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David Sam Afful

dsafful2002@yahoo.co.uk

Kwame Nkrumah University of Science and Technology

Michael Poku-Boansi

Kwame Nkrumah University of Science and Technology

Benjamin Doe

Kwame Nkrumah University of Science and Technology

Michael Osei Asibey

Kwame Nkrumah University of Science and Technology

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A Systematic Review of Sustainable Urban Planning and Development Outcomes in Sub Saharan African Cities

David Sam Afful*[1], Michael Poku-Boansi[1], Benjamin Doe[1], Michael Osei Asibey[1]
[1]Department of Planning, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Corresponding author email addresses: dsafful2002@yahoo.co.uk (D. S. Afful)

Abstract

Sustainable urban planning is increasingly recognised as a global agenda for promoting inclusive, resilient, and environmentally sustainable cities. However, rapid urbanisation, fragmented institutions, land-governance challenges, informality, and socio-spatial inequalities across Sub-Saharan Africa (SSA) constrain the translation of planning aspirations into effective development outcomes. The study investigates urban planning processes influence on sustainable urban development outcomes in SSA cities. Following the PRISMA 2020 reporting guideline, the study synthesises 78 peer-reviewed articles published between 2004 and 2025. The findings indicate that planning effectiveness is mediated by governance quality, institutional coordination, policy coherence, land institutions, implementation capacity, political commitment, and participation. Similar planning interventions may therefore produce different outcomes across metropolitan, secondary, peri-urban, and informal urban contexts. The review further shows that planning outcomes should be assessed in distributional terms. While planning interventions may improve infrastructure, resilience, and spatial organisation, they may also contribute to exclusion, affordability pressures, and unequal access to urban benefits. Sustainable urban planning in SSA should therefore be understood as a governance-mediated process rather than solely as a technical exercise in plan preparation. Strengthening outcomes requires integrated institutions, coherent policy implementation, meaningful participation, inclusive infrastructure provision, and adaptive governance responsive to rapidly urbanising African cities.

Keywords: Sustainable urban planning; development outcomes; informality; governance; systematic review; Sub-Saharan Africa.

1. Introduction

Rapid urbanisation, growing socio-spatial inequalities and climate change have made sustainable urban planning and the future of cities main global policy issues (Satterthwaite et al., 2020; Shawly, 2022). Global policy frameworks such as the Sustainable Development Goals (SDGs), the New Urban Agenda and the African Union's Agenda 2063 (African Union, 2015; Sietchiping et al., 2016) promote inclusive, safe, resilient, compact, economically productive and environmentally sustainable urban communities. These frameworks also imply that urban planning is more than land-use management. It is envisaged as a transformative governance process through which land, infrastructure, environmental management and social inclusion can be orchestrated in the service of sustainable urban futures (Healey, 1997; Pieterse & Parnell, 2014).

Sub-Saharan Africa (SSA) is witnessing some of the world's highest rates of urban growth, and the issues of sustainable urbanisation are particularly severe. The urban population in the region is expected to grow from 537 million in 2018 to 1.258 billion in 2050 (UN DESA, 2018). This rapid growth is taking place against a backdrop of persistent informality, infrastructure deficits, fragmented governance, limited institutional capacity and environmental degradation (Auerbach et al., 2018; Cobbinah & Darkwah, 2017). Also, many SSA cities still face traffic congestion, inadequate housing, unplanned land use, poor access to basic services and recurrent flooding as a major development challenge (Adelekan, 2020; Cobbinah et al., 2020; Nzau & Trillo, 2020). Likewise, planning institutions tend to function in complicated systems with overlapping mandates, limited enforcement power, resource restrictions, and interactions between formal and informal actors (Kombe, 2005; Resnick, 2021; Watson, 2009). Such constraints limit the capacity of planning agencies to steer the course of urban growth toward sustainable ends.

Research on sustainable urban planning and development in SSA has increased, but the data remains both theoretically and empirically fragmented. Similarly, planning research has generally focused on planning instruments, institutional change, and governance structures (Amin et al., 2020; Poku-Boansi & Cobbinah, 2018). On the other hand, development studies have considered outcomes such as housing inequality, poverty, service delivery and environmental vulnerability (Gumede, 2016; Sulemana et al., 2019). As a result, there is still little systematic knowledge about how planning processes shape sustainable urban development outcomes in SSA cities.

This gap is important because the historical, institutional, political and socio-spatial elements that define African urbanisation inform planning processes. Planning theories and policy models developed mainly in North American, European, and Asian contexts do not always adequately address the institutional diversity, informality, uneven state capacity, and political-economic dynamics in African cities (Myers, 2011; Parnell & Robinson, 2012; Watson, 2009). Such contextual variables affect the way planning actions are designed, coordinated, implemented, and enforced. It is thus essential to conduct a context-sensitive analysis to investigate which planning processes are in place in SSA cities, how they are implemented, and under what governance conditions they relate to sustainable urban development outcomes.

The systematic review seeks to answer the following question: *How do sustainable urban planning processes influence development outcomes across sub-Saharan African cities?* In this assessment, planning processes relate to the institutional and governance systems through which urban plans are produced, coordinated, implemented, enforced and monitored. Better social inclusion, housing, access to basic services, environmental quality, economic opportunity, resilience and spatial equity are outcomes of sustainable urban development.

This systematic review synthesises the evidence based on 78 peer-reviewed articles published between 2004 and 2025 (Page et al., 2021) and follows the PRISMA 2020 reporting guideline. The review makes three contributions. First, it consolidates fragmented evidence on the pathways through which planning processes are associated with sustainable urban development outcomes. Second, it develops a governance-mediated conceptual framework that identifies institutional coordination, policy coherence, governance capacity, and participation as key mechanisms through which planning intentions may be enabled or constrained. Third, it advances a context-sensitive interpretation of sustainable urban planning that views African urbanisation as a dynamic governance process shaped by informality, institutional diversity, and political economy, rather than as a context for transferring universal planning models. The review therefore argues that planning effectiveness depends not only on the quality of planning instruments, but also on the institutional mechanisms

2. Theoretical Perspectives

The study draws upon three related theoretical traditions. Southern urbanism is skeptical about the applicability of Euro-American planning models to the particular socio-spatial, political and informal dynamics of cities in the Global South (Parnell & Robinson, 2012; Watson, 2009). Southern urbanism

brings to the fore hybrid forms of governance, large-scale informality, contested land systems and socio-economic inequalities, which are different from the usual planning assumptions and provides a way to identify context-specific patterns that are not captured by standard frameworks.

The theory of collaborative and communicative planning stresses participation, stakeholder involvement and negotiated governance in the shaping of inclusive urban outcomes (Healey, 1997). It conceptualizes planning as relational and governance-based rather than technocratic, and it informs the analysis of interactions between the community, government agencies, and other stakeholders to influence implementation and outcomes.

Institutional urbanism and political ecology highlight how governance arrangements, power relations, and resource inequalities mediate urban development (Swyngedouw & Heynen, 2003). These frameworks explain uneven planning outcomes across SSA cities in terms of institutional fragmentation, market-oriented reforms and socio-political inequalities, with regards to the quality of governance, capacity of administration and political context.

Together, these perspectives offer interlocking lenses for understanding how planning translates into sustainable development. Southern urbanism establishes the contextual conditions under which planning operates in African cities. These efforts are informed by the stakeholder processes described by collaborative planning theory. The insights of institutional and political ecology help us to understand the governance arrangements that mediate planning intentions and outcomes. By integrating all three, the study develops a context-sensitive understanding of the planning-development nexus that foregrounds African urbanisation rather than uncritically applying external frameworks.

3. Approach and Methods

3.1 Study Approach

This study used a systematic literature review to examine how sustainable urban-planning processes shape development outcomes in Sub-Saharan African cities. This approach was selected because it offers a transparent and reproducible method for identifying, appraising and synthesising evidence across diverse empirical studies (Page et al., 2021). It was particularly suited to this topic because research on sustainable urban planning in Sub-Saharan Africa is dispersed across disciplines, methodological approaches, planning contexts and sustainability dimensions.

The review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 Statement (Page et al., 2021). The review question was structured using the Population, Concept and Context framework: urban residents and planning stakeholders in Sub-Saharan African cities formed the population; sustainable urban-planning processes constituted the concept; and urban-development outcomes in Sub-Saharan Africa defined the context. A qualitative narrative synthesis, supported by descriptive quantitative analysis where appropriate, was employed to synthesise evidence from qualitative, quantitative, and mixed-methods studies. This integrative approach was considered appropriate because sustainable urban planning outcomes are influenced by interconnected institutional, socio-economic, spatial, environmental, and governance factors that cannot be adequately examined using a single methodological perspective.

The thematic dimensions analysed in this review were developed through a hybrid deductive–inductive coding approach. An initial coding framework informed by the Sustainable Development Goal (SDG) 11 targets and the UN-Habitat Urban Assessment Framework provided the analytical foundation for data coding. Throughout the analysis, themes were iteratively refined, merged, separated, or redefined in response to patterns emerging from the included studies. Although the initial framework was informed by established sustainability indicators, the final thematic dimensions emerged through iterative comparison across the evidence base, ensuring that the synthesis remained both theoretically grounded and empirically responsive to the SSA literature.

3.2 Methods

3.2.1 Information Sources and Search Strategy

A thorough search of articles was conducted to identify studies published from 2004 to 2025. From October to November 2025, searches were conducted in Scopus, Web of Science and African Journals Online (AJOL) (see Figure 1). These databases were selected for their complementary coverage of urban planning, governance, sustainability and African development research. The starting year (2004) was selected to coincide with the implementation of the Millennium Development Goals (MDGs), which marked a significant increase in international policy attention to sustainable urbanisation and urban development in low- and middle-income countries.

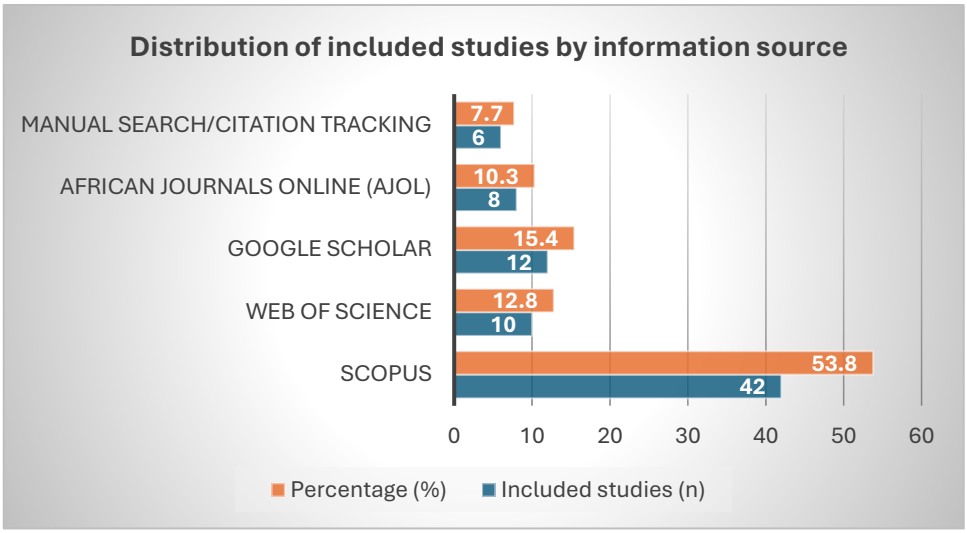


Figure 1: Distribution of included studies by information source

The search strategy was developed iteratively using combinations of database-specific search fields and free-text terms related to sustainable urban planning, governance, development outcomes and Sub-Saharan Africa. Boolean operators ("AND" and "OR"), phrase searching, truncation and wildcards were applied to maximise search sensitivity. To reduce the risk of missing relevant studies, backward citation searching, forward citation tracking and manual screening of reference lists from key publications were also undertaken. The full database-specific search strategies are presented in Table 1.

Table 1 Database-specific search strategies

Database	**Search strategy**
Scopus	TITLE-ABS-KEY(("planning process*" OR "participatory planning" OR "integrated planning" OR "urban planning" OR "urban governance") AND ("development outcome*" OR "urban sustainability" OR "urban resilience" OR "inclusive growth" OR "sustainable development") AND ("Sub-Saharan Africa" OR SSA))
Web of Science	TS ((("sustainable urban planning" OR "urban policy") AND ("development outcome*" OR "urban sustainability") AND ("Sub-Saharan Africa" OR SSA))
Google Scholar	"sustainable urban planning" AND "development outcomes" AND "Sub-Saharan Africa"
African Journals Online (AJOL)	"urban planning" AND "sustainable development" AND ("Sub-Saharan Africa" OR cities)

Source: Authors' construct, 2025

3.2.2 Inclusion and Exclusion Criteria

Eligibility criteria were established *a priori* in accordance with the PRISMA 2020 guidelines. Studies were included if they: (i) were conducted in cities within Sub-Saharan Africa; (ii) examined sustainable urban planning and development, including themes such as land use, housing, governance, infrastructure provision, climate resilience, policy coherence, or social equity; (iii) were published in English between 2004 and 2025; (iv) appeared in peer-reviewed journals or recognised scholarly outlets; and (v) employed qualitative, quantitative, or mixed-methods research designs.

Studies were excluded if they: (i) were conducted outside Sub-Saharan Africa; (ii) did not explicitly address sustainability within urban planning or development; (iii) comprised non-peer-reviewed publications (e.g., opinion pieces, blogs, editorials, or popular media articles); (iv) did not meet minimum scholarly quality standards; (v) provided only superficial treatment of the review topic; (vi) represented duplicate publications; or (vii) were published before 2004 or in languages other than English.

3.2.3 Selection and Screening

All retrieved records were imported into the Rayyan systematic review platform for duplicate management and study screening. Automated duplicate detection was complemented by manual verification to ensure accuracy. Titles and abstracts were independently screened by two reviewers against the predefined eligibility criteria. Studies meeting the inclusion criteria at the initial screening stage proceeded to full-text assessment. Any disagreements during title, abstract, or full-text screening were resolved through discussion until consensus was reached. The study selection process is summarised in the PRISMA 2020 flow diagram (Figure 2). A total of 5,291 records were identified through database searches and supplementary search methods. After duplicate removal and screening, 78 studies met the inclusion criteria and were considered in the final synthesis.

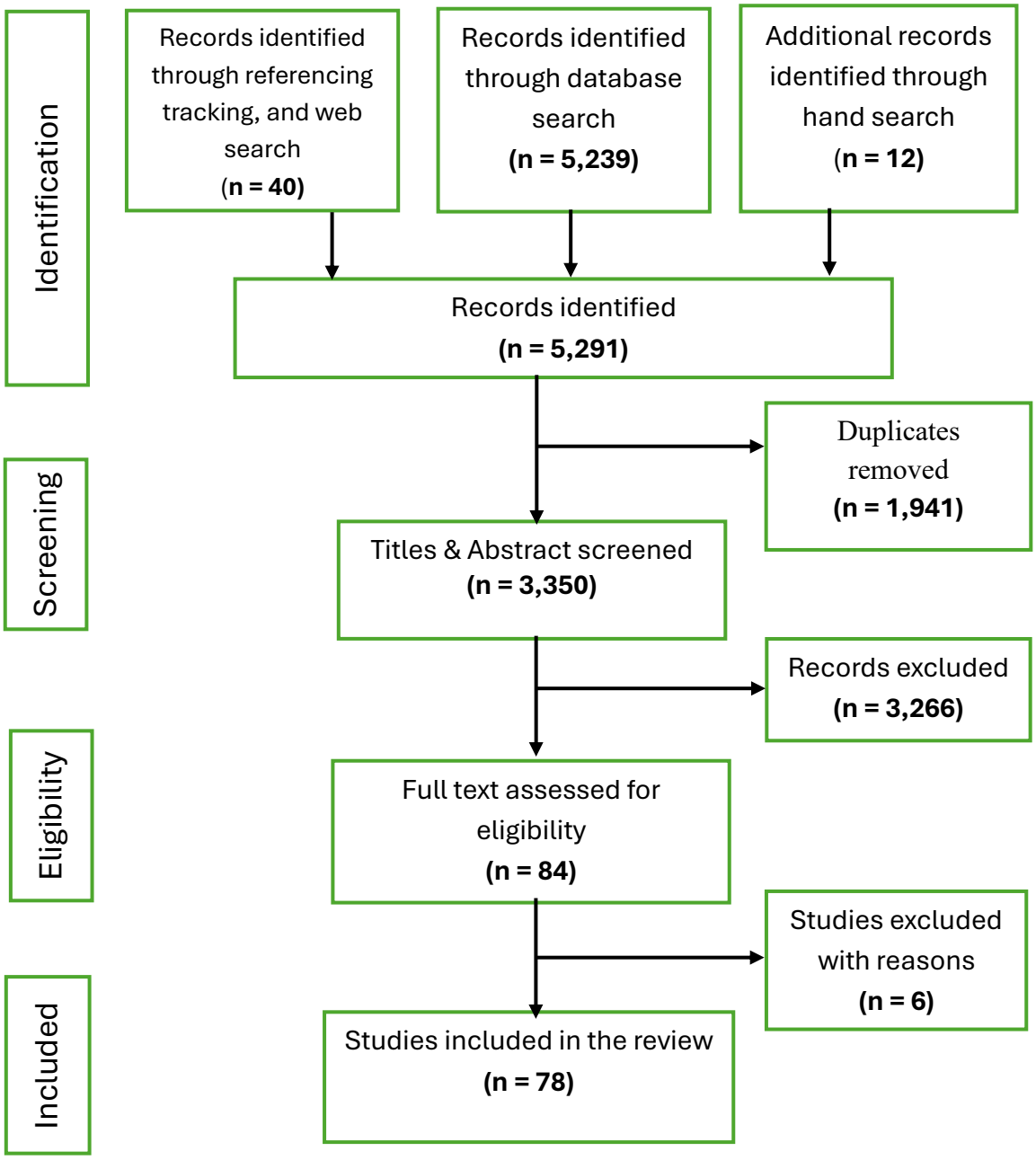


Figure 2: Flowchart of the study selection process

3.2.4 Quality Appraisal

The methodological quality of the included studies was assessed by using the Mixed Methods Appraisal Tool (MMAT), Version 2018 (Hong et al., 2018). The MMAT facilitates the appraisal of qualitative, quantitative, and mixed-methods studies within a single methodological framework. The

assessment comprised two initial screening questions followed by five design-specific quality criteria. Studies were evaluated using the response categories "Yes," "No," and "Can't tell." In accordance with MMAT guidance, no study was excluded solely based on methodological quality; rather, the appraisal was used to inform the interpretation and discussion of the review findings. The appraisal results are presented in Table A2 (Appendix A).

3.2.5 Data Extraction

Data extraction was undertaken independently by two reviewers using a standardised extraction template developed in accordance with PRISMA 2020 guidance (Page et al., 2021). The template captured information on the author(s), publication year, study location, study objectives, methodological approach, data sources, analytical methods, thematic dimension, key indicators, and principal findings. Discrepancies in data extraction were resolved through discussion and consensus. The extracted study characteristics are presented in Table A1 (Appendix A).

3.2.6 Data Synthesis and Analysis

Given the methodological and contextual heterogeneity of the included studies, statistical meta-analysis was not appropriate. Instead, a narrative thematic synthesis was undertaken following the guidance of Popay et al. (2006). Studies were initially organised according to their methodological characteristics and substantive focus. Also, each study was assigned to one geographical category based on its primary study location or geographical scope. "Multi-country (SSA-wide)" refers to studies examining multiple Sub-Saharan African countries, while "Other single-country studies" comprises studies conducted in countries outside the six most frequently represented national contexts. A deductive coding framework informed by SDG 11 and the UN-Habitat Urban Assessment Framework guided the initial analysis, while additional themes were identified inductively through iterative comparison across the included studies.

The coding framework was continuously refined by merging, separation, and redefinition of themes until conceptual saturation was achieved. This iterative process resulted in six interrelated thematic dimensions that capture the principal planning, governance, institutional, and sustainability issues shaping urban development across SSA cities. Cross-theme analysis was the identification of governance interactions, institutional constraints, policy coherence challenges, and adaptive planning mechanisms influencing sustainable urban development outcomes.

4.0 RESULTS

4.1 Characteristics of the Included Studies

The review included 78 studies examining relationships among urban planning, governance, urban-development processes and sustainable-development outcomes in Sub-Saharan African cities. The evidence base was methodologically, geographically and thematically diverse, comprising neighbourhood-level and city-level case studies, national studies, and cross-country or regional analyses. The evidence matrix recorded each study's methodological approach, thematic dimension, indicators, principal findings and geographical setting.

Qualitative research accounted for 46 studies (59.0%), quantitative research for 21 studies (26.9%), and mixed-methods research for 11 studies (14.1%). Qualitative studies focused mainly on institutional processes, planning practice, customary authority, political dynamics, stakeholder participation and implementation challenges. Quantitative studies investigated measurable dimensions of urban development as land consumption, urban sprawl, provision of infrastructure, economic growth, inequality, resilience and environmental performance. Mixed-methods studies integrated spatial or statistical indicators with institutional, stakeholder or community evidence.

Overall, the evidence base combined process-oriented evidence on how planning and governance operate with outcome-oriented evidence on the spatial, economic, social and environmental consequences of urban development. Direct evidence of causal relationships between particular planning interventions and long-term sustainability outcomes was less common than evidence on institutional processes, perceived effectiveness and associations between governance, infrastructure and development outcomes.

4.2 Temporal Distribution of the Included Studies

The review identified a substantial increase in research on sustainable urban planning and development outcomes over time (See Table 2). Only five studies (6.4%) were published between 2004 and 2009, compared with 10 studies (12.8%) between 2010 and 2014, 22 studies (28.2%) between 2015 and 2019, and 41 studies (52.6%) between 2020 and 2025. More than half of the studies included were therefore published during the most recent six-year period. The temporal pattern indicates growing scholarly attention to the links among planning, governance, urban development and sustainability in Sub-

Saharan Africa. The increase since 2015 is particularly notable, with almost twice as many studies published between 2020 and 2025 as during the preceding five-year period.

Table 2 Temporal Distribution of Included Studies

Publication period	Number of studies	Percentage
2004 to 2009	5	6.4
2010 to 2014	10	12.8
2015 to 2019	22	28.2
2020 to 2025	41	52.6
Total	**78**	**100.0**

Source: Authors' construct, 2025

4.3 Geographical Distribution of the Evidence

The 78 included studies covered a broad range of Sub-Saharan African countries, including Ghana, Nigeria, South Africa, Ethiopia, Tanzania, Kenya, Malawi, Mozambique, Zimbabwe, Zambia, Namibia, Angola, Senegal, Uganda, Burkina Faso, Madagascar, Rwanda, and the Democratic Republic of Congo. However, the geographical distribution of the evidence reflects uneven.

Ghana is particularly prominent, with studies of Tamale, Kumasi and Accra, as well as Ghana-wide analyses. These studies addressed customary authority, urban commons, mixed-use development, urban growth, land-use regulation, housing, climate resilience, land governance, flood risk, infrastructure inequality and participation. South Africa, Nigeria, Ethiopia and Tanzania represented additional geographical clusters, with studies addressing participation, climate governance, housing, urban risk, land administration, land-use efficiency, peri-urban land dynamics, local economic development and master-plan implementation.

As shown in Table 3, Ghana is the most frequently represented national context, accounting for 22 studies (28.2%). Nigeria contributed 9 studies (11.5%), followed by South Africa with 8 studies (10.3%) and Ethiopia with 7 studies (9.0%). Kenya and Tanzania each accounted for 4 studies (5.1%). In addition, 16 studies (20.5%) adopted a multi-country or Sub-Saharan Africa-wide scope, while 8 studies (10.3%) were conducted in other individual countries.

Table 3 Geographical Distribution of Included Studies

Country / study coverage	Number of Studies	Percentage
Ghana	22	28.2
Nigeria	9	11.5
South Africa	8	10.3
Ethiopia	7	9.0
Kenya	4	5.1
Tanzania	4	5.1
Multi-country (SSA-wide)	16	20.5
Other single-country studies	8	10.3
Total	**78**	**100**

Source: Authors' analysis of the evidence matrix, 2025.

Overall, the evidence base covered multiple national contexts but is concentrated in a limited number of countries. Ghana, Nigeria, South Africa, and Ethiopia collectively accounted for 46 studies, representing 59.0% of the included evidence. This pattern indicates that the findings should be interpreted cautiously and should not be assumed to represent urban contexts uniformly across all countries in Sub-Saharan Africa.

4.4 Thematic Distribution of Evidence

The evidence is organised into six interconnected themes: planning, governance and institutional capacity; land governance, development control and informality; urban spatial growth, land-use efficiency and urban form; infrastructure, services and economic development; social inclusion, housing and inequality; and environmental sustainability, climate resilience and disaster risk. These themes frequently overlapped within individual studies.

4.4.1 Planning, Governance, and Institutional Capacity

Governance and institutional capacity were among the most pervasive themes. Studies examined the capacity of institutions to formulate, coordinate, implement, and enforce urban-planning policies. Formal planning institutions did not necessarily lead to effective urban-development outcomes across the evidence base.

The institutional fragmentation, weak coordination, political interference and limited administrative capacity were repeatedly identified as constraints on planning effectiveness (Awuah, 2018; Fuseini & Kemp, 2015). Studies on decentralisation, customary authority, master planning and political influence found that planning processes were often weakened by poor coordination, insufficient local capacity,

selective implementation and competing institutional interests (Abubakari et al., 2023; Cobbinah & Darkwah, 2017; Croese et al., 2023).

However, regional quantitative studies reported positive associations between governance quality and development performance, which includes outcomes related to infrastructure, environmental sustainability, and resilience (Akpan and Effiong, 2012; Appiah et al., 2022). These studies provide evidence of broader relationships between governance and development, although they do not directly test the effect of particular planning instruments in individual cities.

4.4.2 Land Governance, Development Control, and Informality

Land governance emerged as a major mechanism linking planning systems to urban-development outcomes. Evidence showed that legal pluralism, overlapping customary and statutory land institutions, informal land markets and weak enforcement could undermine planning coherence and development control.

In Ghana, studies reported that the contradictions between the customary and statutory land systems result in difficulties in planning and enforcement (Boamah and Amoako, 2020; Mensah et al., 2022). Evidence also showed that weak incentives and enforcement mechanisms contributed to deliberate non-compliance with land-use regulations (Awuah & Hammond, 2014; Awuah et al., 2014). However, residential zones with formal planning were linked to improved access to roads, utilities, drainage, and formalized tenure, but gaps in implementation reduced these benefits.

Informality produced mixed outcomes (Gandy, 2006; Magidi, 2022; Mitlin & Walnycki, 2020). Informal land markets could contribute to fragmented development and infrastructure deficits, while informal economic and utility arrangements could sustain livelihoods and service provision where formal systems were inadequate.

4.4.3 Urban Spatial Growth, Land-Use Efficiency and Urban Form

Quantitative spatial studies consistently identified rapid urban expansion, fragmentation, peri-urbanisation and inefficient land consumption in several Sub-Saharan African contexts. Studies of Kumasi, secondary cities and Ethiopian urban areas reported spatial-growth patterns that differed from compact urban-development models (Agyemang et al., 2019; Cardenas-Ritzert et al., 2024; Korah et al., 2021).

Both qualitative and mixed-methods evidence linked inefficient urban development to fragmented land institutions, informal markets and weak policy implementation (Koroso & Zevenbergen, 2024). Evidence on mixed-use and strategic spatial planning nevertheless indicated that planning could support more integrated spatial and socio-economic outcomes (Jinollo et al., 2025) where institutional capacity and policy alignment were present (Oliveira & Meyfroidt, 2022).

4.4.4 Infrastructure, Services and Economic Development

Infrastructure represented a key pathway linking planning to urban-development outcomes. The included studies addressed transport, energy, water, sanitation, drainage and other basic services. Quantitative evidence generally showed positive associations between infrastructure provision, productivity (Azolibe & Okonkwo, 2020), economic growth (Chakamera and Alagidede, 2018), and inclusive development (Mutiiria et al., 2020).

However, infrastructure investment did not automatically generate equitable outcomes. Studies reported uneven spatial allocation (Noah, 2021), persistent infrastructure deficits in informal settlements (Bettencourt & Marchio, 2025) and inequalities in access to services (Silver, 2015). The evidence suggested that the effectiveness of infrastructure outcomes was influenced not only by the levels of investment but also by factors such as distribution, accessibility, reliability, and governance.

4.4.5 Social Inclusion, Housing and Inequality

Social sustainability was assessed in terms of housing affordability, participation, infrastructure access, livelihoods, inequality and rights to the city. Housing studies have identified tensions between market-oriented development and social inclusion. Market-led housing policies (Arku, 2009) and the need to pay advance-rent (N-yanbini et al., 2025) have restricted the access of low-income households to housing. Turok and Scheba refer to rights-based approaches to increase housing inclusiveness.

Participation was generally linked to improved planning and project outcomes but its effectiveness depended on institutionalization, stakeholders' capacity, power relations and the extent to which community voice influenced decisions (Aule et al., 2018). Limited local engagement was linked to poorer planning and master-plan outcomes (Pambila et al., 2025). Similarly, Poku-Boansi (2021) acknowledges that complex stakeholder interactions serve as obstacles to effective participation.

The evidence suggested that urbanisation can intensify inequality where planning and infrastructure provision are insufficiently inclusive (Sulemana et al., 2019). Infrastructure investment could reduce inequality under certain conditions, particularly where it was accompanied by equitable employment and labour policies (Zreik et al., 2024).

4.4.6 Environmental Sustainability, Climate Resilience and Disaster Risk

Environmental sustainability, climate resilience and disaster-risk reduction formed another substantial thematic area. Studies examined climate adaptation, green infrastructure, flood risk, resilience, environmental change and institutional coordination.

Weak coordination among climate, environmental, and planning institutions has been often linked to challenges in implementing climate adaptation, green infrastructure, and resilience strategies (Afionis et al., 2020; Ahmed et al., 2022; Cobbinah, 2021). Studies of flood risk further revealed that rapid and poorly managed urban expansion increases hazard exposure and vulnerability (Adelekan, 2020; Dodman et al., 2017; Oteng-Ababio et al., 2024).

Also, regional quantitative studies linked environmental sustainability and climate resilience to governance and institutional capacity. Some studies have reported non-linear relationships (Asongu and Odhiambo, 20; Bambi et al., 2024; Xiong et al., 2023) indicating the effectiveness of institutional interventions depends on the quality and coordination of interventions rather than their presence.

4.5 Planning, Governance and Development-Outcome Relationships

Across the evidence base, the relationship between planning and sustainable-development outcomes reflects indirect, conditional and institutionally mediated. Planning instruments could influence spatial development, infrastructure provision, service access, participation and resilience, but their effects depended on governance capacity, institutional coordination, land arrangements, political interests, finance, enforcement and stakeholder participation.

Formal planning is associated with improved infrastructure and service outcomes in settings where implementation mechanisms were effective. However, fragmented, under-resourced or poorly coordinated institutions limit the effectiveness of master plans, climate strategies, land-use regulations, resilience planning and infrastructure provision.

Also, land institutions and participation played a role in shaping planning outcomes. Statutory plans had little influence where customary and statutory authorities overlapped, informal land markets prevailed, or enforcement capacity was weak. Participation could improve legitimacy and implementation, but only where institutional arrangements enabled communities to influence decisions.

Taken together, these relationships point to the fact that sustainable urban development outcomes are produced through a planning–governance–implementation pathway, rather than through planning instruments alone.

4.6 Trade-offs and Mixed Outcomes

The evidence identified several trade-offs across sustainability dimensions. Formalisation could improve service provision, infrastructure access and tenure security while creating affordability pressures or exclusionary effects. Property-led development can create investment and urban change, but can also marginalize local needs or produce unequal landscapes.

Infrastructure investment could promote productivity and economic growth without ensuring spatial equity, while informal systems could undermine statutory planning and simultaneously sustain livelihoods and services. These mixed findings demonstrate that sustainability outcomes cannot be assessed solely by the existence of planning interventions or aggregate development gains.

4.7 Context Dependence

Effects of the planning interventions varied between institutional, political, socio-economic and spatial contexts. Customary authority, legal pluralism, local governance capacity, urban scale and land-market conditions conditioned the operation and outcomes of planning instruments.

Secondary cities indicated rapid growth and different land use patterns which imply that planning approaches designed for large metropolitan areas may not be suitable for smaller or intermediate cities (Cardenas-Ritzert et al., 2024; Korah et al., 2023). The evidence therefore does not support a single planning model for all cities in Sub-Saharan Africa.

4.8 Evidence Gaps and Limitations in the Existing Literature

The evidence base was geographically concentrated, with substantial city-specific evidence from Ghana, South Africa, Nigeria, Ethiopia and Tanzania but more limited coverage of other parts of Sub-Saharan Africa. The dominance of qualitative research also meant that the review identified relatively few rigorous quantitative tests of the causal relationship between specific planning interventions and long-term sustainability outcomes.

Longitudinal evidence is limited, making it difficult to determine whether observed planning outcomes were sustained over time. Studies also tended to focus on individual outcome domains, such as land-use efficiency, infrastructure, housing, resilience or growth, rather than examining their interactions.

The review also found limited comparative evidence on the effectiveness of different planning approaches under similar conditions. Governance was frequently identified as important, but fewer studies explicitly examined the pathways through which coordination, capacity, finance, enforcement and political interests mediated planning outcomes.

4.9 Summary of Results

The results demonstrate a consistent but conditional relationship between urban planning and sustainable-development outcomes in Sub-Saharan African cities. Planning was associated with more favourable spatial, infrastructure, environmental and social outcomes where institutions possessed adequate capacity and where implementation mechanisms were effective.

However, planning instruments alone were insufficient. Fragmented institutions, weak coordination, limited finance, political interference, poor enforcement, unequal infrastructure distribution, land-governance constraints and exclusionary development processes reduced or redirected potential benefits.

The findings therefore indicate that planning outcomes are shaped by the interaction of planning systems with governance arrangements, land institutions, political-economic interests, infrastructure provision and local socio-spatial conditions.

5.0 DISCUSSION

5.1 Reframing Sustainable Urban Planning as a Context-Dependent Institutional Process

The synthesis of 78 studies indicates that sustainable urban planning in Sub-Saharan African cities cannot be understood solely as the preparation or application of formal spatial plans. Sustainable-development outcomes emerge through interactions among planning instruments, institutional capacity, governance arrangements, land systems, political-economic interests, infrastructure provision and socio-spatial conditions. Planning should therefore be understood as a context-dependent institutional process whose effectiveness depends on how plans are formulated, implemented and enforced.

This interpretation helps explain why formal planning systems often coexist with urban sprawl, fragmented development, inadequate infrastructure, informality, inequality and environmental vulnerability. The evidence on master planning, land-use regulation, spatial planning and resilience strategies shows that plans and policies may be widely present but selectively implemented because of institutional fragmentation, financial constraints, political influence and limited administrative capacity.

The central challenge in many Sub-Saharan African cities is therefore not simply a planning deficit, but an implementation and institutionalisation deficit. Planning outcomes depend on whether relevant institutions possess sufficient authority, resources, coordination mechanisms, technical capacity and legitimacy to translate policy intentions into development control, infrastructure investment and inclusive urban outcomes. This interpretation is consistent with evidence linking institutional fragmentation and weak coordination to poor urban-development outcomes, as well as studies associating governance quality with development and infrastructure performance.

The findings consequently challenge the assumption that better plans will automatically produce better urban development. Instead, the relationship is conditional as shown in Figure 3.

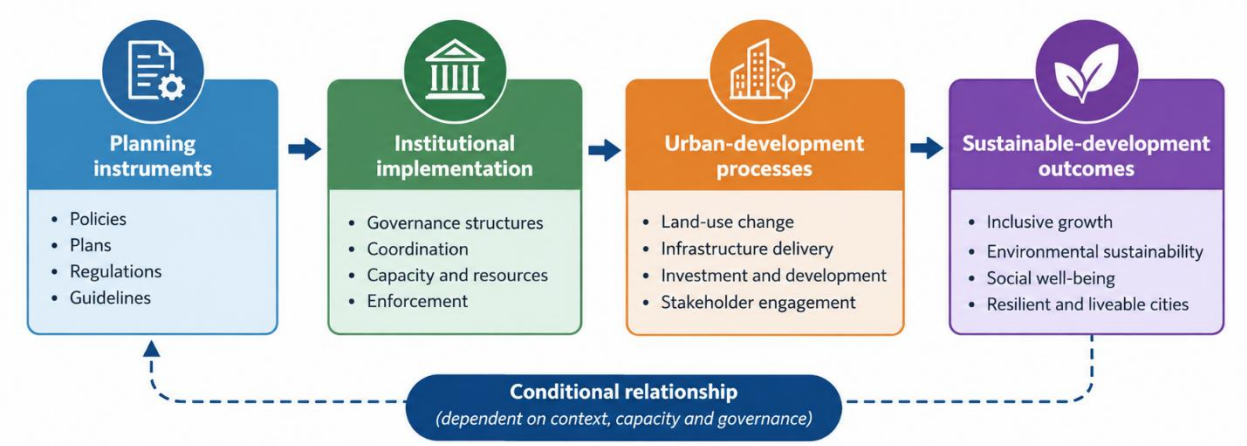


Figure 3: Conditional Pathway to Sustainable Urban Development

Where institutional implementation is weak, even technically sophisticated plans may exert limited influence on actual urban-development trajectories.

5.2 Comparison with Existing Evidence

The findings of this review complement previous systematic reviews of urbanisation, planning and development in Africa, while addressing a more specific question: how planning systems and governance conditions shape sustainable urban-development outcomes.

Yussif et al. (2023) reviewed 247 peer-reviewed studies on sustainability of urban expansion in Africa using the Drivers, Pressures, State, Impacts and Responses (DPSIR) framework. Their review drew together evidence on the drivers and consequences of urban expansion, including land-use change, environmental pressures and implications for sustainable development. The present review complements this work by shifting attention from the drivers and consequences of urban expansion to the institutional and governance conditions through which planning influences wider urban-development outcomes.

Kamana et al. (2024) synthesised 243 studies across 107 African cities, identifying 17 major urban challenges and 16 urban strategies. Their review highlighted persistent problems of climate change, informal settlements, inadequate infrastructure, socio-spatial inequality and limitations in conventional planning approaches. It also emphasised the need for integrated, inclusive and context-sensitive planning. The present review builds on this contribution by examining the mechanisms linking planning processes, institutional and governance conditions, implementation and sustainable-development outcomes.

Mndzebele and Gumbo (2025) provide a more regionally focused review of decentralised urban-planning research and practice in the Southern African Development Community (SADC). Their work highlights the importance of decentralisation and local institutional contexts in shaping planning practice. The present review extends this perspective across Sub-Saharan Africa and considers decentralisation alongside other mediating conditions, including governance coordination, land institutions, participation, implementation capacity, development control and political-economic influence.

Taken together, these reviews make important but distinct contributions. Yussif et al. (2023) identified urban expansion and sustainability implications; Kamana et al. (2024) map urban challenges and planning strategies in African cities and Mndzebele and Gumbo (2025) look at decentralized planning in the SADC context. The present review complements these bodies of work by bringing planning processes, governance conditions, implementation mechanisms and development outcomes together within a single analytical framework.

The principal contribution of the present review is therefore not simply to identify planning challenges or catalogue planning strategies. Rather, it explains the planning, governance and outcomes relationship. The findings show that planning interventions do not produce uniform outcomes independently of context; their effects are mediated by institutional capacity, inter-institutional coordination, land-tenure arrangements, political interests, participation, enforcement, infrastructure provision and interactions between formal and informal urban systems.

This perspective helps reconcile apparently contradictory findings in the literature. Formal planning can improve infrastructure provision, land-use organisation and service access, but weak implementation, fragmented institutions and exclusionary development processes can reduce or redistribute these benefits. Similarly, informal institutions and practices can constrain statutory planning while simultaneously providing livelihoods, land access and basic services where formal systems are inadequate.

The review therefore contributes an integrated understanding of sustainable urban planning. Rather than treating urban expansion, land use, infrastructure, housing, governance, climate resilience, participation and inequality as separate domains, it shows how these dimensions interact to shape development outcomes. Table 4 presents a detailed comparison between the present review and the three earlier reviews.

Table 4 Comparison of the present review with existing systematic reviews

Review	Primary focus	Scope and main contribution	Contribution/difference relative to present review
Yussif et al. (2023)	Sustainability of urban expansion in Africa	Systematic review of **247 peer-reviewed studies** using the DPSIR framework to examine drivers, pressures, states, impacts and responses associated with urban expansion.	Focuses principally on urban expansion and its sustainability implications; the present review examines how planning and governance processes shape broader urban development outcomes.
Kamana et al. (2024)	Urban challenges and strategies in African cities	Systematic review of **243 studies across 107 African cities**, identifying 17 major urban challenges and 16 urban strategies and highlighting the need for integrated, inclusive and context-sensitive planning.	Maps major urban challenges and strategies; the present review goes further by explicitly analysing the mechanisms linking planning, governance, implementation and development outcomes.
Mndzebele & Gumbo (2025)	Decentralised urban planning in the SADC region	Reviews research and practice concerning decentralised urban planning within the SADC context, highlighting the importance of local institutional and planning contexts.	Regionally focused on SADC and decentralised planning; the present review covers SSA more broadly and integrates decentralisation with governance, land, participation, implementation and development outcomes.
Present review	Sustainable urban planning and development outcomes in SSA	Synthesises **78 studies** examining relationships among planning systems, governance, implementation processes and spatial, social, economic and environmental outcomes.	Develops an integrated **planning–governance–outcomes perspective**, emphasising the institutional and contextual conditions through which planning produces, constrains or redistributes sustainable development outcomes.

Source: Authors' construct, 2025.

5.3 Governance and Institutional Capacity as the Main Mediating Mechanisms

Governance emerged as one of the principal mechanisms through which planning influences urban-development outcomes. Across planning, infrastructure provision, land management, climate adaptation and resilience, the effectiveness of interventions depended on institutional coordination, administrative capacity, political relationships, financial resources, enforcement and accountability.

First, coordination determines whether planning, infrastructure, environmental and climate institutions act coherently. The fragmented mandates and weak inter-agency coordination can produce conflicting policies, duplicated responsibilities and uneven implementation. This pattern is evident in evidence on green infrastructure, climate adaptation, industrial development and flood-risk management.

Second, institutional capacity determines whether plans can be translated into action. Also, the limited technical expertise, financial constraints and weak administrative systems reduce the ability of planning authorities to monitor development, enforce regulations and coordinate infrastructure delivery. Such constraints justify the coexistence of formal planning systems with informal development, unregulated growth and inefficient land use.

Third, political and power relations affect planning decisions and implementation. Also, political interests, elite influence and unequal stakeholder power can affect land-use decisions, infrastructure priorities and urban-development trajectories. Planning should therefore be understood not only as a technical activity, but also as a political process involving competing claims over land, investment, public resources and urban space.

Fourth, enforcement and accountability determine whether planning regulations influence actual development behaviour. Where the costs of non-compliance are low, enforcement agencies lack capacity, or accountability systems are weak, land-use regulations and development-control measures are unlikely to achieve their intended outcomes.

Taken together, these findings position governance not as an external background condition but as a mechanism through which planning affects urban outcomes. The effectiveness of planning should therefore be assessed through the institutional conditions that enable or constrain implementation.

5.4 The Formal–Informal Interface as a Defining Feature of Urban Planning in SSA

The findings demonstrate that informality should not be treated simply as a deviation from formal planning. Informal land markets, customary institutions, informal economic activity and informal service arrangements are integral to the production and functioning of many Sub-Saharan African cities.

Evidence from Ghana illustrates this interaction clearly. Customary authorities influence planning outcomes, while contradictions between customary and statutory land systems complicate development control and enforcement. The informal land markets may contribute to fragmented development, but informal economic and utility systems can also provide livelihoods and services where formal institutions are unable to meet urban demand.

This establishes a central paradox. Unplanned development, fragmented land use and deficits in infrastructure arising from informality can undermine the objectives of formal planning. Informal systems may at the same time provide critical means of service access, economic survival and social support for urban residents. Strict formalisation may therefore create exclusionary effects if it does not account for the functions that informal practices perform.

Sustainable urban planning consequently requires a hybrid institutional perspective. Rather than seeking simply to eliminate informal practices, planning institutions should develop appropriate mechanisms to recognise, regulate and integrate customary authorities, informal land arrangements and informal service systems while protecting equity, safety, environmental quality and access to urban services.

5.5 Land Governance as a Critical Link between Planning and Urban Form

The review identifies land governance as a fundamental mechanism linking planning institutions to urban spatial outcomes. Urban expansion, fragmentation, peri-urban development and land-use efficiency are shaped not only by population growth, but also by the institutional arrangements governing land ownership, tenure, allocation, regulation and development.

There is evidence that fragmented and inefficient urban growth results from the overlapping of customary and statutory systems, weak land-use regulation, informal land markets and limited enforcement. Studies of Kumasi, Ethiopian cities and other Sub-Saharan African contexts show patterns of rapid expansion, peri-urbanisation and land consumption that cannot be attributed to demographic growth alone.

This finding challenges conventional assumptions about compact and planned urban development. Policies promoting compactness, densification or mixed-use development are unlikely to achieve their intended effects where land institutions, development incentives and enforcement arrangements continue to encourage dispersed and informal development. Conversely, formal planning is more

likely to improve spatial organisation and infrastructure outcomes where land governance and implementation mechanisms are sufficiently strong.

Land governance should therefore be treated as a core component of sustainable urban planning rather than as a separate land-administration concern. Planning interventions that do not address land ownership, tenure security, development incentives, institutional authority and enforcement are unlikely to exert sustained influence over urban spatial trajectories.

5.6 Planning and Infrastructure: From Provision to Equitable Outcomes

The evidence indicates a generally positive relationship between infrastructure provision and economic and urban development. The infrastructure can support productivity, economic growth, service access and resilience. But infrastructure provision alone cannot guaranty sustainable or inclusive results, because the benefits from infrastructure are dependent on its quality, spatial distribution, access, reliability and governance.

This distinction is particularly important in cities facing infrastructure deficits alongside rapid population growth. Investment can stimulate economic activity while leaving informal settlements and low-income communities poorly served. Uneven infrastructure distribution and unequal access show that aggregate investment can coexist with significant spatial inequalities.

Sustainable planning should therefore move beyond a provision-oriented approach towards one centred on access, equity and outcomes. The relevant question is not simply whether roads, water systems, drainage and energy infrastructure are provided, but who receives them, where they are located, whether they are reliable, and whether they improve opportunities for disadvantaged populations.

This perspective explains why infrastructure can have apparently contradictory effects. It may increase productivity and growth while reinforcing inequality when investment is concentrated in already advantaged locations. Sustainable infrastructure planning consequently requires stronger integration among spatial planning, infrastructure investment and social-equity objectives.

5.7 Social Sustainability, Participation and the Distribution of Urban Benefits

Sustainable urban development cannot be reduced to spatial efficiency or economic growth. Social inclusion, housing affordability, meaningful participation and equitable access to infrastructure are core dimensions of planning outcomes.

Participatory approaches can improve planning and project outcomes, but participation is often weakly institutionalised. Similarly, community involvement does not automatically result in influence over decisions because participation is shaped by unequal power relations, stakeholder capacity and the institutional arrangements governing planning processes.

Housing evidence reinforces this point. Market-led housing policies and property-oriented development can increase investment and housing supply, while simultaneously producing affordability gaps and excluding lower-income households. Real-estate investment may therefore deliver economic gains while contributing to exclusionary urban landscapes.

Sustainable planning concerns both the production of urban development and the distribution of its benefits and costs. An intervention cannot be considered sustainable solely for the fact it increases investment, improves infrastructure or enhances environmental quality if its benefits are concentrated among higher-income groups while vulnerable populations experience displacement, exclusion or reduced affordability.

The review therefore supports a distributional understanding of sustainability. Planning effectiveness should be assessed according to who benefits, who bears the costs and whose interests are represented in urban decision-making.

5.8 Environmental Sustainability and Climate Resilience Require Institutional Integration

The evidence on environmental sustainability and climate resilience shows the importance of integrated planning and governance. Climate risks, flooding, ecological degradation and environmental pressures are becoming more and more urban planning concerns but institutional fragmentation between climate and planning authorities often limits coordinated action.

Studies of climate adaptation and green infrastructure show that policy recognition does not necessarily translate into implementation. Weak coordination between climate and urban-planning institutions constrains adaptation efforts, while fragmented governance limits the expansion of green

infrastructure. These institutional gaps also heighten flood vulnerability in rapidly urbanising areas. Adelekan (2020) argues that everyday hazards expose structural inequalities and intensify disaster risk, while Dodman et al. (2017) link rapid, poorly planned urban growth to risk accumulation. Likewise, Oteng-Ababio et al. (2024) identify weak planning coordination as a key barrier to flood-risk reduction and resilience.

The evidence further suggests that governance quality is link to environmental sustainability and climate resilience, although these relationships may be non-linear. This indicates that increasing institutional activity alone is insufficient; the quality, coordination and effectiveness of institutions are more important than the mere presence of policies or agencies.

Climate resilience should therefore not be treated as a separate policy sector. It should be embedded in land-use planning, infrastructure planning, housing policy, development control and metropolitan governance. Without this integration, climate adaptation is likely to remain project-based and disconnected from the wider processes shaping urban development.

5.9 Sustainability Outcomes Involve Trade-offs Rather Than Uniform Benefits

An important contribution of the review is its identification of trade-offs among different dimensions of sustainable development. The evidence does not support the assumption that planning interventions generate uniformly positive outcomes across social, economic, spatial and environmental domains.

One recurring trade-off is between formalisation and inclusion. The formal planning can improve infrastructure provision, tenure security and development control, but formalization may also increase costs and exclude households unable to meet formal land, housing or service requirements.

A second trade-off concerns investment and social equity. In this perspective property-led development and real-estate investment can support economic growth and urban transformation, while also producing exclusionary landscapes, affordability pressures and displacement risks. The third concerns are infrastructure expansion and distributional equity where infrastructure can support productivity and growth, but unequal spatial allocation can reproduce existing inequalities.

A fourth trade-off concerns formal planning and informal resilience. In this situation informal development may conflict with statutory planning objectives, yet informal economic and service systems can help residents cope with institutional weaknesses and infrastructure deficits.

Sustainable urban planning should therefore be understood as a process of managing competing objectives and negotiating trade-offs, rather than maximising a single outcome. This is particularly important in rapidly urbanising cities, where governments must simultaneously expand infrastructure, support investment, improve housing, protect the environment and accommodate informal livelihoods.

5.10 Why Planning Outcomes Differ across Sub-Saharan African Cities

The geographical and institutional diversity of the evidence indicates that planning outcomes cannot be assumed to be transferable across Sub-Saharan African cities. Differences in land institutions, governance structures, economic conditions, urbanisation rates, administrative capacity and political systems influence how planning is formulated, implemented and experienced.

The evidence from secondary cities is particularly important. These cities can experience rapid spatial expansion and distinctive land-consumption patterns that differ from those of major metropolitan areas. Planning frameworks developed primarily for capital cities may therefore be insufficiently responsive to the institutional and spatial dynamics of smaller and intermediate urban centres.

The interaction between customary and statutory land systems also means that planning instruments operate differently in contexts where customary authorities retain substantial control over land. Evidence from Ghana illustrates how these institutional arrangements can shape development control, land-use decisions and planning outcomes.

Sustainable planning policy should therefore avoid a one-size-fits-all approach. Core principles, including integration, equity, accessibility and environmental sustainability, remain important, but the institutional pathways through which they are implemented must be adapted to local land systems, governance arrangements, urban scale and socio-spatial conditions.

5.11 Towards an Integrated Planning, Governance and Outcomes Framework

The findings support an integrated interpretation of sustainable urban planning in Sub-Saharan Africa. Planning, governance, land, infrastructure, informality and sustainability should not be treated as separate domains; they operate as interconnected components of a wider urban-development system.

As shown in Figure 4, the framework begins with urbanisation pressures and socio-spatial conditions, which shape the context in which planning systems and interventions operate. Planning instruments then influence implementation and urban-development processes through institutional and governance conditions, producing social, economic, spatial and environmental outcomes.

Governance capacity, land institutions, political economy and informality operate as mediating and conditioning factors throughout this process. They influence whether planning interventions are coordinated, financed, enforced, accepted or resisted, and consequently determine how far planning intentions are translated into actual urban outcomes.

The framework also recognises feedback effects. Infrastructure investment can alter land values and development patterns; new development can create further governance demands; informal development can emerge in response to failures of formal institutions; and environmental risks can reveal weaknesses in existing planning systems. Sustainable urban planning should therefore be understood as a dynamic institutional process rather than a linear policy intervention.

This interpretation moves beyond a simple distinction between planned and unplanned urban development. Sub-Saharan African cities are produced through interactions among formal plans, customary institutions, informal practices, market forces, political interests and community action. Sustainable outcomes depend on the capacity of planning systems to coordinate these forces, manage their trade-offs and distribute development benefits more equitably.

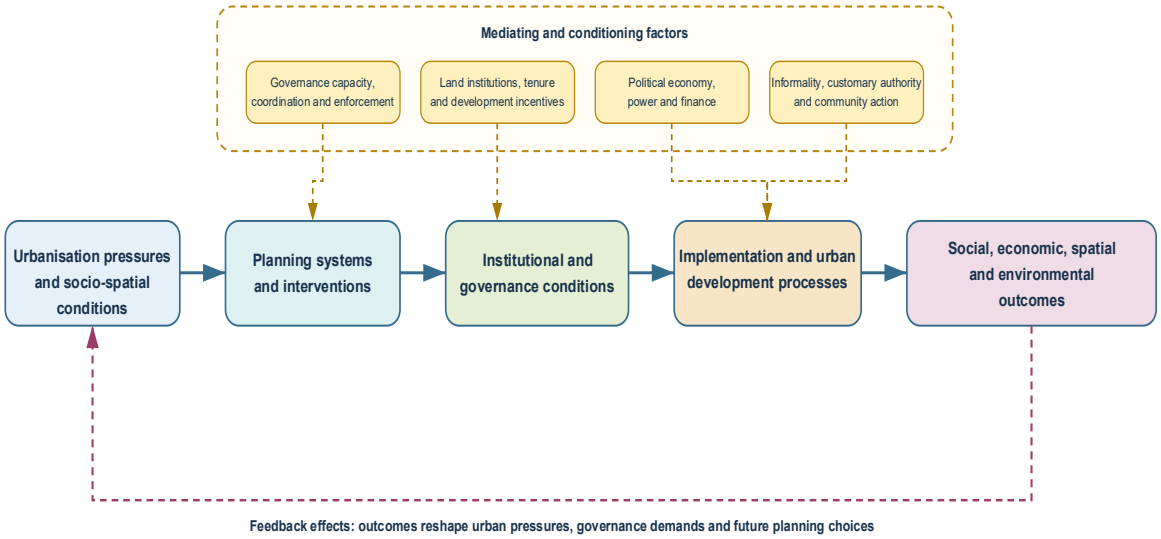


Figure 4. Integrated Planning–Governance Framework for Sustainable Urban Development

5.12 Implications for Planning Practice and Policy

The findings indicate that sustainable urban planning in Sub-Saharan Africa requires greater attention to the institutional conditions through which plans are implemented. Plan preparation remains important, but formal plans are unlikely to influence urban-development outcomes without investment in technical capacity, development-control systems, monitoring, data, finance and institutional coordination.

Planning institutions should strengthen both horizontal and vertical coordination. Spatial planning, infrastructure provision, housing, environmental management and climate adaptation need to be integrated across national, metropolitan and local levels of government. Such coordination is needed to avoid contradictions in policies, to harmonise investment choices and to make it easier to implement them.

Land governance should be treated as a core component of sustainable planning. Policies should address tenure arrangements, customary authorities, informal land markets, development incentives and institutional authority in order to improve land-use efficiency and manage urban expansion more effectively.

Planning also should be more inclusive and distribution sensitive. Housing and regeneration policies, and infrastructure policies in particular, should explicitly address affordability, displacement, access to services and the distribution of benefits between different social groups and urban areas.

Informal institutions and practices should not automatically be treated as planning failures. Where informal systems provide essential economic, social or service functions, planning interventions should seek appropriate forms of recognition, regulation and integration, while addressing the risks associated with insecure tenure, inadequate services and unregulated development.

Climate resilience should be mainstreamed into spatial planning, infrastructure planning, housing policy and development control and not remain a stand-alone policy domain. Integrating climate considerations across these areas is necessary to address the institutional fragmentation that weakens resilience outcomes.

Finally, planning approaches must be context-sensitive. Capital cities, metropolitan regions, secondary cities, peri-urban areas and informal settlements face different institutional and spatial conditions. Sustainable planning should therefore combine common principles of equity, accessibility, integration and environmental sustainability with locally appropriate strategies and implementation arrangements.

6.0 Conclusion

This systematic review synthesised 78 studies examining the relationship between sustainable urban planning and development outcomes in Sub-Saharan African cities. Its central finding is that planning does not produce sustainable outcomes through the existence of plans alone. Rather, planning effectiveness is conditional on the institutional and socio-spatial contexts through which plans are implemented, including governance capacity, land systems, political relations, finance, enforcement and participation.

The review contributes an integrated planning, governance and outcomes perspective. It shows that governance, land institutions and informality are not merely contextual influences but central mechanisms shaping how planning affects urban development. It also demonstrates that planning outcomes must be assessed in distributional terms, since interventions may generate improvements in infrastructure, spatial organisation or resilience while also creating exclusion, affordability pressures or unequal access to urban benefits.

The findings imply that sustainable planning policy should focus on strengthening implementation capacity, institutional coordination, development control, land governance and inclusive infrastructure provision. These priorities must be adapted to the particular conditions of metropolitan, secondary, peri-urban and informal urban areas rather than applied through uniform planning models.

The evidence base is nevertheless limited by the predominance of qualitative and case-based research, geographical concentration and limited longitudinal evidence. Future research should therefore test how specific planning interventions perform over time and across differing governance, land-tenure and socio-spatial contexts.

Overall, sustainable urban development in Sub-Saharan African cities depends on the capacity of planning systems to convert policy intentions into equitable, contextually appropriate and durable urban outcomes.

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Authors' contributions

David Sam Afful is a doctoral student at the Department of Planning of the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, pursuing Development Studies. He conceptualised the research and prepared the first draft of the manuscript under departmental supervision. The Department contributed to subsequent revisions. His research interests include sustainable community development, mixed-use planning, urban studies, inclusive growth, and public safety.

Michael Poku-Boansi, PhD***,*** is a Professor at the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana. He is an Urban/Transport Planner and Resettlement Specialist, currently serving as the Director of the School of Graduate Studies. His research interests, among others, include spatial planning, land use change, urbanism, and urban transportation planning.

Benjamin Doe, PhD, serves as a Senior Lecturer in the Department of Planning at Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, Ghana. He is a seasoned planner, researcher, and lecturer with extensive expertise in engaging with regional and municipal governments,

community-based organisations, and non-governmental organisations. His research interests include urban and regional planning, the application of geospatial technologies in urban planning and management, and governance related to water, sanitation, and hygiene (WASH).

Michael Osei Asibey, PhD, is a Lecturer in the Department of Planning at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi. He has published over 40 articles in journals including Geoforum, Cities, and Land Use Policy. His research focuses on urbanisation, sustainability, informality, climate change adaptation, and urban ecological management.

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ORCID

David Sam Afful https://orcid.org/0000-0003-0479-3661

Michael Poku-Boansi https://orcid.org/0000-0003-4929-0961

Benjamin Doe https://orcid.org/0000-0002-8840-9673

Michael Osei Asibey https://orcid.org/0000-0002-5534-2695

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APPENDIX

Table 1A. Summary of Included Studies

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
1.	Abdul-Hamid et al. (2023)	Qualitative	Collaborative & communicative planning in a chiefly (traditional authority) city	Actor mapping, examples of land/governance conflicts, qualitative evidence of participation/negotiation	Customary/chieftaincy authority shapes planning outcomes and constrains statutory planning; collaborative approaches help but power asymmetries must be negotiated	Ghana (Tamale)
2.	Abubakari et al. (2023)	Qualitative	Governance of urban commons through decentralized planning	Types of commons (green, water, land), institutional arrangements, collective-action capacity	Decentralization can protect commons but political interference, weak local capacity and poor coordination limit effectiveness	Ghana
3.	Adelekan (2020)	Mixed methods	Urban risk and resilience	Flood frequency, building vulnerability, informal housing	Everyday hazards expose structural inequalities and increase disaster risk	Nigeria (Ibadan)
4.	Adhikari et al. (2022)	Mixed methods	Sustainable planning; geospatial monitoring of SDGs	SDG indicator performance; data coverage/reliability	Identifies challenges for integrating reliable geospatial indicators for SDG monitoring.	Burkina Faso, Kenya, Madagascar

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
5.	Afful et al. (2025)	Qualitative	Mixed-use development & sustainable communities	Policy alignment score, planning integration	Weak coherence between urban policies undermines sustainable community creation	Ghana
6.	Afionis et al. (2020)	Qualitative	Urban green infrastructure & governance	Cross-sector coordination index	Fragmented policy limits urban green infrastructure expansion	Malawi
7.	Agyemang et al. (2019)	Quantitative	Urban spatial structure and growth patterns in SSA city-regions	Built-up area change, density/fragmentation metrics, peri-urban expansion rates	The city-region departs from compact models — patchy/peri-urban expansion with planning and service implications	Ghana (Kumasi)
8.	Ahmed et al. (2022)	Qualitative	Climate adaptation & urban policy	Policy coherence index	Weak coordination between climate adaptation and urban planning policies	Ghana
9.	Aklilu et al. (2014)	Qualitative	Community participation & local governance	Participation rate, stakeholder inclusion index	Low citizen participation limits municipal integrated development outcomes	South Africa (Lipopo Province)
10.	Akpan & Effiong (2012)	Quantitative	Governance quality and development performance	Governance indicators, GDP/social metrics	Strong governance correlates with better development	Sub-Saharan Africa
11.	Alence (2004)	Qualitative	Political institutions and developmental governance	Institutional configuration,	Strong institutions, not democracy alone, drive development	Sub-Saharan Africa

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
				bureaucracy capacity		
12.	Appiah et al. (2022)	Quantitative	Governance/institutions in infrastructure development	Project delivery, institutional effectiveness	Governance quality affects infrastructure success	Sub-Saharan Africa
13.	Arku (2009)	Qualitative	Housing policy evolution and implications	Policy instruments, affordability indicators	Market-led policy created affordability gaps	Ghana
14.	Asongu & Odhiambo (2021)	Quantitative	Governance and environmental sustainability	Governance indices, CO_2 emissions, ecological footprint	Better governance improves environment; non-linear effects	Sub-Saharan Africa
15.	Aule et al. (2019)	Qualitative	Community participation in housing	Stakeholder involvement level, satisfaction rate	Community participation improves housing project outcomes but remains under-institutionalized	Nigeria
16.	Awortwi & Helmsing (2007)	Qualitative	Governance of basic services in SSA	Service delivery models, decentralisation	Governance reforms needed for better service delivery	Sub-Saharan Africa
17.	Awuah (2018)	Qualitative	Urban development and governance challenges	Coordination, planning capacity, housing/infrastructure	Fragmented institutions weaken urban development	Nigeria
18.	Awuah & Hammond (2014)	Quantitative	Determinants of low compliance with land-use regulations	Compliance rates, socio-economic correlates,	Non-compliance often deliberate; weak enforcement and	Ghana

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
				enforcement presence/strength	incentives contribute to low compliance	
19.	Awuah et al. (2014)	Quantitative	Benefits of urban land-use planning for residential outcomes	Access to tarred roads, utilities, drainage quality, tenure/formal title presence	Formal planning correlates with better infrastructure and service outcomes, though implementation gaps reduce potential benefits	Ghana
20.	Aytenew et al. (2025)	Qualitative	Urban land policy & administration	Land allocation efficiency, perception index	Land policy reforms in Addis Ababa are perceived as inconsistent and bureaucratic	Ethiopia
21.	Azolibe & Okonkwo (2020)	Qualitative	Infrastructure and industrial productivity	Infrastructure quality, productivity metrics	Better infrastructure raises productivity	Sub-Saharan Africa
22.	Azu (2018)	Qualitative	Urban governance issues and challenges	Decentralisation, revenue, corruption indicators	Weak institutions and poor finance constrain governance	Nigeria
23.	Bambi et al. (2024)	Quantitative	Governance, institutions and climate resilience	Resilience proxies, governance indices, threshold parameters	Governance-resilience effects non-linear; strong institutions yield higher resilience	Sub-Saharan Africa
24.	Bettencourt & Marchio (2025)	Quantitative	Infrastructure deficits and spatial patterns of informal settlements	Building footprint density, proximity to infrastructure,	Infrastructure deficits and inequalities widespread; mapping enables targeted interventions	Sub-Saharan Africa

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
				service access proxies		
25.	Boamah & Amoako (2020)	Qualitative	Legal pluralism (customary vs statutory land systems) and planning dilemmas	Instances of legal contradiction, case examples, institutional role mapping	Dual legal systems create inconsistencies and undermine coherent planning and enforcement	Ghana
26.	Cardenas-Ritzert et al. (2024)	Quantitative	Spatial measurement & SDG monitoring (land-use expansion / land consumption efficiency).	Land consumption rate (LCR); population growth rates; hotspot maps.	Identifies urban expansion hotspots in secondary cities where land consumption significantly outpaces population growth.	Ethiopia (Mekelle), Nigeria (Benin City), South Africa (Polokwane)
27.	Chakamera & Alagidede (2018)	Quantitative	Infrastructure–growth nexus	Infrastructure indices, GDP growth	Infrastructure quantity and quality both vital	Sub-Saharan Africa
28.	Cobbinah (2021)	Qualitative	Climate resilience and urban sustainability	Resilience index, climate vulnerability	Urban resilience remains limited due to fragmented institutional capacity	Ghana
29.	Cobbinah & Darkwah (2017)	Qualitative	Politics of urban planning and implementation	Political influence indicators, institutional capacity, planning failures	Political interests and weak institutions shape planning outcomes; partisan pressures limit effectiveness	Ghana

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
30.	Cobbinah & Poku-Boansi (2018)	Qualitative	Urban resilience strategies and policy-practice gaps	Planners' perceptions, policy alignment, resilience priority areas	Resilience priorities acknowledged but implementation lags; capacity building needed	Ghana
31.	Cobbinah et al. (2020)	Mixed methods	Urban resilience and city planning	Resilience metrics, land use, infrastructure coverage	Kumasi's resilience efforts are constrained by governance and institutional weaknesses	Ghana
32.	Croese et al. (2016)	Qualitative	Global policy vs local slum realities	Policy uptake, slum upgrading cases	Global commitments fail to match local realities	Angola, Ethiopia, Namibia, South Africa
33.	Croese et al. (2023)	Qualitative	Master planning practice and implementation in African cities	Number/character of master plans, implementation evidence, stakeholder roles	Master plans frequent but selective; constrained by institutions, finance and politics	Ghana, Tanzania, Malawi
34.	de Wee & Jakoet-Salie (2025)	Qualitative	Governance & food security policy	Inter-departmental coordination, policy integration index	Integrated policy mechanisms improve coherence in food security governance	South Africa
35.	Dodman et al. (2017)	Qualitative	Risk accumulation and reduction	Disaster risk reduction indicators	Rapid urban growth without planning increases risk accumulation	Sub-Saharan Africa
36.	Fuseini & Kemp (2015)	Qualitative	Spatial planning's role in socio-economic	Historical policy milestones, alignment with	Spatial planning potential high but overshadowed by	Ghana

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
			development and sustainability	SDGs, effectiveness of instruments	socio-economic planning and capacity limits	
37.	Gandy (2006)	Mixed methods	Planning, anti-planning and infrastructure crisis	Infrastructure provision failures, coping mechanisms	Planning failures fuel crisis; informality fills the gap	Nigeria
38.	Goodfellow (2017)	Qualitative	Real estate, late urbanization and urban form	Investment patterns, development outcomes	Real-estate booms yield uneven, exclusionary urban landscapes	Rwanda, Ethiopia
39.	Jiboye (2011)	Qualitative	Sustainable urbanisation and governance	Housing, sanitation, service delivery	Urbanisation strains governance; reforms needed	Nigeria
40.	Jinollo et al. (2025)	Mixed methods	Impacts of mixed land-use planning on spatial development	Land-use mix indices, socio-economic outcomes, stakeholder perceptions	Mixed land-use improves outcomes but governance gaps persist	Ethiopia
41.	Kalonga et al. (2025)	Qualitative	Disaster resilience & policy coherence	Disaster risk governance indicators	Weak institutional coherence undermines resilience in SADC countries	Sub-Saharan Africa
42.	Kombe (2005)	Mixed methods	Peri-urban land use dynamics and urban form	Land conversion rates, settlement patterns	Informal markets drive fragmented urban forms	Tanzania

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
43.	Korah et al. (2023)	Quantitative	Spatial and temporal dynamics of urban growth in secondary cities	Built-up change, fragmentation, ring-based growth rates	Secondary cities expanding rapidly; need tailored planning	Ghana
44.	Koroso et al. (2021)	Quantitative	Urban land-use efficiency under urbanization	Land consumption rate, population growth ratio	Low land-use efficiency; institutional factors drive inefficiency	Ethiopia
45.	Koroso & Zevenbergen (2024)	Mixed methods	Relationship between land policy, land management and ULUE	Institutional/policy attributes, ULUE metrics	Weak policy implementation reduces efficiency	Ethiopia
46.	Kotschy et al. (2025)	Qualitative	M&E practice, equity & resilience (process, governance, participatory monitoring).	Adoption and impact of M&E frameworks for equity/resilience; participatory engagement indicators	M&E, especially participatory methods, strengthens equity and resilience in urban planning practice; highlights adaptive governance and outcome tracking	South Africa
47.	Leck & Roberts (2015)	Qualitative	Municipal climate governance (informal/invisible networks)	Networks, actor roles, governance capacity	Informal politics influence climate action; need network recognition	South Africa

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
48.	Lubida et al. (2019)	Quantitative	Multi-objective land-use planning for sustainable development	Suitability scores, Pareto trade-offs	Optimisation balances competing goals; applied in Zanzibar	Tanzania
49.	Magidi (2022)	Qualitative	Informal economy & urban sustainability	Informal sector participation, income contribution	Informal economy enhances livelihood and sustainability in small towns	Zimbabwe
50.	Mensah et al. (2022)	Qualitative	Land governance and inclusive city development	Tenure security, overlaps, coordination	Complex land governance undermines inclusion; harmonisation needed	Ghana
51.	Mitlin & Walnycki (2020)	Qualitative	Informality in utility management and access	Utility cost recovery, service coverage	Informal utility practices sustain services but risk inequity	Tanzania, Zimbabwe, Namibia, Malawi
52.	Mutiiria et al. (2020)	Quantitative	Infrastructure and inclusive growth	Infrastructure measures, inclusion indicators	Infrastructure fosters inclusive growth; distribution matters	Sub-Saharan Africa
53.	Namangaya (2014)	Qualitative	Urban planning & local economic development	Planning effectiveness, LED indicators	Weak integration of LED in planning undermines local growth	Tanzania
54.	Ngouhouo & Nchofoung (2022)	Quantitative	Economic resilience	Composite resilience index, economic growth rate	Economic resilience is uneven; dependent on governance and diversification	Sub-Saharan Africa

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
55.	Noah (2021)	Quantitative	Infrastructure development & economic growth	Infrastructure index, GDP growth rate, public investment levels	Infrastructure remains unevenly distributed; transport and energy sectors dominate capital allocation; governance gaps slow implementation	Sub-Saharan Africa
56.	N-yanbini et al. (2025)	Mixed methods	Rent practices and housing access	Prepayment levels, affordability	Advance rent worsens access for poor; policy needed	Ghana
57.	Oliveira & Meyfroidt (2022)	Qualitative	Strategic spatial planning in land-use frontiers	Strategic planning cases, land-use change, governance outcomes	Strategic planning influences outcomes where capacity and alignment exist	Mozambique
58.	Osman et al. (2022)	Quantitative	Efficiency of land consumption and urban concretisation	Land consumption rate, impervious surface growth	Rapid inefficient land use in Accra; reforms needed	Ghana
59.	Oteng-Ababio et al. (2024)	Qualitative	Flood risk reduction & resilience	Land-use planning coherence, flood control projects	Urban planning in Accra lacks coordination, weakening flood resilience	Ghana
60.	Pambila et al. (2025)	Mixed methods	Community participation & planning	Level of community involvement, implementation progress	Limited local engagement reduces sustainability of master plan outcomes	Tanzania

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
61.	Parnell & Walawege (2011)	Qualitative	Urbanization & environmental change	Urban growth rate, CO_2 emissions, land use change	Urbanization accelerates environmental change; cities must integrate adaptation measures	Sub-Saharan Africa
62.	Pieterse (2019)	Qualitative	Urban governance and spatial transformation	Policy design vs delivery, financing, capacity	Political and financial limits restrict spatial transformation	South Africa
63.	Poku-Boansi & Cobbinah (2018)	Qualitative	Policy and planners' perspectives on urban resilience	Planner survey, policy alignment, resilience mapping	Awareness high but practice weak; coherence needed	Ghana
64.	Poku-Boansi (2021)	Qualitative	Multi-stakeholder land use planning	Collaboration level, decision-making inclusiveness	Complex interactions hinder effective stakeholder engagement in land use planning	Ghana
65.	Quamruzzaman (2017)	Quantitative	Infrastructure and health outcomes	Governance quality, healthcare access, infrastructure index	Governance quality significantly influences healthcare utilization; infrastructure gaps contribute to regional health inequalities	Sub-Saharan Africa
66.	Resnick (2014)	Qualitative	Urban governance, service delivery and politics	Service delivery, accountability, decentralisation	Politics and incentives shape outcomes; reforms must align	Senegal, Uganda, South Africa
67.	Resnick (2021)	Qualitative	Politics of urban governance in SSA	Intergovernmental relations, fiscal rules	Political dynamics shape governance outcomes	Sub-Saharan Africa

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
68.	Shields et al. (2021)	Mixed methods	Water governance & community participation	Participation rate, service functionality	Community management alone does not ensure participation; external facilitation needed	Ghana, Kenya, Zambia
69.	Silver (2015)	Qualitative	Urban infrastructure and inequality	Electricity supply reliability, informal settlement density	Interrupted electricity services highlight the politics of urban infrastructure and inequality in Accra	Ghana
70.	Sono et al. (2021)	Quantitative	Climate resilience	Climate risk index, adaptive capacity	Developed resilience metrics to benchmark SSA countries' climate adaptation	Sub-Saharan Africa
71.	Sulemana et al. (2019)	Quantitative	Urbanization & inequality	Gini coefficient, urban population share	Urbanization correlates with higher inequality unless managed inclusively	Sub-Saharan Africa
72.	Tanku (2024)	Qualitative	Spatial planning and industrial coordination	Institutional coordination, land-use outcomes	Misalignment of spatial and industrial planning; integration required	Ethiopia
73.	Todes (2012)	Qualitative	Strategic spatial planning and urban growth management	Institutionalisation, budgets, equity outcomes	Planning institutionalised but limited redistributive results	South Africa
74.	Turok (2016)	Qualitative	Urban land-infrastructure-finance nexus	Infrastructure finance ratio, land value capture	Effective urbanization requires integrated land-finance-infrastructure strategies	Sub-Saharan Africa

No.	Author (s)	Methods	Thematic Dimension	Key Metrics / Indicators	Key Findings	Country / Region of Study
75.	Turok & Scheba (2019)	Qualitative	Right to the city and housing equity	Policy alignment with housing rights	Rights-based approaches needed for inclusivity	South Africa
76.	Watson (2014)	Qualitative	Speculative urban projects and futures	Project types, governance factors	Elite-driven projects marginalise local needs	Angola, Kenya, Tanzania, Ghana, Democratic Republic of Congo
77.	Xiong et al. (2023)	Quantitative	Climate resilience & sustainability	Sustainability index, resilience threshold	Variations in climate resilience are explained by institutional and economic capacity	Sub-Saharan Africa
78.	Zreik et al. (2024)	Mixed methods	Infrastructure, inequality, employment	Infrastructure investment, employment levels, Gini coefficient	Infrastructure development can reduce inequality when coupled with equitable labor policies	Kenya, Ghana, Tanzania

Source: Authors' construct, 2025

Table 2A: Quality Appraisal of Included Studies Using MMAT Version 2018

No.	Author(s)	Method	Q1/D1/M1	Q2/D2/M2	Q3/D3/M3	Q4/D4/M4	Q5/D5/M5	Overall
1	Abdul-Hamid et al. (2023)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
2	Abubakari et al. (2023)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
3	Adelekan (2020)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
4	Adhikari et al. (2022)	Mixed methods	Yes	Yes	Yes	Yes	Can't tell	Moderate
5	Afful et al. (2025)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
6	Afionis et al. (2020)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
7	Agyemang et al. (2019)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
8	Ahmed et al. (2022)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
9	Aklilu et al. (2014)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
10	Akpan & Effiong (2012)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
11	Alence (2004)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
12	Appiah et al. (2022)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
13	Arku (2009)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
14	Asongu & Odhiambo (2021)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
15	Aule et al. (2019)	Qualitative	Yes	Yes	Yes	Can't tell	Yes	Moderate
16	Awortwi & Helmsing (2007)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
17	Awuah (2018)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
18	Awuah & Hammond (2014)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
19	Awuah et al. (2014)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
20	Aytenew et al. (2025)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
21	Azolibe & Okonkwo (2020)	Qualitative	Yes	Yes	Yes	Yes	Can't tell	Moderate
22	Azu (2018)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
23	Bambi et al. (2024)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
24	Bettencourt & Marchio (2025)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
25	Boamah & Amoako (2020)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
26	Cardenas-Ritzert et al. (2024)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
27	Chakamera & Alagidede (2018)	Quantitative	Yes	Yes	Yes	Yes	Yes	High

28	Cobbinah (2021)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
29	Cobbinah & Darkwah (2017)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
30	Cobbinah & Poku-Boansi (2018)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
31	Cobbinah et al. (2020)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
32	Croese et al. (2016)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
33	Croese et al. (2023)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
34	de Wee & Jakoet-Salie (2025)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
35	Dodman et al. (2017)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
36	Fuseini & Kemp (2015)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
37	Gandy (2006)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
38	Goodfellow (2017)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
39	Jiboye (2011)	Qualitative	Yes	Yes	Yes	Can't tell	Yes	Moderate
40	Jinollo et al. (2025)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
41	Kalonga et al. (2025)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
42	Kombe (2005)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
43	Korah et al. (2023)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
44	Koroso et al. (2021)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
45	Koroso & Zevenbergen (2024)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
46	Kotschy et al. (2025)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
47	Leck & Roberts (2015)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
48	Lubida et al. (2019)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
49	Magidi (2022)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
50	Mensah et al. (2022)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
51	Mitlin & Walnycki (2020)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
52	Mutiiria et al. (2020)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
53	Namangaya (2014)	Qualitative	Yes	Yes	Yes	Yes	Yes	High

54	Ngouhouo & Nchofoung (2022)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
55	Noah (2021)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
56	N-yanbini et al. (2025)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
57	Oliveira & Meyfroidt (2022)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
58	Osman et al. (2022)	Quantitative	Yes	Yes	Can't tell	Yes	Yes	Moderate
59	Oteng-Ababio et al. (2024)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
60	Pambila et al. (2025)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
61	Parnell & Walawege (2011)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
62	Pieterse (2019)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
63	Poku-Boansi & Cobbinah (2018)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
64	Poku-Boansi (2021)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
65	Quamruzzaman (2017)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
66	Resnick (2014)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
67	Resnick (2021)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
68	Shields et al. (2021)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High
69	Silver (2015)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
70	Sono et al. (2021)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
71	Sulemana et al. (2019)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
72	Tanku (2024)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
73	Todes (2012)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
74	Turok (2016)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
75	Turok & Scheba (2019)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
76	Watson (2014)	Qualitative	Yes	Yes	Yes	Yes	Yes	High
77	Xiong et al. (2023)	Quantitative	Yes	Yes	Yes	Yes	Yes	High
78	Zreik et al. (2024)	Mixed methods	Yes	Yes	Yes	Yes	Yes	High

Source: Authors construct, 2025

APPRAISAL CRITERIA

Screening questions (applied to all studies):

* S1: Is there clear research question? (All studies: Yes)

* S2: Is the collected data appropriate to answer the research question? (All studies: Yes)

Qualitative criteria (Q1-Q5):

* Q1: Is the qualitative approach appropriate to answer the research question?

* Q2: Are the qualitative data collection methods adequate to address the research question?

* Q3: Are the findings adequately derived from data?

* Q4: Is the interpretation of results sufficiently substantiated by data?

* Q5: Is there coherence between qualitative data sources, collection, analysis, and interpretation?

Quantitative descriptive criteria (D1-D5):

* D1: Is the sampling strategy appropriate to answer the research question?

* D2: Are the measurements appropriate?

* D3: Are the risk factors and confounders appropriately accounted for?

* D4: Are the results adequately presented?

* D5: Is the statistical analysis appropriate to answer the research question?

Mixed methods criteria (M1-M5):

* M1: Is there an adequate rationale for using a mixed methods design?

* M2: Are the different components effectively integrated to answer the research question?

* M3: Are interpretations of results well supported by quantitative and qualitative data?

* M4: Are divergences and inconsistencies adequately addressed?

* M5: Do the different components adhere to the quality criteria of each tradition?

Rating: Yes / No / Can't tell