ISSN: 2524-1354 (Online), ISSN: 2519-7851 (Print)
Africa Habitat Review Journal
Volume 21 Issue 2 (May - August 2026)
http://uonjournals.uonbi.ac.ke/ojs/index.php/ahr

Options for Land Acquisition to Accommodate Missing Urban Infrastructure in Kenya:
Lessons from Case Reviews

***Jeremiah N. Ayonga**
https://orcid.org/0000-0002-1253-3387

Received on 20th April, 2026; Received in revised form 15th May, 2026; Accepted on 4th June, 2026.

Abstract
Worldwide, sustainable urban development depends on planning systems that integrate public infrastructure within urban land-use frameworks. However, unregulated market development and exclusionary planning practices have produced infrastructure-deficient settlements in many countries of the Global South, particularly Kenya. This study examines options for land acquisition and infrastructure provision in already developed settlements where land is privately owned and retrospective planning is difficult. The study adopted a qualitative comparative case study methodology based on desk review of planning literature, policies, statutes, and international case studies. Historical and comparative analyses were used to examine the European reconstruction experience, the American incremental planning model, and Tanzania's Kupanga, Kupima na Kuhalalisha (KKK) model. Findings indicate that no single universal model can resolve infrastructure deficiencies in already developed settlements. However, the reviewed cases demonstrate the importance of strong state intervention, participatory planning, incremental redevelopment, and effective development control systems in addressing infrastructure deprivation in Kenyan towns.

Keywords: Urban infrastructure, land acquisition, urban planning, infrastructure provision, informality, Kenya, spatial planning

INTRODUCTION

In Kenya, the colonial government deliberately excluded African settlements from the benefit of planning and this explains why most of the towns and rural areas lack infrastructure (Kenya, CAP 134;133; Home, 2012ab; Murage et al, 2020; Ayonga, 2021). Postcolonial governments have not attempted to resolve this challenge, leaving communities residing in such settlements with the burden of finding options to cope (Ayonga, 2012ab). It is noteworthy that most of the towns are already developed, meaning that land and buildings are held by individuals as private property. The implication is that even if there was genuine desire to provide the missing facilities in such towns, most countries would have to resort to compulsory land acquisition in order to find land to accommodate the new land uses (Ayonga, 2017). This will not be easy because such countries will have to contend with possible resistance from the residents, and the need for funds to compensate those who lose land. The lack of willingness by the state to provide solutions to this urban problematic has put enormous strain on communities residing in settlements deprived of infrastructure since they have to engage in expensive and dangerous coping strategies. In this paper, three cases are reviewed in order to decipher critical lessons that can cure the Kenyan urban infrastructure dilemma.

The paper is organized into five sections. The first section introduces the problem and provides the historical and conceptual background to infrastructure deprivation in Kenya. The second section outlines the methodology adopted in the study. The third section reviews selected international case studies on urban planning and infrastructure provision. The fourth section

*Corresponding author:
Jeremiah, N. Ayonga *Associate professor, Department of Urban and Regional Planning, University of Nairobi, Kenya*
Email: jayonga@uonbi.ac.ke

AFRICA HABITAT REVIEW 21(2) 2026

discusses the lessons derived from the case reviews and proposes a planning and infrastructure development model for Kenyan towns. The final section presents the conclusions and policy recommendations.

THEORY

Theoretical Perspectives on Infrastructure Provision and Spatial Planning

Urban planning theory recognizes infrastructure provision as a central component in the creation of orderly, functional and sustainable human settlements. Classical planning theorists argue that urban development should follow a systematic pathway where planning precedes development so that sufficient land is reserved for roads, drainage systems, sewerage systems, schools, hospitals, markets, recreational facilities and other public utilities (Chapin & Kaiser, 1979; Hall, 2002). Within this framework, the state plays a critical role in regulating land use and ensuring that urban growth occurs in a coordinated and efficient manner.

The rational comprehensive theory of planning particularly emphasizes comprehensive analysis, forecasting, zoning and coordinated implementation of development activities. According to this approach, planning should occur before development takes place so that infrastructure and public goods are integrated into the settlement system from the onset (Taylor, 1998). However, critics such as Friedman (1969) argue that the rational comprehensive approach tends to emphasize preparation of plans while paying insufficient attention to implementation realities, particularly in countries characterized by informality and already developed settlements.

The study is further informed by theories of colonial urbanism and spatial segregation which argue that colonial planning systems deliberately produced unequal urban spaces through selective provision of infrastructure and services (Home, 2012). Colonial planning frameworks often created dual settlement systems consisting of formally planned settlements for privileged populations and neglected settlements for indigenous communities. Such planning regimes generated long-term spatial inequalities that continue to shape contemporary urban development patterns in many postcolonial states.

This paper therefore conceptualizes infrastructure deprivation as a product of: colonial spatial exclusion, unequal planning systems, weak postcolonial reforms, inappropriate planning methodologies and ineffective development control mechanisms.

The paper further argues that retrospective infrastructure provision becomes difficult once settlements are already developed and land is held under private tenure systems. Under such conditions, governments are often compelled to resort to compulsory land acquisition, compensation and resettlement in order to provide missing infrastructure facilities.

Historical Origins of Infrastructure Deprivation in the Towns of Kenya

In Kenya, colonial policy introduced planning in the "white" settlements while excluding African zones from the benefits of planning (Ayonga & Obiero, 2009; Ayonga, 2017; Ayonga, 2019a). In areas where planning was implemented, development followed a structured pathway beginning with preparation of plans before development occurred. Planning delineated land-use districts and reserved land for roads, water supply, electricity, sewerage systems, drainage systems, schools, hospitals, playgrounds, cemeteries and markets. These facilities were developed by the state before individual developers were allowed to settle (Kenya, Cap 133; Kenya, Cap 134).

Developers were thereafter issued with land titles containing specific development conditions and were required to seek permission before undertaking subdivision and construction activities. Upon completion of construction, developers were again required to obtain occupation permits before buildings could be occupied. This development pathway ensured that infrastructure and public utilities were integrated into the urban system before settlement occurred.

From the foregoing, it is evident that the planned development pathway ensured that zoning was carried out on plain land and that land required for infrastructure was reserved and developed before occupation of the settlement. Since planning was actualized mainly in European and Asian settlements, the implication is that planning and infrastructure provision were concentrated

in these areas. The corollary is that African settlements evolved without zoning and without infrastructure provision. Consequently, two distinct settlement systems emerged in both urban and rural Kenya: the "infrastructure endowed" and the "infrastructure deprived" settlements (Ayonga, 2021; Ayonga & Rukwaro, 2022).

Colonial urban policy further reinforced racial segregation through differentiated residential zones characterized by unequal densities and unequal infrastructure allocation. Europeans occupied low-density neighborhoods with wide roads, sewerage systems, hospitals, parks, playgrounds and other amenities, while African settlements were temporary, congested and largely underserved (White, 1948). Africans in urban areas were permitted to reside only in designated locations and often under temporary arrangements linked to labor provision for Europeans and Asians (Kenya, Cap 133). Most African settlements therefore evolved without formal infrastructure systems.

Table 1 summarizes the colonial spatial structure in Kenya and illustrates how planning and infrastructure provision varied across European, Asian and African settlements during the colonial period.

Immediately after independence, management of small towns became the responsibility of county councils. Although some councils established vegetable and livestock markets and allocated plots, comprehensive planning and infrastructure provision remained limited in former African settlements. Essential infrastructure such as schools, hospitals, sewerage systems, playgrounds and industries remained largely absent (Ayonga, 2012a; Ayonga & Obiero, 2009).

Similarly, postcolonial land reforms emphasized land adjudication and issuance of title deeds without integrating planning professionals into the process. Land surveyors, adjudication officers and land registrars played central roles in land allocation, while land-use planners remained largely excluded. Consequently, the absence of zoning and infrastructure reservation that characterized colonial African settlements was reproduced during the postcolonial period.

Obstacles in Providing Infrastructure in Already Developed Towns of Kenya

Most urban and rural settlements in Kenya evolved without planning and infrastructure provision and currently constitute more than 90% of the settlement system (Ayonga, 2021; Ayonga & Rukwaro, 2022). One major challenge associated with such settlements is that they are already developed and land is held under private ownership, making retrospective infrastructure provision extremely difficult.

Another major obstacle is the continued use of planning methodologies designed for undeveloped land. Colonial planning systems introduced master planning approaches intended for areas where development had not yet occurred. Such approaches assumed that planning would precede settlement. However, in Kenya, most settlements are already occupied, meaning that conventional master planning methodologies are often ineffective and difficult to implement (Ayonga, 2019b).

For example, the Town Planning Act (Cap 134), the Land Planning Act (Cap 303) and

TABLE 1
Colonial spatial structure and infrastructure provision in Kenya

Settlement Category	Planning Status	Infrastructure Provision	Settlement Characteristics
European Settlements	Fully planned	Extensive infrastructure provision	Low density and regulated
Asian Settlements	Moderately planned	Moderate infrastructure provision	Medium density settlements
African Settlements	Largely unplanned	Minimal infrastructure provision	Congested and informal

Source: Adapted from White (1948) and Ayonga (2021)

the Town Planning Rules Ordinance (Cap 133) were all designed to guide planning in areas where development had not yet taken place. Similarly, the current Physical and Land Use Planning Act (2019) remains heavily premised on master planning approaches intended for future development on undeveloped land surfaces. Since most towns in Kenya are already developed, the opportunity to prepare conventional master plans for such settlements is extremely limited.

Figure 1 illustrates the sequence of challenges associated with retrospective infrastructure provision in already developed settlements. Once settlements evolve without prior planning, land becomes fragmented under private ownership, leaving limited space for infrastructure expansion. Governments are therefore compelled to resort to compulsory land acquisition in order to provide roads, drainage systems, sewerage facilities and other public utilities. However,

FIGURE 1
Challenges of retrospective infrastructure provision
Source: Author, 2026

compulsory acquisition is often associated with high compensation costs, political resistance and litigation, thereby delaying infrastructure provision and perpetuating urban dysfunctionality.

Institutional and professional limitations further compound the challenge. Many policy makers and land-based professionals have not fully recognized the magnitude of infrastructure deprivation affecting Kenyan settlements. Planning education in Kenya has traditionally emphasized policy formulation and rational comprehensive planning approaches rather than implementation-oriented planning capable of addressing already developed and informal settlements.

Friedman (1969) observed that planners often emphasize rational analysis while neglecting implementation mechanisms. This critique is particularly relevant in Kenya where many planning reports provide detailed analyses and ambitious proposals but rarely address practical implementation strategies. The study therefore argues that infrastructure provision in Kenya requires context-specific planning approaches capable of addressing retrospective planning, informal settlements, land acquisition challenges and incremental urban transformation.

Conceptual Framework

The conceptual framework guiding this study explains the relationship between colonial planning exclusion, informal urbanization and contemporary infrastructure deprivation in Kenyan towns. The framework demonstrates that exclusionary planning systems generated settlements without zoning and infrastructure reservation, thereby producing unplanned and underserved urban areas. The framework further shows that postcolonial continuation of weak planning systems reinforced infrastructure deficiencies and constrained the ability of the state to undertake retrospective planning interventions.

Figure 2 illustrates that infrastructure deprivation in Kenya is historically rooted in colonial planning systems that excluded African settlements from formal planning and infrastructure provision. The framework demonstrates that unequal planning systems generated settlements without roads, sewerage systems, drainage infrastructure, schools, hospitals and other public utilities. Following independence, postcolonial governments largely retained inherited planning structures and failed to undertake comprehensive reforms capable of correcting spatial inequalities.

The framework further demonstrates that most settlements evolved under conditions of informality and weak development control. As urbanization intensified, land became fragmented under private ownership, thereby limiting opportunities for infrastructure expansion. Consequently, retrospective infrastructure provision now requires compulsory land acquisition, compensation and resettlement, processes that are financially expensive and politically difficult to implement. The framework therefore supports the argument that effective urban transformation in Kenya requires context-specific planning reforms, incremental planning approaches and stronger development control systems.

RESEARCH METHODS

Research Design

This study adopted a qualitative and comparative case study research design. The design was considered appropriate because the paper seeks to understand the historical origins of infrastructure deprivation in Kenya and to identify planning approaches that can facilitate infrastructure provision in already developed settlements. The study further employed a desk-based analytical approach involving review of planning policies, statutes, scholarly literature and selected international case studies.

Data Sources

Data used in this paper was obtained from multiple secondary sources. First, the study reviewed colonial planning policies, ordinances and statutes in Kenya in order to establish the historical origins of infrastructure deprivation in African settlements. The review revealed that colonial planning systems deliberately excluded African settlements from formal planning and infrastructure provision (Kenya, Cap 133; Kenya, Cap 134; Home, 2012; Ayonga, 2017). Further review of postcolonial planning policies and statutes indicated that the inherited spatial structure was largely retained after independence, resulting in continued infrastructure deprivation in many settlements.

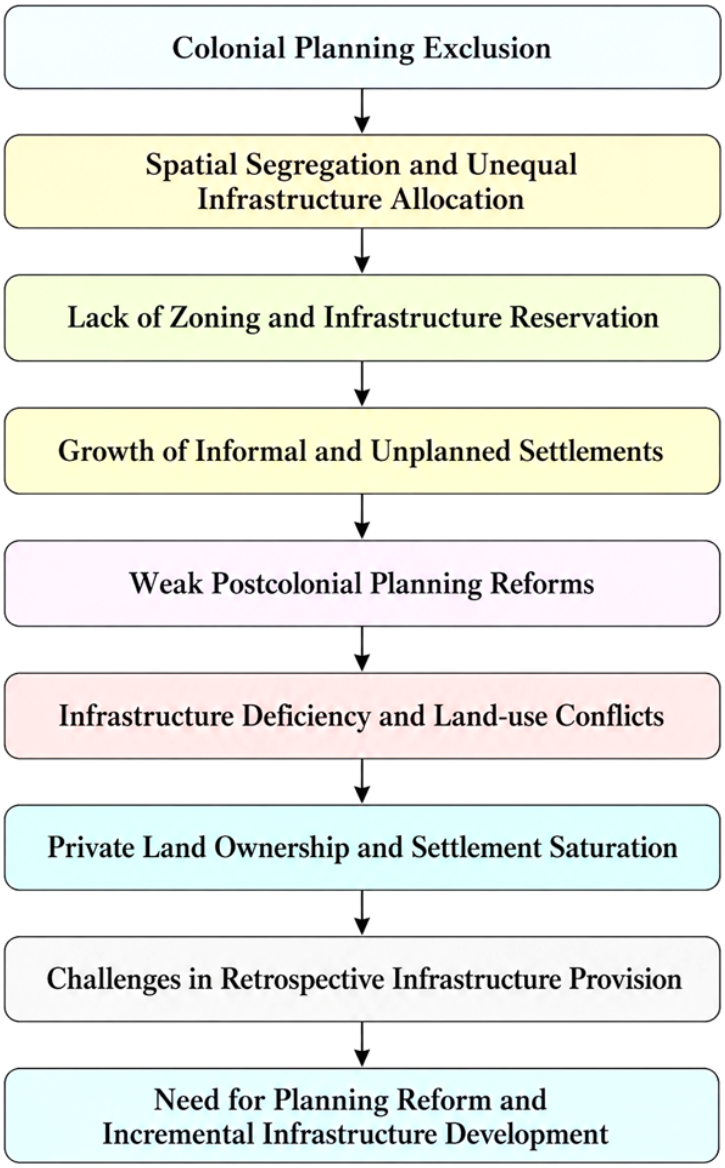

FIGURE 2
Conceptual framework on infrastructure deprivation
Source: Author, 2026

Additional data was obtained through desk-based review of books, journal articles, policy documents and planning reports related to urban planning, infrastructure provision, land acquisition and urban reconstruction. Literature from both the global north and the global south was reviewed in order to understand how different countries addressed infrastructure deficiency in already developed settlements.

Analytical Framework

The study employed historical analysis and comparative case analysis as the main analytical approaches. Historical analysis was used to examine how colonial planning systems shaped unequal infrastructure provision and spatial segregation in Kenya. Comparative case analysis was used to identify lessons from selected international experiences relevant to infrastructure provision in already developed settlements.

The analysis focused on planning approaches, infrastructure provision mechanisms, land acquisition strategies, development control systems and institutional arrangements adopted in different contexts. The findings from the case reviews were synthesized in order to develop a planning and infrastructure development model suitable for Kenyan towns.

Case Selection Criteria
Three case studies were purposively selected based on their relevance to the Kenyan urban infrastructure dilemma. The selected cases include the European reconstruction experience, the American incremental planning model and the Tanzanian Kupanga, Kupima na Kuhalalisha (KKK) model.

The European case was selected because it demonstrates how countries that previously experienced infrastructure deficiency and urban dysfunctionality transformed their settlements through reconstruction and state intervention (Hall, 2002; Taylor, 1998). The American case was selected because it illustrates how incremental and piecemeal planning approaches were used to improve already developed settlements without relying on wartime reconstruction opportunities (Gallion & Eisner, 1963). The Tanzanian case was selected because it provides an African experience of regularization, participatory planning and infrastructure provision in settlements where development had already taken place (Nassoro, 2024).

Case Review Procedure
The European case review revealed that market-led urban development or laissez-faire development during the mediaeval and industrial periods did not optimize infrastructure provision. Consequently, many cities in Europe experienced congestion, land-use conflicts and infrastructure deficiency (Gallion & Eisner, 1963; Hall, 2002; Cullingworth, 1988). However, reconstruction following World War I and II created opportunities for comprehensive urban redesign and infrastructure provision.

The American case review demonstrated that infrastructure provision can also occur through incremental and piecemeal planning approaches. In this model, comprehensive planning was followed by gradual reconstruction and infrastructure improvement in already developed areas until the urban system was progressively transformed (Gallion & Eisner, 1963; Hall, 2002).

Finally, the Tanzanian Kupanga, Kupima na Kuhalalisha (KKK) model was reviewed to examine how regularization, participatory planning and land tenure formalization were used to facilitate infrastructure provision in already occupied settlements (Nassoro, 2024).

The three case studies provided important lessons that informed the development of an infrastructure planning and development model specific for Kenyan towns.

Limitations of the Study
The study relied primarily on secondary data sources and desk-based literature review. Consequently, the findings are dependent on the quality, availability and interpretation of existing literature and policy documents. In addition, the selected case studies represent specific historical and institutional contexts whose experiences may not be fully transferable to Kenya. Nevertheless, the cases provide useful comparative insights relevant to infrastructure provision in already developed settlements.

RESULTS

The findings presented in this section are derived from comparative review of three international experiences on infrastructure provision in already developed settlements. The section presents the major findings from the European reconstruction experience, the American incremental planning model and the Tanzanian Kupanga, Kupima na Kuhalalisha (KKK) model. The findings demonstrate that although no universal solution exists for infrastructure provision in already developed settlements, important lessons can be drawn from each case.

The European Reconstruction Experience
The European case review revealed that market-led urban development, commonly referred to as laissez-faire development, did not optimize social and physical infrastructure provision (Gallion & Eisner, 1963; Hall, 2002). During the mediaeval and industrial periods, urban growth in Europe occurred with minimal state intervention, allowing landowners and investors to prioritize profit-oriented land uses while neglecting public goods such as roads, drainage systems, sewerage facilities, cemeteries, schools, recreational facilities and waste disposal sites.

As a result, many cities experienced congestion, environmental degradation, land-use conflicts and severe infrastructure deficiencies. Residential neighborhoods were characterized

AFRICA HABITAT REVIEW 21(2) 2026

by overcrowding, poor ventilation, inadequate sanitation and extensive informality. Industrial pollution and incompatible land uses further contributed to urban dysfunctionality (Taylor, 1998).

The findings further revealed that reconstruction following World War I and II created opportunities for comprehensive urban redesign and infrastructure provision. Reconstruction enabled governments to redesign congested cities, improve transport systems, reorganize land uses and provide modern infrastructure facilities (Hall, 2002). The reconstruction process therefore transformed many European cities from dysfunctional and pathological settlements into planned and efficient urban systems.

An important finding from the European case concerns the role of state intervention in infrastructure provision. The Uthwatt Committee recommended stronger state control over undeveloped land and proposed taxation of land value increments resulting from public investment on infrastructure (Cullingworth, 1988). Similarly, the Scot Committee introduced the principle of "appropriation of development rights," requiring developers to seek planning permission before undertaking development activities.

The findings further revealed that development control mechanisms became central instruments for ensuring conformity to approved plans. Developers were required to obtain development permits, certificates of completion and occupation permits before structures could be occupied. This strengthened the ability of the state to regulate urban growth and reserve land for infrastructure provision.

The Barlow Commission additionally recommended decentralization of population and industry and promoted the establishment of new towns in order to reduce congestion in major cities such as London (Taylor, 1998). The creation of new towns subsequently provided opportunities for experimentation with modern planning principles and infrastructure systems.

Table 2 presents the major findings derived from the European case study and illustrates how state intervention and urban reconstruction transformed infrastructure-deficient settlements into planned urban systems.

The American Incremental Planning Model

The American case review revealed that infrastructure provision in already developed settlements can occur through incremental and piecemeal planning approaches rather than through large-scale reconstruction alone (Gallion & Eisner, 1963). Unlike Europe, where reconstruction opportunities emerged from wartime destruction, American cities adopted gradual planning and infrastructure improvement strategies aimed at transforming already occupied urban areas.

A major finding from the American experience was the importance of comprehensive baseline surveys before infrastructure planning. Planning teams conducted detailed inventories of physical structure, topography, climate, hydrology, geology and existing land uses before preparing comprehensive urban plans. Such inventories enabled planners to determine appropriate land uses and identify areas requiring redevelopment or infrastructure improvement.

The findings further showed that classification

TABLE 2
Key findings from the European experience

Issue Identified	Major Findings
Laissez-faire development	Produced congestion and infrastructure deficiency
Urban reconstruction	Enabled comprehensive urban redesign
State intervention	Strengthened infrastructure provision
Development rights	Improved development control
New towns policy	Reduced congestion and improved planning

Source: Adapted from Hall (2002) and Taylor (1998)

and inventory of land uses were important components of infrastructure planning. Existing land uses were analyzed in order to determine which uses required retention, relocation, modification or redevelopment. Urban land uses were categorized into residential, commercial, industrial and agricultural functions with further sub-classifications based on intensity and compatibility.

Another important finding concerns the integration of social and economic analysis into planning processes. American planners analyzed family incomes, housing conditions, employment structures, education levels and spending patterns in order to determine appropriate allocation of land and infrastructure services. This enabled planning to respond not only to physical conditions but also to social and economic realities within the urban system.

The review further revealed that infrastructure provision occurred incrementally through gradual redevelopment of blighted areas and progressive improvement of circulation systems, utilities and urban services. Areas characterized by poor layouts and infrastructure deficiency were repaired and redeveloped progressively until urban functionality was achieved.

Figure 3 illustrates the sequential planning process adopted in the American incremental infrastructure development model. The process begins with comprehensive urban surveys and inventories of physical, social and economic conditions. This is followed by land-use classification and preparation of comprehensive urban plans. Infrastructure provision is then implemented gradually through incremental redevelopment and piecemeal upgrading of deficient areas until a more functional urban environment is achieved.

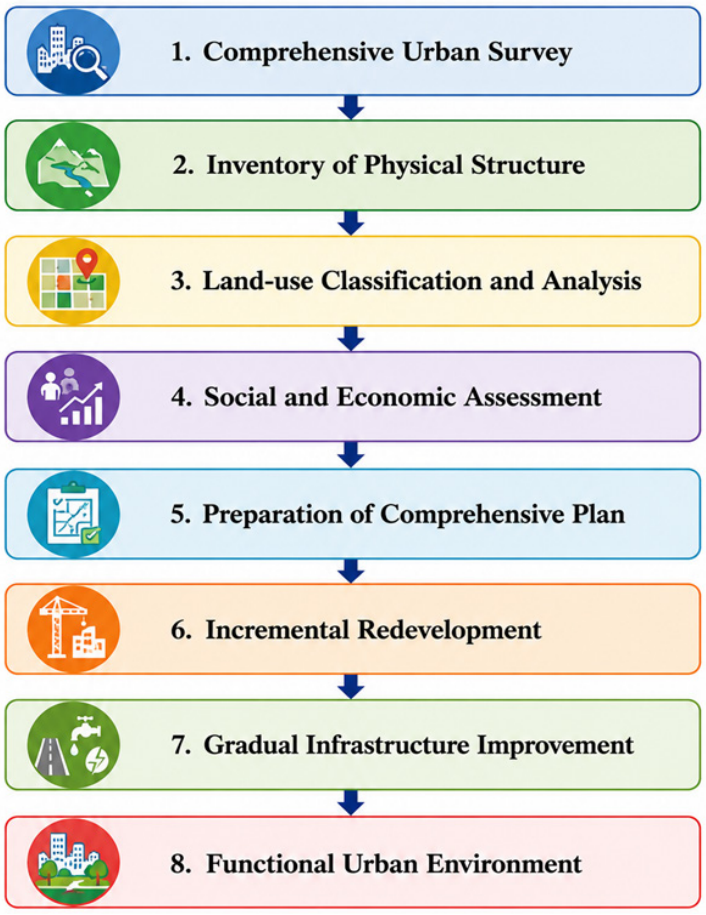

FIGURE 3
Incremental Infrastructure Development Model
Source: Adapted from Gallion and Eisner (1963).

AFRICA HABITAT REVIEW 21(2) 2026

The Tanzanian Kupanga, Kupima na Kuhalalisha (KKK) Model

The Tanzanian case review revealed that infrastructure provision in already occupied settlements can be facilitated through participatory planning, land regularization and community involvement (Nassoro, 2024). The Kupanga, Kupima na Kuhalalisha (KKK) model was implemented within the broader framework of ujamaa village settlements where communities lived in organized clusters under the management of village leadership structures.

A major finding from the Tanzanian experience was the importance of local participation in identifying land rights and infrastructure needs. Village committees, elders and government officials jointly identified land ownership patterns, resolved disputes and determined locations requiring infrastructure provision. This participatory process reduced conflicts and facilitated consensus during planning implementation.

The findings further revealed that regularization and planning occurred simultaneously. Once land rights were identified, village plans were prepared to articulate roads, schools, hospitals, waste disposal sites, cemeteries, markets, sewerage systems and other infrastructure facilities. The planning process also involved widening of roads and reorganization of settlement layouts where necessary.

Another important finding was that state ownership of land minimized challenges associated with compulsory acquisition and speculative compensation. Since land ultimately belonged to the state, implementation of infrastructure projects encountered fewer legal and compensation-related obstacles compared to contexts characterized by extensive private land ownership.

The review additionally revealed that political support and institutional coordination played important roles in facilitating infrastructure provision. Village committees worked closely with regional and national government officials throughout the planning and implementation process (**Table 3**).

Comparative Findings from the Three Case Studies

The comparative analysis revealed that although the three case studies emerged from different historical and institutional contexts, they shared several important characteristics relevant to infrastructure provision in already developed settlements. First, all cases demonstrated the importance of strong state intervention in regulating urban development and coordinating infrastructure provision. Second, all cases emphasized the need for planning systems capable of integrating infrastructure into already occupied settlements.

Third, the findings revealed that infrastructure provision requires effective development control mechanisms, institutional coordination and land management systems. Finally, the review demonstrated that no single universal model exists for addressing infrastructure deficiency. Instead, countries adopt context-specific approaches shaped by historical, political, legal and institutional conditions as shown in **Table 4**.

DISCUSSION

The findings from the European, American and Tanzanian case studies demonstrate that infrastructure deprivation in urban settlements is not unique to Kenya. The reviewed cases reveal

TABLE 3
Key findings from the Tanzanian KKK Model

Planning Component	Major Findings
Community participation	Reduced disputes and improved consensus
Land regularization	Facilitated planning implementation
Infrastructure planning	Enabled provision of public facilities
State land ownership	Reduced compensation challenges
Institutional coordination	Improved implementation process

Source: Adapted from Nassoro (2024)

TABLE 4
Comparative findings from the Case Studies

Case Study	Main Approach	Key Lesson
European Experience	Reconstruction and state intervention	Strong development control necessary
American Experience	Incremental planning	Gradual upgrading is possible
Tanzanian KKK Model	Participatory regularization	Community involvement is essential

Source: Author (2026)

that many countries previously experienced urban dysfunctionality, informality, congestion and inadequate infrastructure provision before adopting planning reforms and institutional interventions that transformed their settlements into more functional urban systems (Hall, 2002; Taylor, 1998). However, the findings further demonstrate that no single universal model exists for addressing infrastructure deficiency in already developed settlements. Instead, different countries adopted context-specific planning approaches shaped by their political, legal, economic and institutional realities.

The European experience demonstrates the importance of strong state intervention in urban planning and infrastructure provision. The findings revealed that laissez-faire urban development failed to optimize infrastructure provision because market forces prioritized profit-oriented land uses while neglecting public goods such as drainage systems, sewerage facilities, schools, recreational areas and transportation networks (Gallion & Eisner, 1963; Cullingworth, 1988). Consequently, many European cities evolved into congested and dysfunctional settlements characterized by environmental degradation and land-use conflicts.

The reconstruction period following World War I and II provided an opportunity for comprehensive urban redesign and infrastructure provision in Europe. The findings suggest that state intervention through planning regulation, land management and development control became central in transforming cities previously characterized by urban pathology into functional and efficient settlements (Hall, 2002). The establishment of development control systems requiring planning permits, certificates of completion and occupation permits strengthened the ability of governments to regulate development and reserve land for infrastructure provision (Cullingworth, 1988).

However, the European reconstruction model was facilitated by exceptional historical circumstances associated with wartime destruction. Such opportunities may not exist in Kenya where settlements are already occupied and development continues under conditions of private land ownership. The findings therefore suggest that although the European experience provides important lessons regarding development control and state intervention, direct replication of the reconstruction model may not be feasible in the Kenyan context.

The American experience provides a more relevant lesson for Kenya because it demonstrates that infrastructure provision can occur incrementally within already developed settlements. Unlike Europe, American cities did not rely solely on wartime reconstruction opportunities. Instead, infrastructure improvement occurred gradually through comprehensive urban surveys, land-use inventories, social and economic assessments and piecemeal redevelopment of deficient urban areas (Gallion & Eisner, 1963).

The findings from the American model suggest that effective infrastructure provision requires detailed understanding of the physical, social and economic structure of urban settlements before planning interventions are undertaken. The use of incremental redevelopment enabled authorities to improve infrastructure progressively without requiring complete demolition and reconstruction of urban areas. This approach appears particularly relevant to Kenya where many settlements are already occupied and where large-scale redevelopment may be financially and politically difficult.

Figure 4 illustrates how the three case studies contribute complementary lessons toward development of an infrastructure planning model

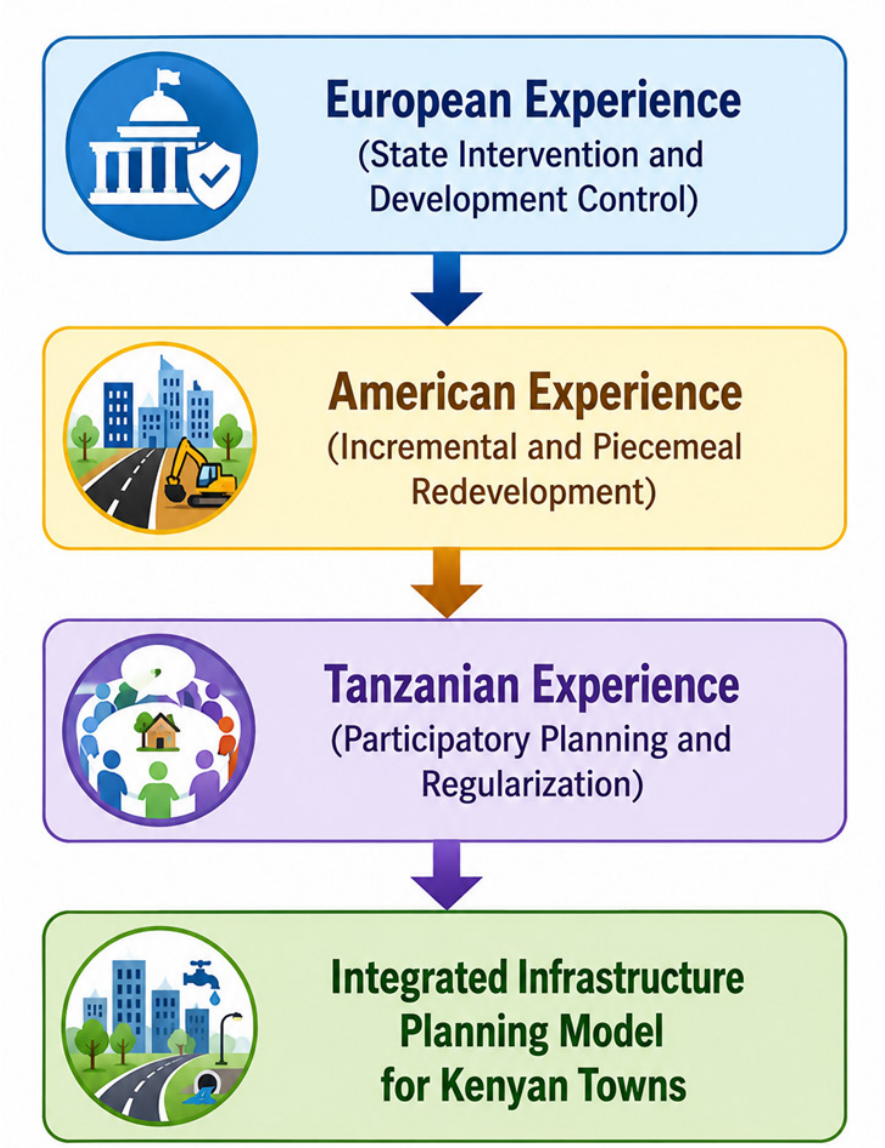

FIGURE 4
Lessons from Comparative Case Studies.
Source: Author (2026)

for Kenyan towns. The European experience emphasizes the importance of state intervention and development control systems. The American model demonstrates the usefulness of incremental redevelopment and comprehensive urban analysis, while the Tanzanian experience highlights the role of participation, regularization and institutional coordination. Together, these experiences provide an integrated framework for addressing infrastructure deficiency in already developed settlements in Kenya.

The Tanzanian Kupanga, Kupima na Kuhalalisha (KKK) model further demonstrates the importance of community participation and land regularization in facilitating infrastructure provision within already occupied settlements (Nassoro, 2024). The findings revealed that involvement of village committees, local leaders and government officials in identifying land rights and infrastructure needs reduced conflicts and enhanced consensus during implementation.

The Tanzanian experience also demonstrates that planning and regularization can occur simultaneously. Once land rights were identified, village plans were prepared to articulate roads, schools, hospitals, waste disposal sites, markets and sewerage systems. The findings suggest that participatory planning approaches

may improve implementation outcomes in contexts characterized by informality and weak development control.

Another important lesson emerging from the Tanzanian experience concerns the role of land tenure systems in facilitating infrastructure provision. Since land in Tanzania belongs to the state, challenges associated with compulsory acquisition and speculative compensation were minimized. In contrast, most land in Kenya is privately owned, making retrospective infrastructure provision more difficult and costly. The findings therefore suggest that infrastructure provision in Kenya must address the complexities associated with private land ownership, compensation and resettlement.

The findings further reveal that Kenya faces a major contradiction between prevailing urban realities and existing planning methodologies. Most settlements in Kenya evolved without planning and infrastructure provision, yet the planning system continues to rely heavily on master planning approaches designed for undeveloped land (Ayonga, 2019b; Ayonga & Rukwaro, 2022). The continued reliance on conventional master planning approaches limits the ability of planners to effectively address infrastructure deficiency in already developed settlements.

The discussion further suggests that infrastructure provision in Kenya requires stronger institutional coordination and implementation-oriented planning approaches. Existing planning education and planning practice have traditionally emphasized preparation of plans and policy documents rather than implementation mechanisms capable of addressing informality and retrospective planning challenges (Friedman, 1969). Consequently, many settlements continue to expand without effective development control or infrastructure reservation.

Table 5 summarizes the major lessons derived from the comparative case studies and their relevance to infrastructure planning and development in Kenya.

The findings therefore support the argument that Kenya requires a context-specific infrastructure planning model that integrates development control, incremental redevelopment, participatory planning and institutional coordination. Such a model should move beyond conventional master planning approaches and instead adopt flexible planning strategies capable of addressing already developed settlements.

The study further argues that infrastructure provision in Kenya cannot rely solely on technical planning instruments. Effective implementation will require political support, institutional reforms, stakeholder participation, infrastructure financing mechanisms and stronger enforcement of development control systems. Without such reforms, infrastructure deprivation and urban dysfunctionality are likely to persist within many settlements across the country.

CONCLUSION

The study concludes that infrastructure deprivation in many Kenyan towns is historically rooted in colonial planning systems that excluded African settlements from formal planning and infrastructure provision. Postcolonial governments largely retained these unequal planning structures, resulting in continued growth of unplanned and underserved settlements. The study further establishes that retrospective infrastructure provision in already developed settlements is difficult due to private land ownership, weak development control systems,

TABLE 5
Major lessons relevant to Kenya

Case Study	Major Lesson for Kenya
European Experience	Strong state intervention is necessary
American Experience	Incremental redevelopment is feasible
Tanzanian KKK Model	Participation improves implementation
Comparative Findings	Context-specific planning is essential

Source: Author (2026)

AFRICA HABITAT REVIEW 21(2) 2026

inadequate planning methodologies, and high costs associated with compulsory land acquisition and compensation.

The comparative review of the European, American, and Tanzanian experiences demonstrates that no single universal model exists for addressing infrastructure deficiencies in already developed settlements. However, important lessons can be drawn from each case. The European experience highlights the importance of strong state intervention and development control systems. The American model demonstrates that incremental and piecemeal redevelopment can gradually transform already occupied settlements, while the Tanzanian KKK model underscores the importance of participatory planning, regularization, and institutional coordination.

The study therefore argues that Kenya requires a context-specific infrastructure planning model that combines strong development control, incremental redevelopment, participatory planning, land regularization, and institutional coordination. Such a model should move beyond conventional master planning approaches designed for undeveloped land and instead adopt flexible implementation-oriented planning strategies capable of addressing the realities of already developed settlements.

RECOMMENDATIONS

i. The Government of Kenya should reform existing planning laws and adopt implementation-oriented planning approaches suitable for already developed settlements rather than relying solely on conventional master planning methodologies.
ii. National and county governments should strengthen development control systems to ensure that future urban growth integrates infrastructure reservation, zoning, and public utilities before settlement expansion occurs.
iii. Infrastructure provision in already occupied settlements should adopt incremental and piecemeal redevelopment approaches that allow gradual upgrading of roads, drainage systems, sewerage facilities, schools, hospitals, markets, and recreational spaces.
iv. The government should establish clear and transparent frameworks for compulsory land acquisition, compensation, and resettlement in order to reduce conflicts, litigation, and delays in infrastructure implementation.
v. Planning processes should promote community participation and stakeholder engagement in identifying infrastructure needs, land rights, and redevelopment priorities, drawing lessons from the Tanzanian KKK model.
vi. Planning education and professional training in Kenya should place greater emphasis on implementation-oriented planning, informal settlement upgrading, land management, and retrospective infrastructure provision.
vii. National and county governments should strengthen institutional coordination among planners, surveyors, land administrators, engineers, and other stakeholders involved in urban development and infrastructure provision.
viii. Kenya should develop sustainable infrastructure financing mechanisms, including land value capture, infrastructure funds, and public-private partnerships, to support urban redevelopment and infrastructure expansion.

CITED REFERENCES

Ayonga, J. N. (2012a). *Urban infrastructure deprivation and planning challenges in Kenyan towns.* Nairobi: University of Nairobi Press.

Ayonga, J. N. (2012b). *Postcolonial planning failures and coping strategies in Kenyan settlements.* Nairobi: University of Nairobi Press.

Ayonga, J. N. (2017). *Land acquisition and infrastructure provision in Kenya.* Nairobi: University of Nairobi Press.

Ayonga, J. N. (2019a). *Colonial planning exclusion and infrastructure inequality in Kenya.* Nairobi: University of Nairobi Press.

Ayonga, J. N. (2019b). *Limitations of master planning approaches in already developed settlements.* Nairobi: University of Nairobi Press.

Ayonga, J. N. (2021). *Infrastructure deprivation and settlement development in Kenya.* Nairobi: University of Nairobi Press.

Ayonga, J. N., & Obiero, O. (2009). *Spatial*

planning and infrastructure development in Kenya. Nairobi: University of Nairobi Press.

Ayonga, J. N., & Rukwaro, R. (2022). *Informality and infrastructure challenges in Kenyan settlements.* Nairobi: University of Nairobi Press.

Chapin, F. S., & Kaiser, E. J. (1979). Urban land use planning. Urbana and Chicago: University of Illinois Press.

Cullingworth, J. B. (1988). *Town and country planning in Britain.* London: Routledge.

Friedman, J. (1969). *Retracking America: A theory of transactive planning.* New York: Anchor Books.

Gallion, A. B., & Eisner, S. (1963). *The urban pattern: City planning and design.* New York: D. Van Nostrand Company.

Hall, P. (2002). *Cities of tomorrow: An intellectual history of urban planning and design in the twentieth century.* Oxford: Blackwell Publishers.

Home, R. (2012a). *Of planting and planning: The making of British colonial cities.* London: Routledge.

Home, R. (2012b). *Colonial planning and spatial segregation in Africa.* London: Routledge.

Kenya. Cap 133. *Town Planning Rules Ordinance.* Nairobi: Government Printer.

Kenya. Cap 134. *Town Planning Act.* Nairobi: Government Printer.

Kenya. Cap 303. *Land Planning Act.* Nairobi: Government Printer.

Kenya. (2019). *Physical and Land Use Planning Act.* Nairobi: Government Printer.

Murage, P., et al. (2020). *Urban planning and infrastructure inequalities in Kenya.* Nairobi: Government Printer.

Nassoro, A. (2024). *Kupanga, Kupima na Kuhalalisha (KKK) model and participatory settlement planning in Tanzania.* Dar es Salaam: University of Dar es Salaam Press.

Taylor, N. (1998). *Urban planning theory since 1945.* London: Sage Publications.

White, L. W. (1948). *Colonial urban structure and racial segregation in Kenya.* Nairobi: Government Printer.