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Informal Settlements Upgrading Interventions and their Implications for Liveability: A Case of Kibra, Nairobi City County, Kenya

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Abstract
Rapid urbanisation in developing countries has accelerated the growth of informal settlements, characterised by poor housing, weak infrastructure, tenure insecurity, environmental degradation, and poverty. This study investigated the extent to which past informal settlement upgrading interventions have improved Liveability in Kibra Informal Settlement, Nairobi City County. This study is anchored on Pacione's Liveability Framework (2003), which conceptualises Liveability as multidimensional, encompassing housing quality, access to basic services, environmental quality, safety, tenure security, socio-economic well-being, and residents' satisfaction. Using a mixed-methods approach, data were collected from 152 households through structured questionnaires, 22 key informant interviews, field observations, and secondary sources. Quantitative data were analysed using descriptive statistics, while qualitative data were examined thematically. The findings reveal that although infrastructure such as roads (78.3%), street lighting (74.3%), and water supply (65.8%) was upgraded, overall Liveability remains critically low. Housing conditions are severely inadequate: 67% of residents live in semi-permanent structures, 8% in temporary dwellings, and only 5% in permanent houses. Approximately 80% of residents are tenants, 69% struggle to meet rent payments, 66% live in single-room houses, and 59% earn less than Ksh 10,000 per month. Furthermore, only 38% are connected to the main sewer, while 42.6% dispose of solid waste in open spaces, reflecting persistent environmental health challenges. The study concludes that past interventions achieved only partial improvements because they prioritised physical infrastructure while neglecting socio-economic dimensions, including housing quality, affordability, tenure security, and livelihood enhancement.

Introduction
The introduction provides context for the study at the global, African, and Kenyan levels on informal settlements upgrading/Interventions and their implications for liveability. The growing number of urban residents has stretched housing and other service resources, a trend that has become clear as urban growth continues to outpace government housing measures (UN-Habitat, 2023). As reported

by UN-Habitat (2023), an estimated 1 billion people worldwide live in informal settlements. These settlements are usually without housing, permanence, or sanitary conditions, and with very limited or no access to power, water, and sanitation (UN-Habitat, 2023). According to the World Bank (2024), roughly a quarter of the world's inhabitants living in urban areas still face the challenges of informal settlements. Previous government actions seem to have failed to yield satisfactory outcomes, prompting a reconsideration of the value of such interventions in enhancing dwelling communities (World Bank, 2024).

Globally, approximately one in four urban dwellers resides in slum-like conditions, with the highest concentrations found in Sub-Saharan Africa, South Asia, and Latin America (World Bank, 2024). The rapid proliferation of informal settlements is driven by multiple interrelated factors, including rural–urban migration, population growth, inadequate supply of affordable housing, weak urban governance, and persistent poverty (Stokes, 1962; UN-Habitat, 2023).

In Sub-Saharan Africa, informal settlements house over 50% of the urban population, making the region the most rapidly urbanising yet least prepared to accommodate its growing urban poor (Azunre, Boateng, & Amponsah, 2024). Countries such as Nigeria, Ghana, Zimbabwe, and Kenya have experienced exponential growth of informal settlements, often outpacing the capacity of national and local governments to provide adequate housing, infrastructure, and basic services. This challenge is further compounded by weak institutional frameworks, limited financial resources, and fragmented policy implementation (Azunre et al., 2024)

In Kenya, the scale of informal settlement growth has reached critical proportions. According to the Kenya National Bureau of Statistics (KNBS, 2019), over 60% of Nairobi's population lives in informal settlements, which occupy less than 5% of the city's total residential land area. This extreme density reflects the acute shortage of affordable formal housing and the limited effectiveness of past government interventions (Syagga, Mitullah, & Gitau, 2001; Macharia & Kinuthia, 1992). The Kenyan government, in partnership with international development agencies such as UN-Habitat and the World Bank, has launched several upgrading initiatives, including the Kenya Slum Upgrading Programme (KENSUP) in 2001 and the Kenya Informal Settlements Improvement Project (KISIP) in 2011. These programmes were designed to improve infrastructure, basic services, housing conditions, and tenure security. However, their outcomes have been mixed, with many interventions prioritising physical infrastructure over socio-economic development (Gulyani, Talukdar, & Potter, 2006; Syagga et al., 2001).

The problem statement highlights the gap between the ideal situation and the reality for informal settlements upgrading interventions. Sustainable Development Goal 11, the New Urban Agenda, and Kenya's urban development policies are directed at building inclusive, safe, and resilient cities in which every resident is entitled to a suitable dwelling, basic services, secure tenure, and a clean environment. So, improvement campaigns targeted at slum areas are expected to improve the quality of life not only for those residing in informal settlement areas but also for the people in urban areas affected by these informal settlements, through better housing and facilities, better employment opportunities, and, overall, a better environment (UN-Habitat, 2022)

Despite the provisions, Poor housing, high population density, lack of proper sanitation, poor tenure arrangements, low incomes, and poverty still persist in informal settlements despite interventions by the government and non-government organisations, as highlighted by Azunre et al., 2024. These persistent issues raise the question of whether former informal settlement upgrading programmes have at all eased residents' conditions.

Besides, while research on slum and informal settlement upgrading has previously been undertaken, only a limited number have thoroughly evaluated the extent to which past measures have made Kibra liveable across aspects such as social relations, economics, shelter, environment, and governance. Besides, existing studies have mostly centred on material upgrading, leaving unexplored the interconnection between livelihoods and Liveability, both in theory and in practice, which we aim to address in our study.

This study seeks to fill in the gap by outlining Informal Settlements Upgrading Interventions and their Contribution to Improved Liveability using Kibra, Nairobi as a case. The findings will provide evidence on the effectiveness of previous interventions and identify areas requiring further improvement. The study is justified because informal settlements continue to expand despite significant investments in upgrading programmes. The findings will also inform policymakers, planners, development partners, and researchers in designing more sustainable, inclusive, and evidence-based strategies for slum transformation.

Literature review

The section reviews empirical and theoretical literature on informal settlement upgrading and liveability. It begins with global evidence, turns to Sub-Saharan Africa before focusing on the Kenyan experiences.

Extent to Which Past Informal Settlement Upgrading Interventions Have Improved Liveability Status

Global empirical evidence indicates that informal settlement upgrading has produced mixed outcomes in improving residents' Liveability. Corburn and Sverdlik (2017) observed that upgrading interventions can improve environmental health, housing conditions, and access to basic services, thereby contributing to sustainable urban development. However, the authors noted that most evaluations focus on physical improvements while paying limited attention to broader dimensions of Liveability, such as socio-economic well-being, tenure security, and residents' satisfaction.

Similarly, Hass & Kuffer, (2019).reported that many redevelopment programmes have achieved only partial success because they often disrupt livelihoods, weaken social networks, and relocate residents to peripheral locations with inadequate services. Supporting this argument, Reyes et al. (2024) found in Mexico City that conventional measures of slum conditions fail to capture differences in housing quality within settlements, resulting in generalised upgrading strategies that overlook the needs of the most vulnerable households. Collectively, these studies suggest that physical upgrading alone is insufficient to achieve sustainable improvements in Liveability.

Evidence from Sub-Saharan Africa presents similar findings. Azunre, Boateng, and Amponsah (2024) observed that many informal settlement upgrading initiatives have been undermined by weak governance, forced evictions, inadequate financing, and limited community participation. The authors highlighted that eviction-based approaches in countries such as Zimbabwe and Nigeria resulted in displacement, homelessness, and loss of livelihoods, thereby reducing the effectiveness of upgrading programmes. Likewise, Azunre et al. (2025) found that although participatory approaches were incorporated into Ghana's Greater Accra Resilient and Integrated Development (GARID) Programme, most residents perceived participation as tokenistic because they were mainly consulted rather than actively involved in decision-making. These findings demonstrate that meaningful community participation remains essential for achieving sustainable improvements in Liveability.

In Kenya, empirical evidence similarly indicates that informal settlement upgrading has generated only modest improvements in residents' living conditions. Gulyani, Talukdar, and Potter (2006) observed that infrastructure upgrading and tenure regularisation often fail to benefit low-income

households because most residents of informal settlements are tenants rather than owners of structures. Consequently, improvements increase rental values, forcing many poor households to relocate. UN-Habitat (2005) similarly reported that upgrading programmes frequently contribute to gentrification, as beneficiaries are unable to afford the improved housing and eventually sell or vacate upgraded units.

Macharia and Kinuthi (1992), together with Syagga, Mitullah, and Gitau (2001), further observed that between 80 and 90 per cent of slum residents are tenants who spend a substantial proportion of their income on rent, thereby limiting the long-term benefits of upgrading interventions. In contrast, Yuen (2000) demonstrated that Singapore achieved significant improvements in urban Liveability through sustained, coordinated, and long-term upgrading programmes, while Njeru and Kimutai (2018) argued that Kenya's fragmented implementation has constrained similar outcomes.

Another important dimension highlighted in the Kenyan literature is the ownership structure of informal settlements. Ayonga (2021) argued that the greatest obstacle to successful upgrading is the concentration of structure ownership among a small group of landlords who derive substantial income from informal housing and therefore have limited incentive to support transformation. This perspective suggests that previous upgrading initiatives have focused primarily on improving physical infrastructure and residents' financial capability while paying insufficient attention to tenure relations, housing ownership, and the political economy that sustains informal settlements.

Overall, the empirical literature demonstrates that although informal settlement upgrading has improved infrastructure, accessibility, and service provision, its contribution to Liveability has remained limited because housing affordability, tenure insecurity, livelihoods, governance, and community participation continue to constrain sustainable outcomes. These findings justify this study, which evaluates the extent to which past informal settlement upgrading has improved the liveability of Kibra Informal Settlement, using multidimensional Liveability indicators rather than relying solely on physical infrastructure improvements.

Theoretical Framework

This section presents the theories used in the study; it defines them, outlines their strengths and weaknesses, and explains their relevance to the study. This study is primarily anchored on the Liveability Framework advanced by Pacione (2003), which emerged from broader debates in urban studies about what constitutes a "good city" and how to measure urban quality of life (Lynch, 1981; Jacobs, 1961). The framework posits that urban development should be evaluated by residents' quality of life, measured through multidimensional indicators including housing quality, access to basic services, environmental quality, accessibility, safety, tenure security, socio-economic well-being, and resident satisfaction (Pacione, 2003; Van Kamp et al., 2003).

Its strength lies in its multidimensional assessment, which goes beyond narrow physical metrics to capture the complexity of residents' lived experiences (Reyes et al., 2024, Corburn & Sverdlik, 2017). The framework is particularly suited to this study because it explicitly recognises that improvements in physical infrastructure do not automatically translate into improved quality of life; rather, Liveability encompasses socio-economic well-being, tenure security, and residents' satisfaction alongside physical conditions (Pacione, 2003; Gulyani, Talukdar, & Potter, 2006). This aligns directly with the research aim of assessing whether past upgrading interventions have meaningfully improved Liveability in Kibra across multiple dimensions, rather than merely evaluating physical outputs.

This study also draws on the Theory of Informal Settlements proposed by Stokes (1962), which posits that informal settlements emerge from rapid urbanisation, rural–urban migration, poverty, and low-

income households' inability to access formal housing. While this theory provides valuable context for understanding why settlements like Kibra emerge and persist, it is insufficient as the primary framework for this study because it gives limited attention to governance, planning institutions, and the effectiveness of upgrading interventions (Stokes, 1962; Gilbert, 2007). By combining the Liveability Framework as the primary analytical lens with Stokes' theory as a supplementary contextual framework, this study can both understand the structural factors that have created and sustained Kibra and comprehensively evaluate whether past upgrading interventions have improved residents' quality of life across multiple Liveability dimensions.

Research Gap

Although previous studies have examined informal settlement upgrading interventions, most focus on physical improvements such as housing, infrastructure, sanitation, and land tenure, with limited attention to multidimensional Liveability. Existing studies also provide little evidence that upgrading has significantly improved residents' quality of life, as measured by Liveability indicators. Moreover, few studies integrate theories that explain both the development of informal settlements and the assessment of Liveability outcomes. These gaps are critical to address in the study area, since Kibra is widely recognised as the largest urban slum in Africa (Desgroppes & Taupin, 2011) and faces the same issues.

Conceptual Framework

This subsection relates the variables of the study, showing how the independent affects the dependent variable; it also highlights the intervening variables which may directly or indirectly affect the dependent variables

Key Concepts and Variables

An informal settlement refers to a residential area characterised by inadequate housing, insecure land tenure, poor infrastructure, limited access to basic services, and development outside formal planning and regulatory frameworks (UN-Habitat, 2020). Informal settlement upgrading refers to planned interventions aimed at improving living conditions through housing improvement, infrastructure provision, basic services, tenure regularisation, environmental management, livelihood enhancement, and community participation without necessarily relocating residents (Cities Alliance, 2002). Liveability refers to the extent to which an urban environment provides safe, healthy, inclusive, accessible, and sustainable conditions that enhance residents' quality of life. In this study, Liveability is measured using housing quality, access to basic services, accessibility and mobility, environmental quality, safety and security, tenure security, socio-economic well-being, and residents' satisfaction.

The independent variable is past informal settlement upgrading interventions, comprising housing improvement, infrastructure and basic service provision, land tenure regularisation, environmental improvement, livelihood enhancement, and community participation. The dependent variable is the Liveability status of Kibra Informal Settlement, assessed using the identified Liveability indicators. The relationship between these variables is influenced by contextual factors, including government policies and legal frameworks, institutional capacity, financial resources, stakeholder collaboration, political commitment, land ownership and tenure systems, population growth, and community participation (see Figure 1).

This framework enables the study to assess not only the nature of past upgrading interventions but also the extent to which they have improved the multidimensional Liveability of Kibra Informal Settlement, rather than merely evaluating whether projects were implemented.

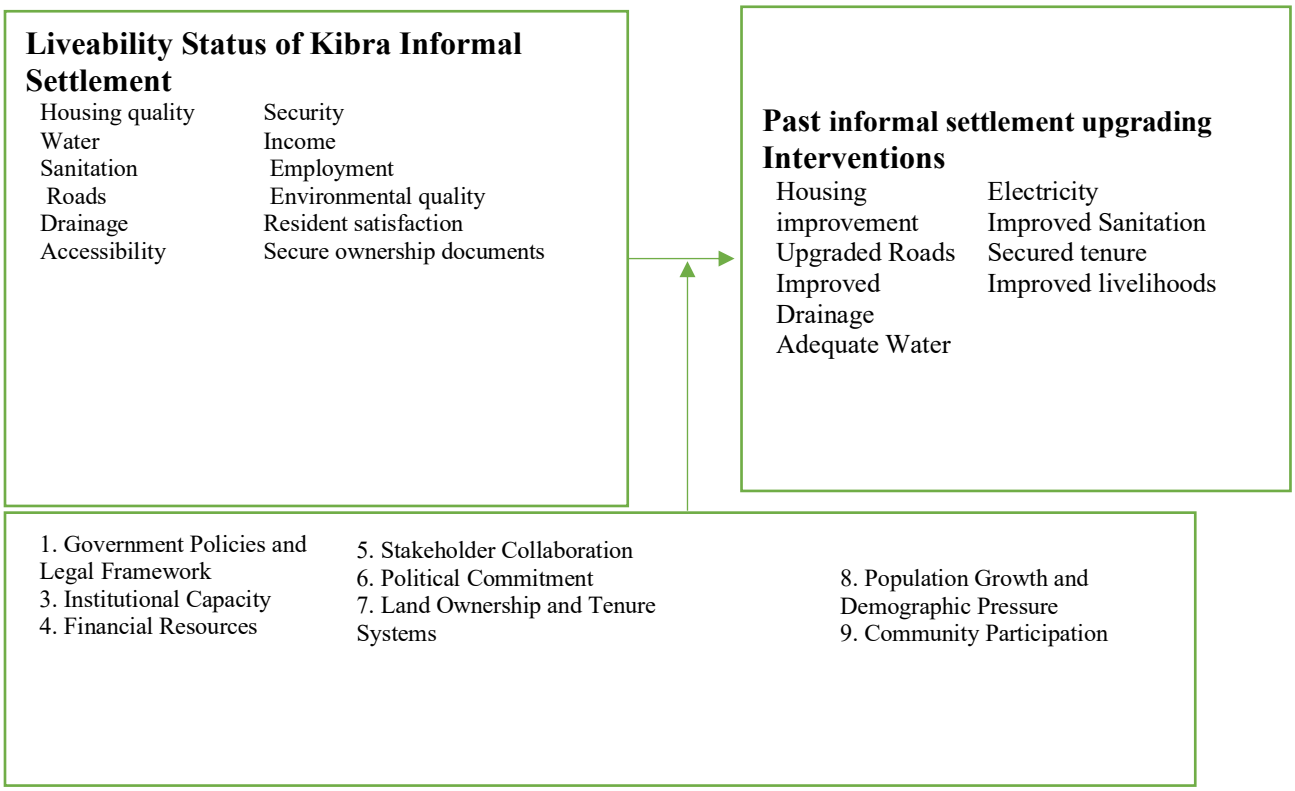


Figure 1: Conceptual Framework

The research methodology describes the research design, study area, population and sampling, and data collection and analysis techniques used in the study. The study adopted a descriptive cross-sectional survey design, using a mixed-methods approach, to assess the extent to which past informal settlement upgrading interventions have improved the liveability of the Kibra Informal Settlement. The design enabled the collection of quantitative and qualitative data without manipulating the study variables. Kibra was purposively selected because it is Nairobi's largest informal settlement and has been a primary target of major upgrading interventions, including KENSUP and KISIP, yet persistent challenges of poor housing, inadequate infrastructure, and tenure insecurity remain.

Five villages, Gatwekera, Lindi, Makina, Silanga, and Laini Saba, were purposively selected to capture variations in physical conditions, socio-economic characteristics, and residents' experiences. The study population consisted of households in Kibra and key players involved in slum upgrading planning, implementation, and management. At the time of the 2019 Kenya Population and Housing Census, Kibra Sub-County had an estimated population of 185,777 (KNBS, 2019). Households were selected as the primary unit of analysis because they represent the fundamental socio-spatial unit through which lived experiences of upgrading can be captured. Eligible household respondents were adults aged 18 years and older who had lived in Kibra for at least five years, ensuring sufficient experience with previous interventions; visitors, temporary residents, minors, and non-residents were excluded.

A multi-stage sampling design integrating probability and non-probability techniques was adopted. Kibra was purposively selected in the first stage, the five villages in the second, and systematic

random sampling was then used to select households from a mapped and enumerated sampling frame, supplemented by snowball and convenience sampling to identify key informants such as community leaders, NGO representatives, and structure owners.

The sample size was determined using Yamane's (1967) simplified formula at 95% confidence level, producing 156 respondents; after non-response and data cleaning, 152 completed household questionnaires were considered valid and used for analysis. In addition, 22 Key Informant Interviews were conducted with representatives from government institutions, community organisations, non-governmental organisations, academia, and the private sector. Primary data were collected using structured household questionnaires, Key Informant Interviews, field observations, and photographic documentation, while secondary data were obtained from published and unpublished literature, policy documents, census reports, project reports, and institutional records from KNBS, the State Department for Housing and Urban Development, KENSUP, KISIP, Nairobi City County Government, UN-Habitat, and the World Bank. Quantitative data were analysed using IBM SPSS and MS Excel with frequencies, percentages, means, and cross-tabulations, and presented in tables, charts, and graphs; qualitative data were transcribed, categorised, and analysed thematically. The two sets of findings were triangulated to strengthen validity and provide a comprehensive assessment of changes in Kibra's liveability.

Results and Discussion

The section presents the study's findings on the extent to which past informal settlement upgrading interventions have improved the liveability of Kibra Informal Settlement and discusses them in relation to the reviewed literature and the theoretical frameworks guiding the study.

Nature of Past Informal Settlement Upgrading Interventions

Past informal settlement upgrading interventions in Kibra have largely been implemented through the Kenya Slum Upgrading Programme (KENSUP), the Kenya Informal Settlements Improvement Project (KISIP), and community-led upgrading initiatives. These programmes primarily focused on improving physical infrastructure and access to basic services. The major interventions identified during the study included road upgrading, drainage improvement, water supply expansion, sanitation facilities, street lighting, railway reserve improvement, and limited housing redevelopment (See Table 1). However, livelihood enhancement and tenure regularisation received comparatively less attention.

Table 1: Past Informal Settlement Upgrading Interventions

Intervention	Implemented (%)	Partially Implemented (%)	Not Implemented (%)
Road improvement	78.3	17.1	4.6
Street lighting	74.3	20.4	5.3
Water supply	65.8	24.3	9.9
Drainage improvement	46.7	38.2	15.1
Electricity expansion	61.2	28.3	10.5
Sanitation facilities	39.5	42.8	17.7
Housing redevelopment	24.3	45.4	30.3
Livelihood programmes	18.4	27.6	54.0
Tenure regularisation	12.5	25.7	61.8

Table 1 shows that interventions related to road improvement (78.3%), street lighting (74.3%), and water supply (65.8%) had the highest implementation rates, indicating a strong emphasis on physical infrastructure. In contrast, livelihood programmes (18.4%) and tenure regularisation (12.5%) recorded the lowest implementation rates, with over half of respondents indicating that these interventions were not implemented at all (54.0% and 61.8%, respectively).

The findings indicate that previous interventions concentrated more on physical infrastructure than on socio-economic development. Similar observations were reported by Corburn and Sverdlik (2017), who found that upgrading programmes generally prioritise infrastructure while housing affordability, tenure security, and livelihoods remain inadequately addressed.

Extent to Which Upgrading Has Improved Liveability

The study assessed improvements across major dimensions of Liveability, including housing quality, water supply, sanitation, accessibility, environmental quality, safety, tenure security, household income, and residents' satisfaction. Results indicate that accessibility, roads, and street lighting recorded the greatest improvements, while housing quality, sanitation, tenure security, and household income showed only limited improvement (see Figure 2).

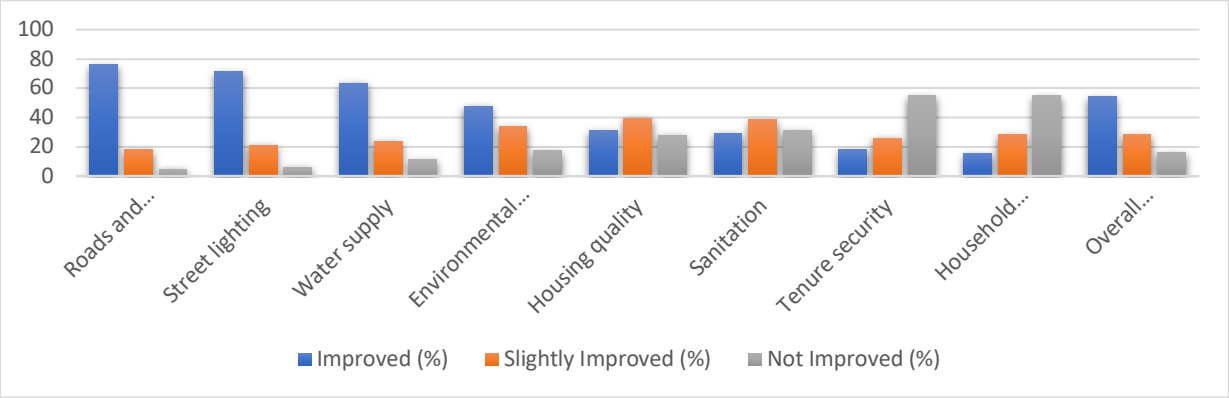


Figure 2: Extent of Improvement in Liveability Indicators

These findings suggest that upgrading has improved the physical environment but has achieved limited success in addressing socio-economic challenges. This finding aligns with UN-Habitat (2005), which argues that infrastructure improvements alone are insufficient to significantly improve residents' quality of life.

Housing Quality and Tenure Security

Housing conditions remain one of the greatest challenges in Kibra. The study found that 67% of the respondents live in semi-permanent structures, 8% in temporary houses, and only 5% in permanent structures (See Figure 3 on Types of house ownership). Most residents continue to occupy informal housing structures characterised by overcrowding, limited living space, and inadequate sanitation facilities. Most households are tenants rather than owner-occupiers, indicating persistent tenure insecurity. Although upgrading programmes have improved selected housing areas, comprehensive housing redevelopment remains limited.

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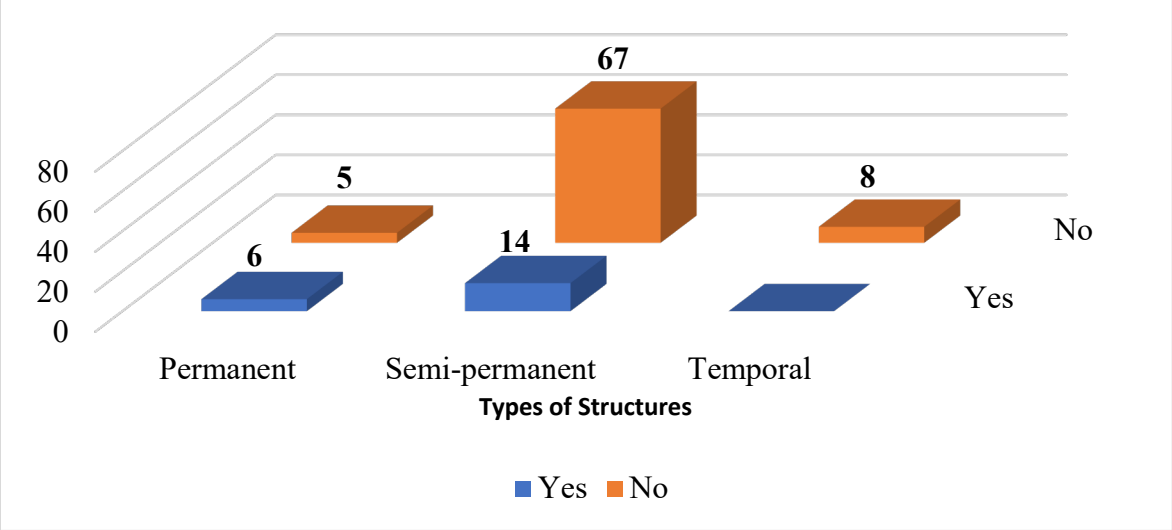


Figure 3: Ownership of the main dwelling unit and the type of the unit

Table 2: Rent statistics for the main dwelling units in Kibra informal settlements

Mean	**Ksh. 3,160**
Median	Ksh. 3,000
Mode	Ksh. 3,000
Range	Ksh. 7,200
Minimum	Ksh. 800
Maximum	Ksh. 8,000

From Table 2, the mode is Ksh. 3,000. Since the mode is the most common number, the bulk of Kibra slum tenants pay rent of Ksh. 3,000. The minimum amount of rent paid is Ksh. 800, while the maximum rent paid is Ksh.8,000. The difference between the minimum and maximum rent is Ksh. 7,200. Among the tenants, 69% cannot pay their rent on time, as shown in Figure

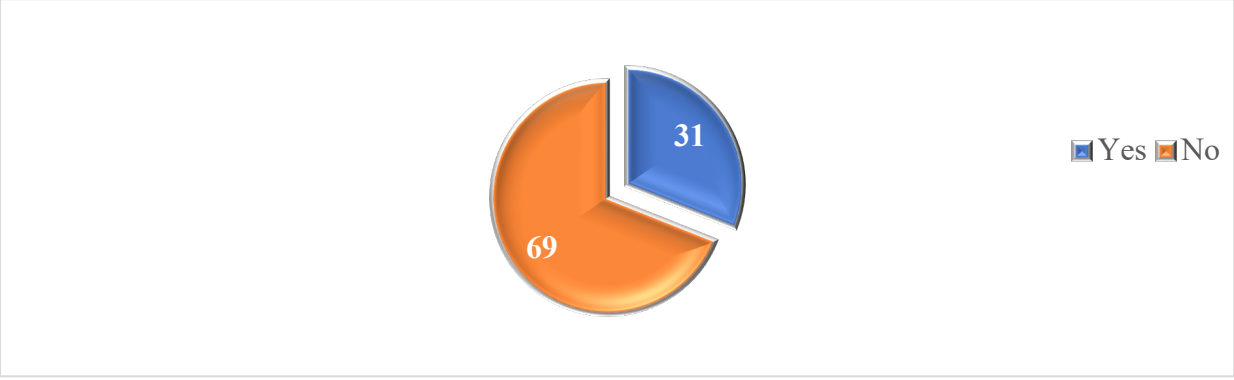


Figure 4: Paying rent on time (%)

The rent statistics data in Figure 4 show that many households have difficulty paying rent due to low incomes. Overcrowding and insecure tenure continue to reduce the overall Liveability of the settlement. These findings align with Gulyani et al. (2006), who reported that infrastructure upgrades often benefit landlords more than tenants, with increased rents and limited improvements in housing affordability.

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Access to Infrastructure and Basic Services

Infrastructure development represents the most visible outcome of past upgrading interventions. Residents reported improved road accessibility, expanded street lighting, and better water supply compared with previous years. These improvements have enhanced mobility, security, and access to public services.

Despite these achievements, respondents identified inadequate drainage, poor sanitation facilities, insufficient solid waste management, and limited recreational spaces as continuing challenges. Consequently, environmental health problems remain common in several villages.

This finding supports Corburn and Sverdlik (2017), who observed that informal settlement upgrading programmes tend to produce greater improvements in infrastructure than in environmental health and housing quality. Infrastructure development represents the most visible outcome of past upgrading interventions.

Residents reported improved road accessibility, expanded street lighting, and better water supply compared with previous years. As one resident noted, "*The construction of tarmac roads in Kibra informal settlements has commenced; this is in a bid to enhance and improve accessibility in the informal settlement*" Similarly, another respondent observed that "*the installation of streetlights in Gatwekera and Soweto area has greatly improved the lives of many people since those people who do business alongside the newly constructed road*". These improvements have enhanced mobility, security, and access to public services, with upgrading programmes being implemented through partnerships between the Nairobi Metropolitan Services (NMS) and organisations such as SHOFCO to improve road access, housing, and sanitary conditions.

Despite these achievements, respondents identified inadequate drainage, poor sanitation facilities, insufficient solid waste management, and limited recreational spaces as continuing challenges. Quantitative data from the study reveal that only 38% of residents are connected to the Nairobi main sewer, while the majority rely on pit latrines, bucket latrines, or open bush for human waste disposal (see Figure 5). Furthermore, 42.6% of residents dispose of solid waste in open streets, vacant plots, drains, or waterways, with only 6.5% collected by the County Government and 20.7% by community-based organisations (Figure 6).

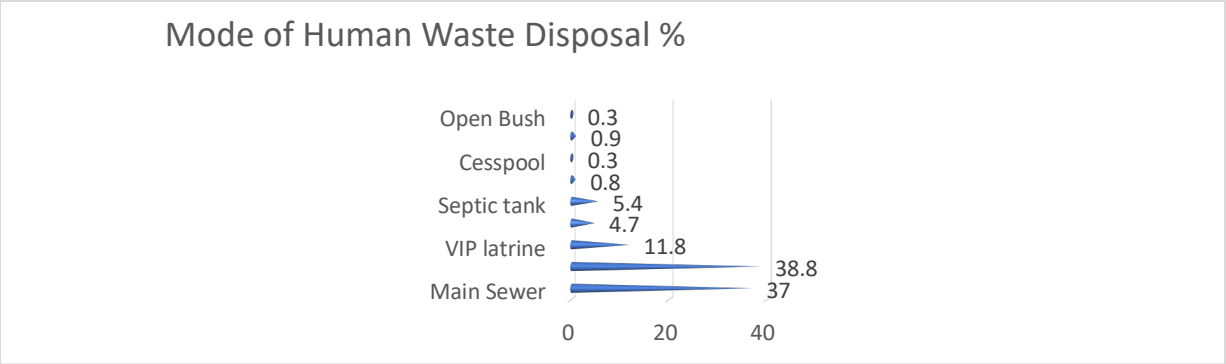


Figure 5: Mode of human waste disposal

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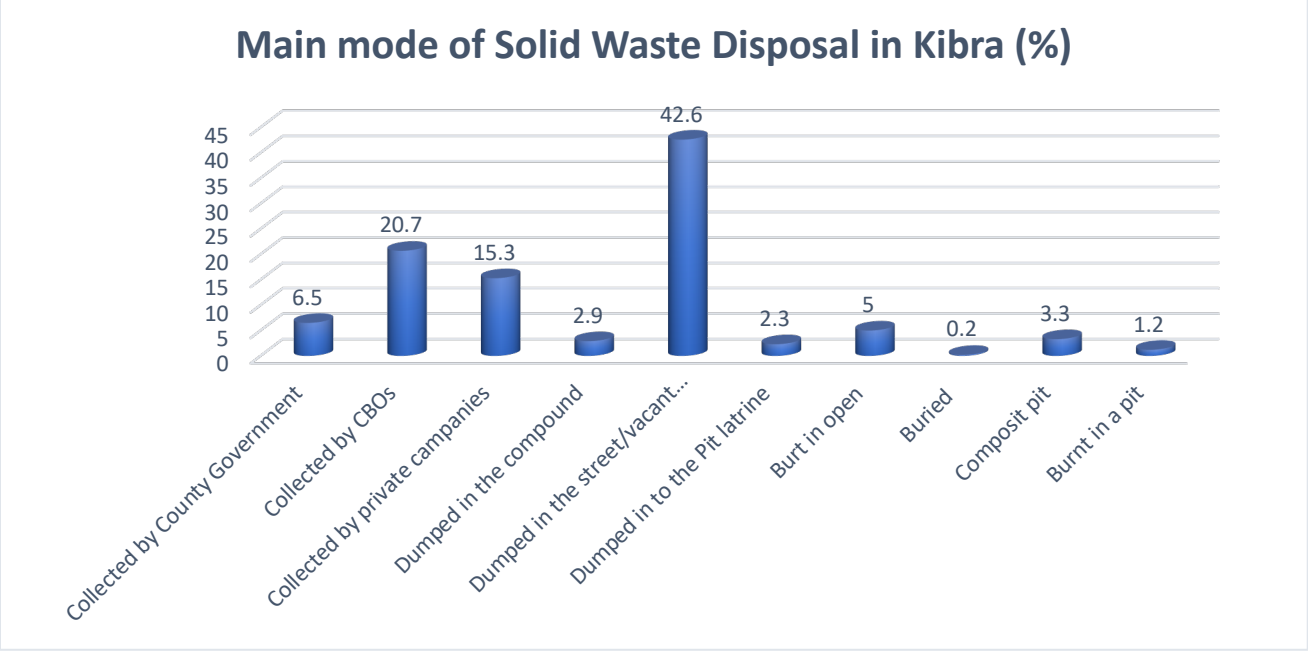


Figure 6: Mode of Solid Waste Disposal in Kibra

Source: KNBS Accessed in 2025

As one resident lamented, *"the water we drink in Kibra is not safe; the pipes pass through the drainage channels full of sewage. This leads to people suffering from diseases such as cholera. Likewise, the drainage channels full of sewage are abutting most of the houses; when it rains, the overflow gets into those houses"*. Another respondent added that "*those staying near the rivers experience the problem of flooding; their houses are usually swept away... waterborne diseases are very common in areas near the polluted streams*". Consequently, environmental health problems remain common in several villages.

This finding supports Corburn and Sverdlik (2017), who observed that informal settlement upgrading Programmes tend to produce greater improvements in infrastructure than in environmental health and housing quality.

Socio-economic Liveability

The study established that socio-economic conditions have improved only marginally. Household income levels remain generally low, with many residents depending on informal employment, casual labour, and small businesses. Although improved accessibility has increased business opportunities, unemployment and income insecurity remain widespread. As one resident lamented, "*Joblessness is not just a key issue but also one of the challenges people undergo in Kibra. This has greatly affected families as they cannot meet their daily living* needs. Another noted, "*Due to unemployment, most families live a hand-to-mouth life, making it very difficult to save*".

Residents also indicated that previous upgrading programmes placed greater emphasis on physical infrastructure than on employment creation and livelihood support. A long-term resident expressed disillusionment: "*I came here in 1983 to look for a job and a better life. I'm so disheartened that 39 years later there has been no change to date, only a few roads and sanitation facilities*". This finding agrees with UN-Habitat (2005), which concluded that infrastructure development alone does not significantly improve household income unless accompanied by economic empowerment programmes.

Residents' Perception of Upgrading

Residents generally acknowledged that upgrading interventions have improved roads, street lighting, and accessibility. One resident observed, "*The construction of tarmac roads in Kibra informal settlements has commenced; this is in a bid to enhance and improve accessibility in the informal settlement. The installation of streetlights in Gatwekera and Soweto area has greatly improved the lives of many people since those people who do business alongside the newly constructed road*".

However, many respondents expressed dissatisfaction with housing quality, sanitation, drainage, waste management, and tenure security. A resident lamented, "*The water we drink in Kibra is not safe; the pipes pass through the drainage channels full of sewage. This leads to people suffering from diseases such as cholera. Likewise, the drainage channels full of sewage are abutting most of the houses; when it rains, the overflow gets into those houses*". Another noted, "*We experience challenges such as poor sanitation, where you find garbage disposal in the rivers*".

Respondents further emphasised that future upgrading programmes should prioritise affordable housing, employment opportunities, environmental management, and secure land tenure. One resident stated, "*Poor road networks have made it difficult for rescue during fire outbreaks in a particular village. This has rendered many families homeless. Roads should be kept in good condition, and more roads should be opened to enhance movement in and out of Kibra*". Overall, residents perceived the interventions as having produced moderate improvements in Liveability but insufficient progress in addressing long-term socio-economic challenges.

Facilities Requiring Further Improvement

The study identified several facilities that require additional investment to improve the overall Liveability of Kibra. Quantitative data revealed that only 38% of residents are connected to the main sewer, while 42.6% dispose of solid waste in open streets, drains, or waterways (See figure 5 &6). A resident lamented, "*The water we drink is not safe; the pipes pass through drainage channels full of sewage. This leads to diseases such as cholera*". Another noted, "*Those staying near the rivers experience flooding; their houses are swept away due to weak materials*". Residents also expressed concern over the lack of access roads, with one stating, "*Poor road networks have made it difficult for rescue during fire outbreak... roads should be kept in good condition, and more roads should be opened to enhance movement in and out of Kibra*"

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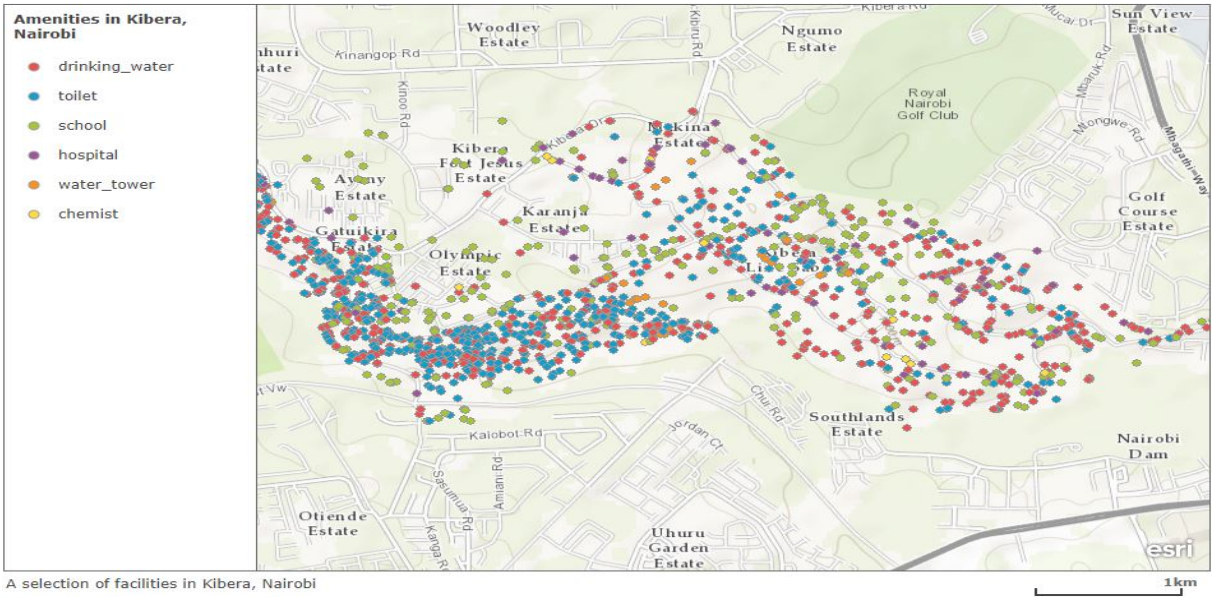


Figure 7: Amenities in Kibra Nairobi

The findings indicated that, despite the presence of various amenities in Kibra, as shown in Figure 7, future upgrading programmes should go beyond infrastructure provision to address housing quality, environmental sanitation, and socio-economic development. This finding supports Azunre et al. (2024), who emphasised that sustainable informal settlement upgrading requires integrated interventions combining physical infrastructure, governance, and livelihood enhancement.

Discussion

The study findings reveal that past upgrading interventions in Kibra achieved partial improvements in physical infrastructure, particularly roads, street lighting, and water access, consistent with Corburn and Sverdlik (2017), who observed that upgrading programmes tend to prioritise physical improvements over broader Liveability outcomes. However, persistent challenges in housing quality, sanitation, waste management, and tenure security align with Gulyani, Talukdar, and Potter (2006), who found that infrastructure upgrading often fails to benefit tenants as landlords increase rents, displacing the poor.

The finding that only 38% of residents are connected to sewer and 42.6% dispose of solid waste in open spaces contradicts UN-Habitat's (2005) optimism regarding upgrading outcomes, confirming that physical improvements alone are insufficient. Residents' expressed fears of displacement and unaffordable rents echo Azunre et al. (2024), who documented that eviction-based approaches in African countries result in homelessness and livelihood losses. These findings align with the Liveability Framework (Pacione, 2003), which posits that sustainable urban development requires a multidimensional assessment that goes beyond physical metrics, encompassing socio-economic well-being, tenure security, and residents' satisfaction.

Conclusion

This section concludes the study by summarising the key findings on the extent to which past informal settlement upgrading interventions have improved the liveability of Kibra Informal Settlement, and by drawing out the implications for policy, planning practice, and future research.

This study established that past informal settlement upgrading interventions in Kibra have achieved only partial improvements in liveability, primarily through roads, street lighting, water access, and basic infrastructure, while housing quality, tenure security, sanitation, and household income remain critically inadequate. The persistence of these challenges demonstrates that physical upgrading alone cannot sustainably improve liveability without addressing the socio-economic and tenure conditions affecting residents, and that continued reliance on fragmented physical interventions risks perpetuating poverty, displacement, and poor housing.

Future interventions should therefore adopt an integrated liveability approach that combines infrastructure upgrading with affordable housing, tenure security, livelihood enhancement, financial capability development, and meaningful community participation. Planning practice should move beyond vague appeals to "attention to tenants" and instead adopt Conditional Infrastructure Upgrades, in which infrastructure investment is legally conditional on landlords registering rental properties, formalising tenancy agreements, and capping rent increases at inflation rates, operationalised through amendments to the Physical and Land Use Planning Act (2019) and the Kenya Slum Upgrading and Prevention Policy (2020). Planning practice should also evaluate upgrading using multidimensional liveability indicators, including housing quality, basic services, accessibility, environmental quality, safety, socio-economic well-being, and residents' satisfaction.

This study contributes to knowledge by demonstrating that, in Sub-Saharan Africa, the primary barrier to slum transformation is not technical or financial but political-economic — namely, the vested interests of politically connected structure owners who resist change to protect untaxed rental income. These findings challenge conventional upgrading approaches that focus on residents' poverty while ignoring the power dynamics that perpetuate slum conditions, and they advance slum theory by adding political economy as a ninth category of hindrance to the existing eight. By translating Stokes' structural analysis into Pacione's evaluative matrix through specific legal and policy mechanisms rent tribunals, Community Land Trusts, and rent-to-own schemes the study reconceptualises transformation as requiring not only resident empowerment but also the transformation of structure owners' interests through taxation, regulation, and alternative investment opportunities. Further research should assess the long-term impacts of upgrading on housing affordability, tenure security, displacement, infrastructure access, and residents' socio-economic well-being across Kibra and other informal settlements.

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