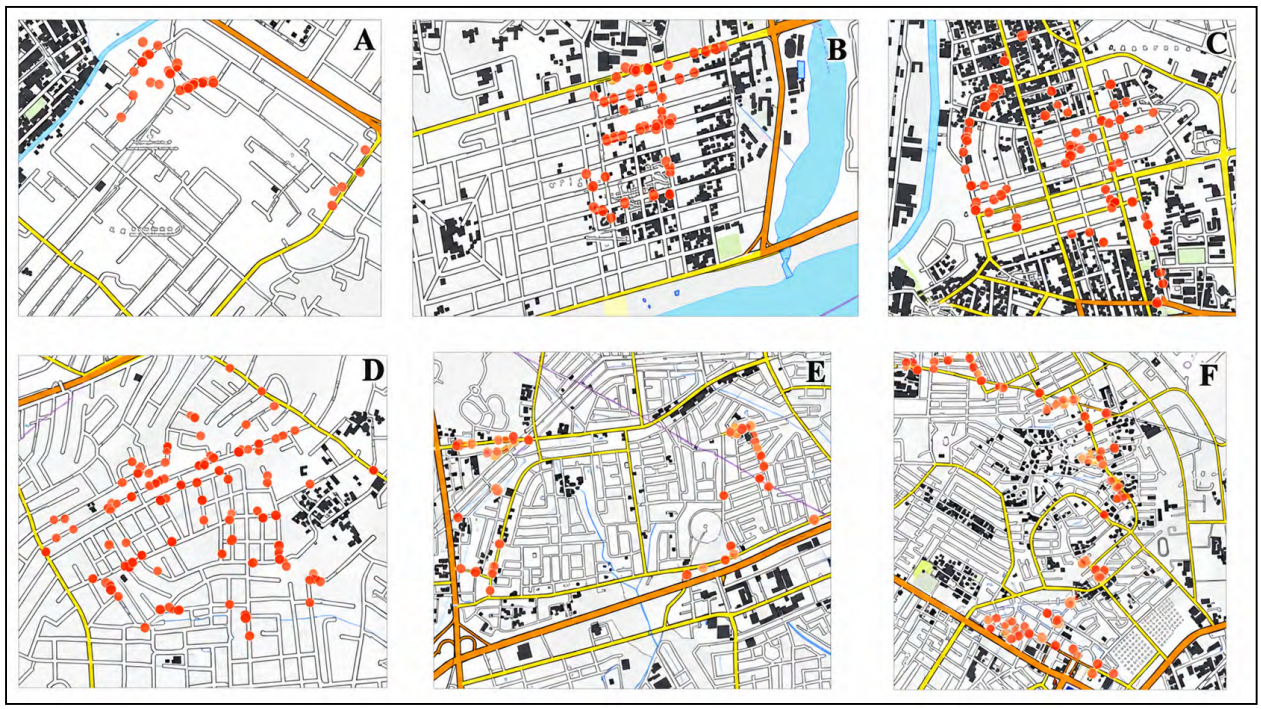


Fig. 6. Container location and road network: (A) Kotobabi, (B) Korle Gonno, (C) Adabraka, (D) New Fadama, (E) East Legon, (F) North Kaneshie
Source: own elaboration based on field data

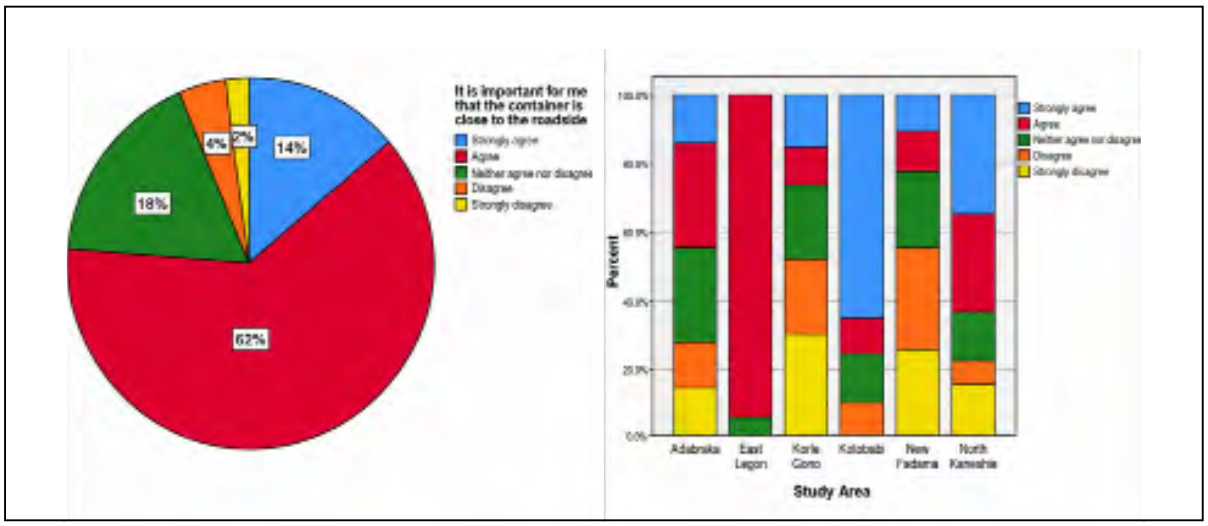


Fig. 7. Importance of container location close to the roadside
Source: own elaboration based on field data

the risk level of respondents. For example, most of the respondents in New Fadama's 100-metre hotspot area were in a high-risk zone due to limited access to essential services (Fig. 10). In contrast, most of the respondents in Adabraka and East Legon's 100-metre hotspot areas were in low-risk zone with easy access to essential services (Fig. 10).



Fig. 8. Photos of container security measures
Source: field data

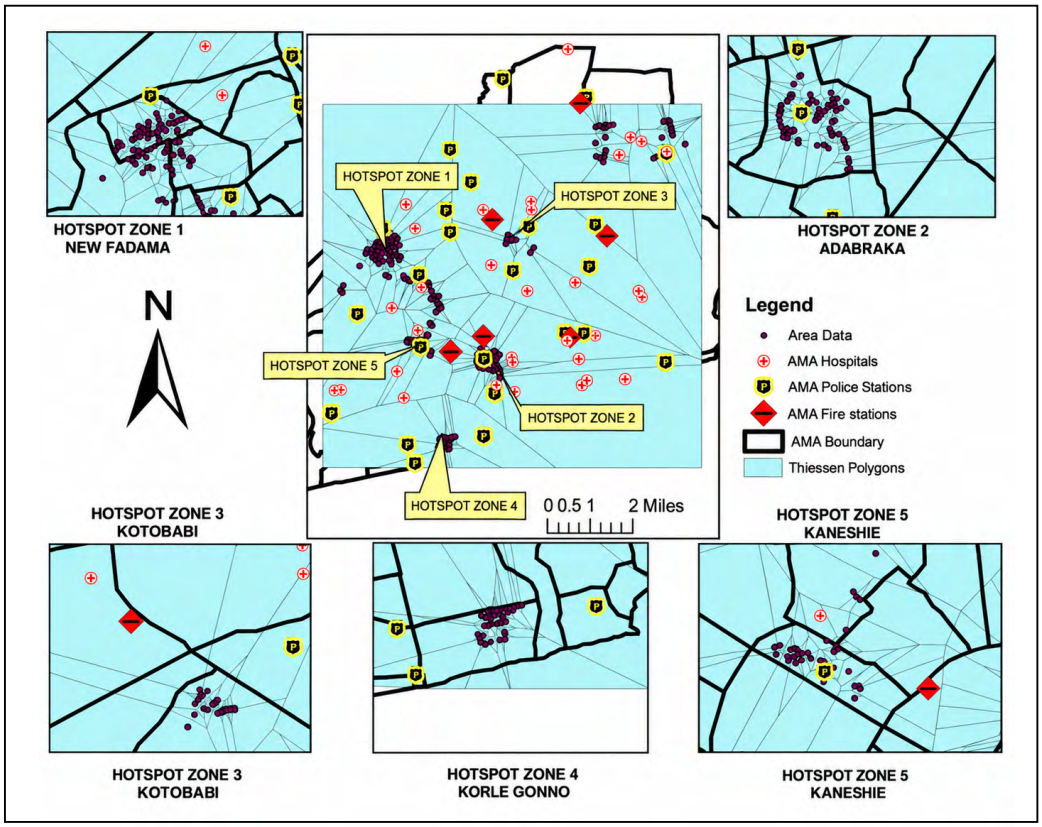


Fig. 9. Thiessen polygons analysis of container use and essential services
Source: own elaboration based on field survey

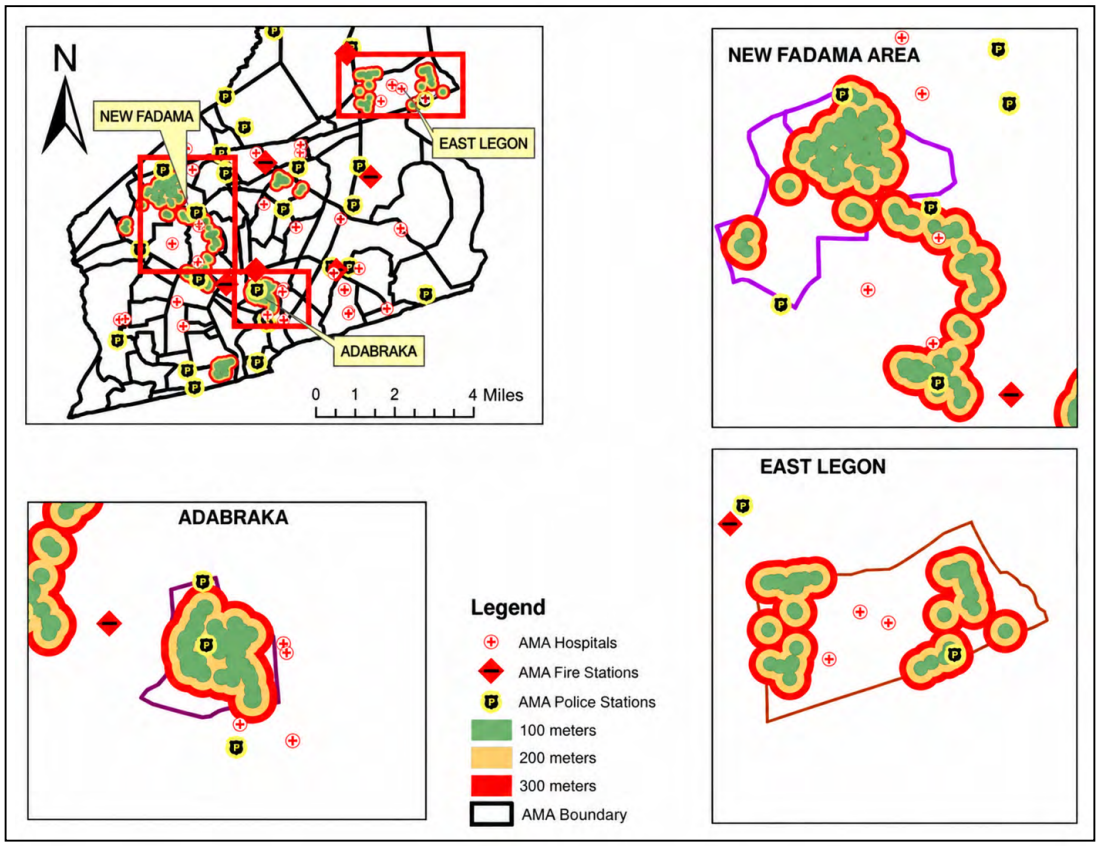


Fig. 10. Multiple ring buffer of container use and essential services
Source: own elaboration based on field survey

5. Discussion and conclusions

The findings demonstrate that container clusters are not random but mirror the socio-spatial logics of Accra's uneven development. Concentrations in low-income, infrastructurally under-served neighbourhoods reflect how residents' appropriate space through situated practices while negotiating representations of space that privilege formal property and elite enclaves. In this sense, containers function simultaneously as livelihood anchors and as artefacts of exclusionary planning.

Patterns of sociability are likewise spatially produced. Smaller units and container clusters tend to intensify everyday interaction, while cramped interiors also constrain privacy and self-expression; crowding effects documented elsewhere help explain the reported psychosocial strain among some users (Gabe & Williams, 1986). Strong local ties through churches, mosques and mutual support buffer stigma and eviction risk, but they do not fully offset structural vulnerabilities.

Security concerns cut across sites yet vary by gender, prior victimisation and activity. Early closures and protective retrofits reported by occupants align with citywide advisories to reduce exposure to robbery and armed attacks, particularly for cash-handling businesses such as mobile-money vendors (Danso, 2022). These adaptations, while rational, shorten trading hours and dampen street-level conviviality.

Mobility impacts are most visible along sidewalks and verges. The encroachment of trading containers into pedestrian zones reproduces a wider city trajectory in which commercial uses progressively displace walkability, echoing transformations observed on Oxford Street (Quayson, 2014). Access to essential services further conditions risk: proximity to police, fire and health facilities reduces perceived vulnerability, consistent with evidence that robust public social control lowers victimisation (Velez, 2001).

Finally, the material afterlives of ISO containers raise planning questions beyond informality. Although current deployments are largely ad-hoc, the results suggest opportunities to couple container retrofits with sustainability-oriented urban frameworks so that siting, thermal performance and lifecycle considerations become criteria for equitable upgrading rather than afterthoughts (Lewandowska & Szymańska, 2021).

This study shows that container urbanism in Accra is both inventive and symptomatic: it expands access to livelihoods and micro-infrastructure for marginalised residents while crystallising long-standing inequalities in land use, mobility and safety. Clustering near roads, markets and other containers is a rational locational strategy, yet it amplifies exposure to crime, compresses pedestrian space and reproduces spatial disparities in access to essential services. Social networks mitigate some risks, but the structural imprint of uneven planning persists (Danso, 2022; Quayson, 2014; Velez, 2001; Gabe & Williams, 1986).

Policy and design responses should therefore integrate container practices into mainstream urban management without erasing their grassroots utility. In practical terms, city authorities can: develop clear siting and setback rules that safeguard pedestrian corridors while enabling trading clusters; prioritise serviced sites where proximity to police, fire and clinics reduces risk; and promote gender-sensitive security and operating-hours guidance for cash-intensive activities. Upgrading guidelines should also support thermal retrofits and lifecycle stewardship so containers contribute to broader sustainability targets rather than ad-hoc fixes (Lewandowska & Szymańska, 2021). Taken together, these measures translate the study's evidence into an actionable pathway that preserves the adaptive value of containers while advancing safer, more walkable and more equitable urban space.

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