Preview - Critical Analysis of Smart City Development in Africa: Opportunities, Challenges, and the Question of Real Value

This document was prepared in advance of the case studies to provide a backdrop to the a priori assumptions adopted by this study.

Executive Overview

The deployment of smart city technologies across Africa represents one of the most contested frontiers of contemporary urban development. Drawing on over 100 scholarly sources, policy reports, and empirical case studies, this analysis reveals a landscape characterized by profound contradictions. While smart city initiatives promise economic transformation, improved governance, and sustainable development aligned with the UN's Sustainable Development Goals, they simultaneously risk deepening existing inequalities, enabling digital authoritarianism, perpetuating technological colonialism, and creating "urban fantasies" disconnected from the lived realities of most African urban residents. The fundamental question—whether smart cities represent genuine development or represent what Watson terms "dreams or nightmares"—remains unresolved and demands critical scrutiny of funding structures, ownership patterns, surveillance dimensions, and actual outcomes versus promotional rhetoric.[1]

The Promise: Opportunities and Potential Benefits

Economic Transformation and Job Creation

African smart cities present compelling economic opportunities in a continent experiencing unprecedented urbanization. With Africa's urban population projected to exceed 55% by 2050 and over 2.5 billion people living in cities, smart city technologies offer pathways to address infrastructure deficits while creating economic value. The economic case appears substantial: artificial intelligence alone is projected to contribute $2.9 trillion to Africa's economy, potentially boosting GDP by 3% annually and creating 500,000 jobs each year by 2030.[2][3][1]

Specific projects demonstrate this job creation potential. South Africa's Shongweni smart city project expects to generate over 23,000 jobs while attracting approximately $822 million in private investment. Nigeria's Eko Atlantic City anticipates creating 250,000 new jobs, while South Africa's Waterfall City projects 86,000 jobs by completion. In African C40 cities, 7.5% of jobs (approximately 1.4 million) are directly classified as "green jobs," with another 4.4% (830,000) indirectly tied to green initiatives, and C40 mayors have pledged to create 50 million green jobs by 2030.[2]

Beyond direct employment, smart cities facilitate digital economy growth. Kenya's Konza Technopolis—dubbed "Silicon Savannah"—aims to contribute at least 2% of national GDP while creating innovation ecosystems, research laboratories, and incubation centers. The digital economy is projected to contribute 5.2% to Africa's GDP by 2025, offering pathways for economic diversification away from

natural resource dependency. Smart city infrastructure enables businesses to access global markets, facilitates e-commerce and digital payments, and encourages innovative entrepreneurship while developing digital skills among the workforce.[3][4] [5] [1]

Infrastructure Development and Service Delivery Enhancement

Africa faces an infrastructure investment gap exceeding $93 billion annually according to World Bank estimates—representing 14% of continental GDP. Smart city initiatives promise to address these deficits through technology-enabled solutions. The opportunities span multiple sectors: intelligent traffic management systems, smart water meters and leak detection, IoT-enabled waste management, renewable energy smart grids, e-governance platforms, digital health systems, and smart education initiatives. [6] [1] [3] [2]

Evidence from leading African cities demonstrates tangible improvements. Johannesburg, ranked first in the 2024 Africa Smart City Index, has implemented comprehensive smart governance strategies including public Wi-Fi in public spaces, waste-to-energy programs generating 88MW, traffic management systems, 5G deployment, and AI-driven crime prevention. Cape Town's Digital City Strategy features open data portals, smart water meters, IoT waste management, and AI-based urban surveillance. Kigali's Irembo e-government platform provides 103 online services, with 95% of public services now digital, while LoRaWAN IoT networks enable smart streetlights, environmental monitoring, power grid monitoring, and water leak detection.[7] [8] [5]

Significantly, Africa's limited legacy infrastructure creates opportunities to "leapfrog" outdated approaches and implement innovative technologies directly. This flexibility allows African cities to adopt cutting-edge solutions without being constrained by entrenched systems that plague cities in developed nations.[5]

Alignment with Sustainable Development Goals

Smart cities offer pathways toward achieving multiple SDGs simultaneously. SDG 11 (Sustainable Cities and Communities) directly targets making cities inclusive, safe, resilient, and sustainable. Smart technologies can enhance urban resilience against climate change impacts—particularly critical as African cities face floods, heatwaves, droughts, and waste management crises.

Kigali's solar-powered streetlights, AI-optimized traffic systems, and IoT-enabled waste systems have reportedly reduced emissions by 28%.[9] [8] [3]

Smart transportation solutions can reduce congestion and pollution while improving mobility for urban poor populations. Bus Rapid Transit (BRT) systems integrated with digital payment platforms—implemented in Lagos, Dar es Salaam, and Dakar—demonstrate potential for large- scale benefits affecting millions with disproportionate advantages for low-income groups. Smart water and waste management systems address critical SDG 6 (Clean Water and Sanitation) and SDG 12 (Responsible Consumption) targets.[10]

Climate-smart urban planning integrating renewable energy, smart grids, and environmental monitoring enables African cities to position themselves at the forefront of sustainable development. Rwanda's Green City master plan with $5 billion investment and Kigali Innovation City's low-carbon design

exemplify how smart cities can embed climate resilience into urban fabric.[11] [8]

Innovation Ecosystems and Knowledge Transfer

Smart city projects create conducive environments for digital economy growth and technology startups through innovation hubs, incubators, and co-working spaces. These platforms facilitate collaboration, knowledge sharing, and skills development while driving economic diversification. Kigali Innovation City spans 70 hectares with over 50 tech firms already operational, while partnerships with Carnegie Mellon University Africa provide access to cutting-edge research.[8][12] [1]

International partnerships offer knowledge transfer opportunities. Huawei's training centers— including the Cairo Smart Village with $20 million initial investment and partnerships with African universities—provide local training in ICT technologies. The Kenya-Korea collaboration establishing the Kenya Advanced Institute of Science and Technology (KAIST) at Konza Technopolis exemplifies effective knowledge transfer models. These initiatives theoretically build local capacity, develop technical skills, and create opportunities for context-specific solutions addressing African challenges.[13] [14] [1]

The Peril: Challenges, Dangers, and Critical Concerns

Digital Authoritarianism and State Surveillance

The most alarming dimension of African smart city development concerns the deployment of surveillance technologies enabling digital authoritarianism. Muller's 2023 analysis provides essential evidence that smart cities risk fostering and consolidating digital authoritarianism across Africa, particularly in contexts where democratic institutions are eroding. The fundamental architecture of smart cities—featuring extensive CCTV networks, facial recognition systems, biometric databases, and digital identity systems—creates infrastructure readily exploitable by illiberal regimes for population monitoring and political control.[15] [16] [1]

Empirical evidence documents systematic surveillance abuses. The 2025 Unwanted Witness report exposes how "smart city" projects across Uganda, Ethiopia, Kenya, Rwanda, and Zimbabwe serve as hubs for digital surveillance targeting citizens, journalists, and political opponents. Uganda's Huawei Safe City Project in Kampala—a $126 million initiative installing 1,800 CCTV cameras with facial recognition capabilities linked to national police command centers—exemplifies this pattern. In a notable 2018 case, Huawei-assisted hacking allegedly enabled state access to WhatsApp and Skype accounts of opposition leader Robert Kyagulanyi (Bobi Wine), leading to mass arrests before and after the 2021 general elections.[15]

Kenya's Safe City project, also partnered with Huawei, deployed 2,000 CCTV cameras linking 1,800 HD cameras and 200 traffic surveillance infrastructures. Despite promises of crime reduction, reported crimes actually increased after implementation, raising questions about actual security benefits versus surveillance capabilities. In Rwanda, the government has used smart city initiatives to cover 55% of Kigali with CCTV networks, with reports alleging use of Pegasus spyware to target over 3,500 phone numbers including dissidents and journalists in exile.[1] [15]

Zimbabwe's $60 billion Zim Cyber City project with Chinese firms Hikvision and CloudWalk Technology raises particular concerns about "data colonialism." The CloudWalk Technology deal sends biometric data to China for facial recognition algorithm development, creating scenarios where sensitive identity data of African citizens is processed and stored in foreign jurisdictions. Ethiopia's reliance on Chinese tech companies ZTE and Huawei for surveillance, combined with use of commercial spyware like FinFisher and Hacking Team to target activists and diaspora communities, demonstrates the regional scope of this challenge.[16] [1] [15]

The Atlantic Council's 2025 investigation reveals that 49 African countries now operate biometric systems, with foreign vendors—Idemia (France), Semlex (Belgium), Veridos (Germany), Thales (France), Huawei (China)-dominating the market and controlling the continent's most sensitive identity infrastructure. Weak governance frameworks mean these technologies often exclude populations they're intended to serve while creating data breach risks, corruption in enrollment, and facilitating use of facial recognition to monitor political dissent. Only 38% of surveyed citizens are aware of governments' biometric/facial recognition/AI system purchases, highlighting dangerous transparency gaps.[1]

Digital Colonialism and Technological Dependency

Smart city development in Africa occurs within profound power asymmetries that scholars increasingly frame as "digital colonialism"—the twenty-first century "Scramble for Africa" through extraction and control of user data by large-scale tech companies. Coleman's seminal 2019 analysis establishes this framework, documenting how Western and Chinese tech companies use altruism guises to access untapped African data while scant data protection laws and foreign ownership of infrastructure enable data exploitation as raw material for profit and predictive analytics.[1]

The dominance of foreign technology vendors creates structural dependencies. Huawei operates in approximately 22 African states for surveillance technology according to Atlantic Council research. The company's localization strategy in North Africa—including Africa's first Huawei factory in Algeria (opened 2019) producing 30,000 mobile devices monthly, and Cairo's OpenLab for R&D activities—embeds the firm deeply into African ICT ecosystems. Yet this localization was not accompanied by meaningful technological upgrading or genuine knowledge transfer, primarily serving Huawei's market dominance objectives.[13]

Chinese financing mechanisms deepen dependencies. The China Development Bank provided Huawei with loans of $10 billion in 2004 and $20 billion in 2009, enabling vendor financing that allowed Huawei to offer more favorable terms than Western competitors. Between 2000 and 2019, Chinese financiers backed over 70 loan-backed projects in Africa involving Huawei contracts. This financial architecture creates debt relationships binding African governments to Chinese technology providers, limiting future flexibility and sovereignty.[13]

The implications extend beyond Chinese actors. De Freitas's 2025 analysis notes China's role as primary builder of African digital infrastructure through companies like Huawei and ZTE, with Chinese financing underpinning critical data centers and e-government systems, providing alternatives to Western dominance while raising sovereignty concerns. Meanwhile, Kwet's research examines how US-based tech giants (Facebook, Google, Amazon) engage in digital colonialism through monopolistic control of critical infrastructure, data extraction, and imposition of privatized governance forms. The net effect is

African smart cities becoming battlegrounds for competing digital empires, with African data sovereignty and technological autonomy compromised regardless of vendor nationality.[1]

Urban Inequality, Exclusion, and the Digital Divide

Smart city initiatives risk deepening Africa's already severe urban inequalities rather than ameliorating them. African Development Bank data shows African cities have among the highest levels of social inequalities globally. When smart city concepts are layered over existing landscapes of spatial injustices and social exclusion, they threaten to accentuate institutionalized inequities, potentially excluding significant populations from experiencing any benefits.[17]

The digital divide creates fundamental barriers. Only 28% of sub-Saharan Africa residents have internet access, dropping below 10% in informal settlements. Over a quarter (27%) of older people in African urban areas lack internet access due to lower digital skills or financial difficulties. The cost of 1GB of data in many African cities averages 7.12% of monthly income—far exceeding the Broadband Commission's affordability target—making digital participation economically prohibitive for the urban poor.[17]

Marais's 2025 analysis warns that without inclusive design principles, smart cities risk becoming "surveillance cities for the poor and service cities for the wealthy". The urban poor with insufficient knowledge, capabilities, and skills for digital interfaces risk exclusion from automated public services, creating new classes of "unfit-for-smart-city urban dwellers" in growing African slums. Spatial and socio-economic exclusion reinforced by poor Human Development Index ratings render millions invisible in urban development maps.[18] [1]

The marginalization of informal economies represents a critical failure. Informal economic activities represent the majority of African urban economic activity—accounting for 80.8% of jobs in urban Africa—yet smart city literature and implementations largely ignore this reality. Peter and Misuraca's 2023 research addresses this gap, proposing place-based approaches and community engagement mechanisms essential for integrating informal economies into smart city agendas. However, most smart city projects prioritize formal sectors, modern infrastructure, and elite residential areas in the absence of explicit planning for urban poor, low-income residents, marginalized neighborhoods, and informal settlements.[19] [20] [1]

Real-world examples illustrate exclusionary dynamics. In Kibera (Nairobi's largest informal settlement), residents spend three hours daily navigating congested, unmapped routes outside digital platforms—entirely excluded from smart mobility solutions. Nigeria's Port Harcourt authorities deployed joint police-military forces in 2022 to dismantle informal settlements housing approximately 15,000 families to clear space for large-scale development projects.

Similar displacement actions targeting street vendors and slum residents occur regularly in Ghana and across the continent as governments pursue "modernization" agendas.[21] [17]

Tonnarelli and Bole's 2024 analysis provides crucial insight: existing smart urbanism theories developed in the Global North fundamentally fail to apply to African contexts, necessitating reconceptualization of smart city frameworks. Watson's foundational 2014 critique introduced the concept of "conflicting rationalities" between planners and urban residents, essential for understanding why smart city visions disconnected from rapid urbanization, informality, and poverty affecting most African urban populations

consistently fail to address actual urban challenges.[1]

Data Governance Deficits and Privacy Violations

African smart cities operate within fragmented and inadequate data protection frameworks. While 46 of 54 African countries now have data protection laws, implementation remains weak and inconsistent. The African Union's Malabo Convention on Cyber Security and Personal Data Protection—intended to harmonize data protection across member states—has been ratified by only 15 countries and signed by 12 out of 55 nations, revealing gaps in comprehensive adoption. Critically, the Convention lacks legally binding enforcement measures, clear accountability mechanisms, and provisions on data subject rights regarding data portability and restricting further processing.[22]

National frameworks vary dramatically in scope and effectiveness. South Africa's Protection of Personal Information Act (POPIA), Kenya's Data Protection Act (2019), Nigeria's Data Protection Act (2023), and Egypt's Personal Data Protection Law (2020) represent relatively robust frameworks inspired by GDPR principles. However, many contain explicit national security exemptions rendering protections ineffective in surveillance state contexts. Yusuf's 2024 analysis documents how African actors face constraints from competing Chinese, American, and European data governance models, limiting ability to develop indigenous frameworks while African data is exploited by foreign corporations in patterns echoing colonial resource exploitation.[23] [22] [1]

The Centre for Intellectual Property and Information Technology Law (CIPIT) documents that African governments exercise wide access over data subjects' information with inadequate legal safeguards. National security and legal loopholes are routinely exploited to abuse and violate data rights through measures unlawful, arbitrary, and disproportionate under human rights law.

Smart city surveillance infrastructure—operating through partnerships between foreign tech vendors and state security agencies—creates data collection ecosystems where citizens have little agency to challenge or resist state surveillance due to low digital literacy, poverty, and limitations in access to justice.[23]

The fragmented landscape hinders cross-border data flows and international trade while leaving millions without adequate privacy protections. Businesses operating across multiple African jurisdictions face inconsistent regulatory requirements, leading to higher compliance costs and operational inefficiencies. Yet unified frameworks remain elusive due to divergent national interests, capacity constraints, and competing geopolitical pressures.[22]

Infrastructure Deficits and Implementation Failures

Despite promotional rhetoric, many African smart city projects face fundamental implementation challenges. Governance fragmentation undermines coordination, with city departments operating in silos, misalignment between national and local strategies, and weak interdepartmental coordination. Africa lags dramatically in establishing dedicated smart city governance units—only 36% of African municipalities have specialized agencies or task forces with decision-making authority, compared to 92% in North America and 88% in Europe.[24]

Citizen engagement remains critically low. Just 15% of African cities report active or very active public

participation in smart city planning—the lowest globally—reinforcing concerns that cities are designed "for" rather than "with" residents. Private sector funding is constrained at only 9% of African smart city projects compared to 18-21% in North America and Europe, limiting innovation scalability and financial sustainability.[24]

Several high-profile projects illustrate implementation failures. Kenya's Konza Technopolis, announced in 2008 with planned completion in 2019, has experienced consistent delays and now targets 2030. Critics note inadequately qualified managers running innovation hubs leading to substandard startup support, and lack of infrastructure for innovators. The Kenyan government allocated $73.8 million in the 2022 financial year, but progress remains limited relative to ambitions.[25] [1]

Senegal's Akon City represents spectacular failure. Announced in 2018 with $6 billion estimated cost and promises of financing through "Akon Coin" cryptocurrency, the project attracted celebrity attention and government support. By 2020, a ceremonial cornerstone was laid, but the project stalled completely. Media dubbed it "Con City" as the Akon Coin concept was criticized as a pyramid scheme, promised land was allocated to hotel consortiums instead, and partnerships with European firms contradicted commitments to use African talent. The cornerstone still sits isolated in an undeveloped field, a monument to unfulfilled promises.[25]

Ethiopia's Bahir Dar smart city advertised as "a real Wakanda" similarly failed to materialize. Morocco's China Road and Bridge Corporation smart city project was significantly downsized after disputes over ownership. The pattern repeats: ambitious announcements, impressive architectural renderings, media attention, government endorsements, then stalled implementation, cost overruns, and abandoned sites.[25] [13]

Questionable Value Propositions and Misplaced Priorities

Fundamental questions persist regarding whether smart city investments represent appropriate priorities given Africa's development challenges. The African Development Bank estimates Africa needs $170 billion annually in infrastructure investment, yet limited resources are directed toward technologically sophisticated systems rather than basic infrastructure provision—clean water, sanitation, electricity, roads, housing—desperately needed by most urban residents.[26][18] [11]

Radoine's concept of "gadget cities" captures this critique: fixation on shiny technologies like self-driving cars and automated grids while neglecting fundamental challenges of inadequate infrastructure, limited access to clean water and sanitation, and sprawling informal settlements. The technology-driven approach ignores importance of "institutional capacity"—robust governance structures, skilled workforce, and regulations essential for implementing and maintaining complex technological solutions. In 2015, 41% of sub-Saharan Africans lived below the international poverty line of $1.90 per day, making high-tech solutions inaccessible or irrelevant to significant populations.[26]

Cost-benefit analyses raise concerns. Uganda's Safe City Project cost $126 million yet crime rates did not decline as promised. Kenya's Safe City investment led to increased reported crimes despite deployment of extensive surveillance infrastructure. The maintenance costs of smart city technologies strain already weak municipal budgets dependent on limited tax revenue bases.

Proprietary technology and vendor lock-in create long-term financial obligations and restrict flexibility to

adapt to evolving needs.[18] [15] [24] [1]

Alternative investments might yield greater developmental impact. The unglamorous hard work of improving existing infrastructure, extending basic services to informal settlements, upgrading public transportation, providing affordable housing, and strengthening municipal governance capacity may deliver more tangible benefits to larger populations than showcase smart city projects serving elite interests. The African Planning Society emphasizes actual incremental progress making cities liveable—urban rail systems in Morocco and Senegal, water treatment innovations, green solutions like tree planting and park construction in Rwanda—as more important than futuristic visions.[25]

Ownership, Funding, and Control: Who Benefits?

Funding Structures and Financial Flows

Smart city financing in Africa operates through complex mechanisms involving multiple actors with varying interests. Public funding from government budgets, grants, and development funds remains dominant, yet public resources are severely constrained. Development Finance Institutions play significant roles: the Development Bank of Southern Africa partners with World Bank and South African metropolitan cities; the African Development Bank's Global Smart City Partnership Program supports 22 projects with Africa holding 32% share; and multilateral agencies provide funding and technical support for master plans and feasibility studies.[6] [1]

Private investment remains limited despite rhetoric emphasizing Public-Private Partnerships. African smart city projects attract only 9% private sector funding compared to higher rates in developed regions. When private capital does flow, it often comes with conditions favoring investor interests. The $6 billion Eko Atlantic City represents private-public partnership between Lagos State Government and private investors, with China Communications Construction Group as contractor. Yet questions persist regarding who will access housing and commercial space in this exclusive development built on reclaimed land.[24] [1]

Chinese financing deserves particular scrutiny. Between 2000 and 2019, Chinese financiers provided over 70 loan-backed projects involving Huawei contracts in Africa. Algeria granted an estimated $70 billion in contracts to Chinese firms between 2009 and 2019. Vendor financing through China Development Bank allows Chinese companies to offer favorable terms, creating debt relationships and technological dependencies. While these investments provide immediate connectivity gains, they raise sovereignty concerns and risk replicating colonial patterns of economic dependency.[13] [1]

International development assistance from agencies like USAID (through the $350 million+ Digital Transformation with Africa initiative), EU partnerships, and bilateral cooperation represents another funding stream. However, this assistance often comes with conditionalities, prescribed technological solutions, and limited input from African communities on priorities and implementation approaches.[1]

Ownership and Control Dynamics

Foreign vendors dominate ownership of critical smart city infrastructure. Huawei's $430 million five-year investment initiative for 28 African countries north of the equator—including $200 million for the

region's first public cloud center and $200 million to support local software and channel partners—exemplifies the scale of foreign control. Biometric identity systems across 49 African countries are controlled by foreign vendors: Idemia (France), Semlex (Belgium), Veridos (Germany), Thales (France), and Huawei (China).[1]

This foreign ownership creates dependencies extending beyond initial contracts. Proprietary technologies and single-vendor ecosystems limit flexibility, raise long-term costs, and restrict ability to adapt to evolving needs. Data sovereignty is fundamentally compromised when critical infrastructure—data centers, cloud services, telecommunications networks—is owned and operated by foreign entities with obligations to home governments rather than African citizens.[14] [24] [1]

Questions of "who owns the data" remain largely unresolved. When CloudWalk Technology sends Zimbabwean biometric data to China for algorithm development, who owns that data and how can citizens exercise rights over their personal information? When smart city systems generate vast datasets about urban residents' movements, behaviors, and interactions, who controls access to this information and for what purposes can it be used? African governments lack technical capacity to independently audit foreign-owned systems, creating "black boxes" where surveillance and data processing occur without transparency or accountability.[27] [16] [23]

The economic benefits similarly flow disproportionately to foreign entities. While smart city projects create some local jobs, high-value activities—system design, software development, data analytics, strategic decision-making—remain concentrated in foreign corporations' home countries. Huawei's African factory in Algeria assembles products but does not transfer core technological capabilities or enable independent innovation. Knowledge transfer programs train African workers to operate foreign technologies but do not build capacity to develop indigenous technological alternatives.[13]

Toward Alternative Visions: Community-Led and Context-Appropriate Approaches

Critical scholars and practitioners increasingly advocate for alternative approaches prioritizing African agency, community participation, and contextual appropriateness over imported technological models. The concept of "African smartness" leverages the continent's rich cultural capital and traditional knowledge through digital lenses rather than imposing Northern frameworks.[26]

Ubuntu philosophy—emphasizing collectivism and interdependence—could inform smart city approaches emphasizing community-mediated decision-making regarding health and technology use, contrasting with current individualistic Western models. Nhimbe (community- based cooperative work) principles offer frameworks for participatory governance of digital infrastructure. These indigenous philosophical traditions provide bases for developing smart city models aligned with African values and social structures.[28] [14]

Community-led governance initiatives demonstrate alternatives to top-down corporate deployments. Platform cooperatives, digital commons movements, and decentralized technology initiatives seek to forge autonomous spaces and self-governance structures counteracting digital empire dominance. In

Accra, associations of street vendors and market traders mobilized collectively to demand improved occupational health and safety from municipalities, resulting in installation of fire extinguishers, regular garbage collection, registration of 2,000 market porters in National Health Insurance, and banning of unfair tolls— demonstrating power of organized informal workers to shape urban development.[29] [30]

Technical alternatives include development of modular, open-source systems enabling communities to modify and adapt technologies to their needs rather than being locked into proprietary platforms. Federation and decentralization distributing power across networks rather than consolidating control in single authorities offers pathways toward digital sovereignty. The Kenya-Korea KAIST collaboration and African Algorithmic Audit Toolkit co-developed by Kenyan researchers exemplify effective knowledge transfer models creating opportunities for context- specific solutions.[30] [14]

Governance innovation requires shifting from "tech-led" to "needs-led" approaches embedding inclusive planning frameworks, participatory decision-making, and multi-level monitoring. Data collectives and cooperatives where individuals pool and manage data collectively could maintain agency while providing representative datasets to organizations. Regulatory innovation centered on African values and ethics rooted in collaborative community approaches represents opportunity to rapidly shift power dynamics.[14] [24]

Conclusion: An Unresolved Tension

African smart city development exists in profound tension between transformative promise and dystopian potential. The opportunities are genuine: economic growth, job creation, improved infrastructure, enhanced service delivery, sustainable development pathways, and innovation ecosystems. The perils are equally real: surveillance authoritarianism, digital colonialism, deepened inequalities, exclusion of informal economies, data exploitation, technological dependencies, and implementation failures.

The fundamental question—are smart cities generating real value for African populations or primarily serving elite interests, foreign corporations, and authoritarian governments?—demands honest assessment. Current evidence suggests benefits concentrate among already-privileged populations in formal economies while costs and risks disproportionately burden the urban poor, informal workers, political dissidents, and marginalized communities.[17] [18] [1]

Success requires radical reorientation. Smart city initiatives must be rooted in contextual realities, properly calibrated to address actual urban challenges, designed through participatory processes centering community voices, governed through transparent and accountable frameworks, built on open and interoperable technologies, and explicitly structured to advance social equity rather than market interests. The technologies themselves are neither inherently beneficial nor harmful—outcomes depend entirely on who controls them, for what purposes they are deployed, and whose interests they serve.[17] [26] [1]

As Africa's urban population accelerates toward 2.5 billion by 2050, cities will determine the continent's developmental trajectory. Whether smart city technologies contribute to inclusive prosperity or entrench exclusionary systems of surveillance and control remains an open question whose answer will

be written through struggles over ownership, governance, and power in African urban spaces. The stakes could not be higher, and the time for critical examination and democratic contestation of smart city agendas is now, before technological and institutional lock-in forecloses alternative pathways. Only through such critical engagement can African cities move beyond imported "urban fantasies" toward contextually appropriate, socially just, and genuinely transformative urban futures.[1]

References

1. African-Smart-Cities-Biblio.md
2. https://www.techinafrica.com/smart-cities-in-africa-economic-benefits-explained/
3. https://www.tandfonline.com/doi/full/10.1080/21665095.2021.1894963
4. https://smart-cities.africa/wp-content/uploads/2025/05/ASCIS-Index-Report-2023-min.pdf
5. https://smart-cities.africa/wp-content/uploads/2025/05/African-Smart-City-Index-2024-min.pdf
6. https://afdb-org.jp/wp-content/uploads/2018/08/JABF2014_Gateway_-Innovations_Mr.-Owusu.pdf
7. african_smart_cities.csv
8. https://www.africanleadershipmagazine.co.uk/world-cities-day -2025-inside-africas-urban-revolution- mapping-the-smart-city -agenda/
9. https://sdgacademy.org/wp-content/uploads/2024/11/12-Monkam_Evaluating-the-Realities-of-SDG-11-i n-Africa_NM-FINAL.pdf
10. https://assets.bii.co.uk/wp-content/uploads/2021/06/29140858/Whats-the-impact-ofinvesting-in-urban -infrastructure-in-Africa.pdf
11. https://ethicalbusiness.africa/2025/11/13/sustainable-infrastructure-financing-africas-green-cities/
12. https://furtherafrica.com/2024/04/19/smart-cities-in-africa-building-the-urban-future/
13. https://carnegieendowment.org/research/2022/04/how-huaweis-localization-in-north-africa-delivered- mixed-returns?lang=en
14. https://techpolicy.press/how-digital-colonialism-threatens-kenyas-silicon-savannah
15. https://observer.ug/technology/new-report-exposes-african-smart-cities-as-hubs-for-digital-surveillan ce/
16. https://www.csis.org/analysis/chinas-smart-cities-africa-should-united-states-be-concerned
17. https://www.citymonitor.ai/analysis/african-smart-city -inclusive/

18. https://www.urbanet.info/smart-city-is-africa-ready-echoes-from-african-urban-slums/

19. https://researchictafrica.net/2020/10/14/africa-needs-sustainable-digitalisation-for-post-covid-19-futur e-resilience/

20. https://blogs.worldbank.org/en/africacan/supporting-africas-urban-informal-sector-coordinated-polici es-social-protection-core

21. https://theconversation.com/yes-africas-informal-sector-has-problems-but-the-answer-isnt-to-m argin alise-it-188234

22. https://iapp.org/news/a/evaluating-data-privacy -across-africa-toward-a-unified-gdpr-inspired-frame work

23. https://cipesa.org/2025/03/the-surveillance-footprint-in-africa-threatens-privacy -and-data-protection/

24. https://www.winssolutions.org/why -most-smart-cities-fail-2025/

25. https://www.inonafrica.com/2024/02/14/africas-proposed-smart-cities-fail-to-show-their-promise/

26. https://www.moroccoworldnews.com/2024/07/17115/rethinking-smart-cities-can-africa-lead-the-way/

27. https://autonomy.work/wp-content/uploads/2020/09/Avila.pdf

28. https://gh.bmj.com/content/9/2/e014131

29. https://oecd-development-matters.org/2017/04/04/the-informal-economy -in-african-cities-key -to-incl usive-and-sustainable-urban-development/

30. https://lab.cccb.org/en/countering-digital-colonialism/

31. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/fd32493b-ab34-40ca-a48c-105112f5fdde/Continental-AI-Strateg y.pdf

32. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/99f79677-367b-496e-8bc0-555eab11d020/AU-Data-Policy -Framework.pdf

33. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/e2baa7ab-ac1f-4f79-9e93-61b2a0cc9e8a/AU-Digital-Transformation-Strategy.pdf

34. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/89e535ff-a003-4887-afc6-a5d7a9ac8fa4/AU-Digital-Compact.pdf

35. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-b

e50- 5155b174fd39/2dc4fbe8-0442-41a3-bdf5-77de8dbcd228/biblio-mining-instructions.txt

36. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/60e62fcb-648c-4eff-bfac-29cd8bc7232a/news-mining-instructions.txt

37. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/0bcf7e63-45cb-4269-98c1-c5db7ad3cf31/news-sources.txt

38. https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_e7bbc0ae-b6c6-45e0-be50- 5155b174fd39/6daba197-5ec0-4f9e-abdd-6472d0baa366/smart_city_research_categories.csv

39. https://finance.yahoo.com/news/huawei-helping-build-south-africas-113000990.html

40. https://www.nigeriacommunicationsweek.com.ng/huawei-launches-1-5b-fund-to-help-build-africas-sm art-city -ecosystem/

41. https://www.rinnovabili.net/business/constructions/smart-cities-in-africa-urban-future/

42. https://www.sciencedirect.com/science/article/pii/S0016718523002026

43. https://www.africa-usforum.africa/artificial-intelligence-and-the-future-of-smart-cities-in-africa/

44. https://www.huawei.com/en/media-center/transform/15/03-emily-royall

45. https://www.tandfonline.com/doi/full/10.1080/00343404.2023.2235407

46. https://www.africanleadershipmagazine.co.uk/africas-quiet-rise-of-surveillance-states/?q=artificial-int elligence-to-take-centre-stage-at-the-2025-afreximbank-compliance-forum-in-kigali-rwanda-in-nove mber&pr=356902&lang=ar

47. https://www-file.huawei.com/-/media/corp2020/media-center/pdf/transform/transform-feb-rbg-final- 0312.pdf?la=en

48. https://www.sciencedirect.com/science/article/pii/S2666519025000603

49. https://www.diplomacy.edu/blog/ai-smart-cities-and-the-surveillance-trade-off/

50. https://govinsider.asia/intl-en/article/china-trailblazer-smart-cities-huawei-lei-hui

51. https://www.sciencedirect.com/science/article/pii/S0264275123004717

52. https://smartafrica.org/IMG/pdf/smart_africa_sustainable-cities_a_blueprint_for_africa.pdf.pdf

53. https://www.smartcitiesdive.com/ex/sustainablecitiescollective/how-embracing-opportunities-green-ec onomy-can-bring-sustainable-growth-africa/1055366/

54. https://www.ucl.ac.uk/bartlett/urban-lab/research/research-projects/infrastructure-financing-africa-fiv e-key -themes-sustainable-development

55. https://globalgoals.org/goals/11-sustainable-cities-and-communities/

56. https://documents1.worldbank.org/curated/en/246961468003355256/pdf/521020PUB0EPI1101Official0 Use0Only1.pdf

57. https://www.bearingpoint.com/files/smart-cities-the-key -to-africas-third-revolution.pdf

58. https://www.socialresponsibility.manchester.ac.uk/sustainable-development-goals/goal-11-sustainable- cities-and-communities/goal-11-research/

59. https://www.africa50.com/fileadmin/user_upload/Africa50_Sustainability_Report_24_ENG.pdf

60. https://www.dbsa.org/article/important-technological-development-lessons-africas-smart-cities

61. https://africa-hr.com/blog/data-laws-across-africa/

62. https://auth0.com/blog/kenya-passes-data-protection-law-inspired-by -gdpr/

63. https://www.usitc.gov/publications/332/journals/jice_africa_data_protection_laws.pdf

64. https://ecologyandsociety.org/vol30/iss2/art20/

65. https://www.linkedin.com/pulse/need-gdpr-compliance-africa-navigating-data-omar-mba-omar-aroun a-mba-mvtge

66. https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1294&context=mjrl

67. https://www.africanleadershipmagazine.co.uk/smart-cities-in-africa-whats-the-share-of-urban-popula tions/

68. https://www.accessnow.org/wp-content/uploads/2024/01/Strengthening-data-protection-in-Africa-key - issues-for-implementation-updated.pdf

69. https://academic.oup.com/joc/article/75/5/385/8078024

70. https://www.diplomacy.edu/resource/report-stronger-digital-voices-from-africa/digital-rights-in-africa

-national-overview/

71. https://prism.sustainability -directory.com/scenario/community -led-governance-of-african-digital-spac es/

72. https://futures.issafrica.org/blog/2025/The-Cape-Mirage-Why -Cape-Town-may -become-another-dysf unctional-African-city

73. https://www.sciencedirect.com/science/article/pii/S1757780224003627

74. https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/03/africa-s-urbanisation-dynami cs-2025_005a8aa0/2a47845c-en.pdf

75. https://www.sciencedirect.com/science/article/pii/S0016718521000919

76. https://www.thesun.co.uk/news/32612627/mega-city_-manhattan-of-africa-china/

77. https://www.mei.edu/publications/climate-smart-cities-mena-region-promise-and-pitfalls

78. https://www.africa-usforum.africa/wp-content/uploads/2024/11/Smart-Cities-Bulletin.pdf

79. https://www.oecd.org/content/dam/oecd/en/publications/reports/2017/03/investing-in-growing-african- cities_a8747ee5/26914998-en.pdf

80. https://en.enovation-factory.com/nos-actualites/villes-intelligentes-en-afrique-reve-utopique-ou-realisa ble

81. https://www.uclga.org/wp-content/uploads/2018/02/African20Cities200520Eng.pdf