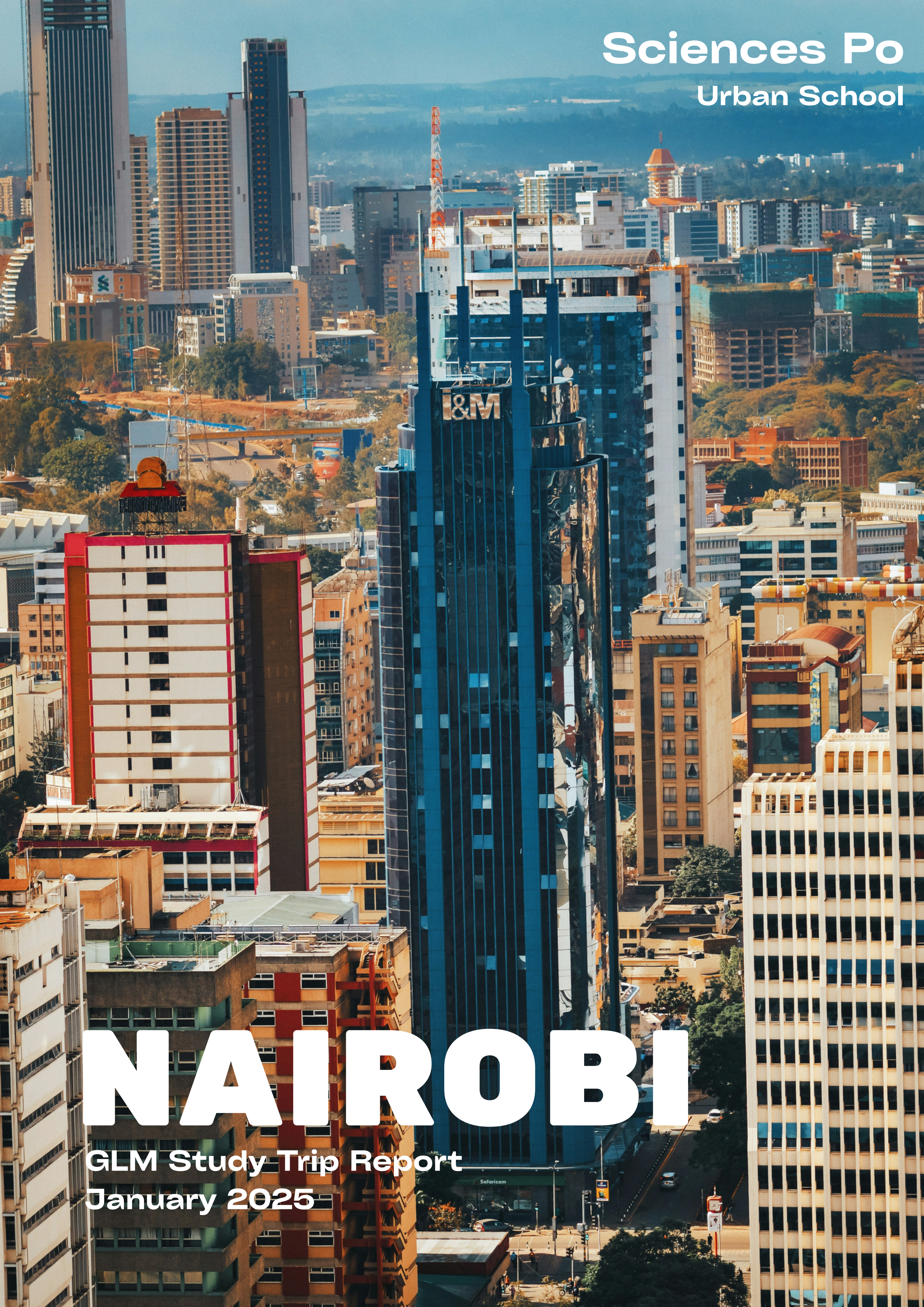

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NAIROBI

GLM Study Trip Report
January 2025

NAIROBI, KENYA

Sciences Po Urban School
Governing the Large Metropolis

1 Place Saint-Thomas d'Aquin,
Paris, France 75007

2025 Study Trip Report

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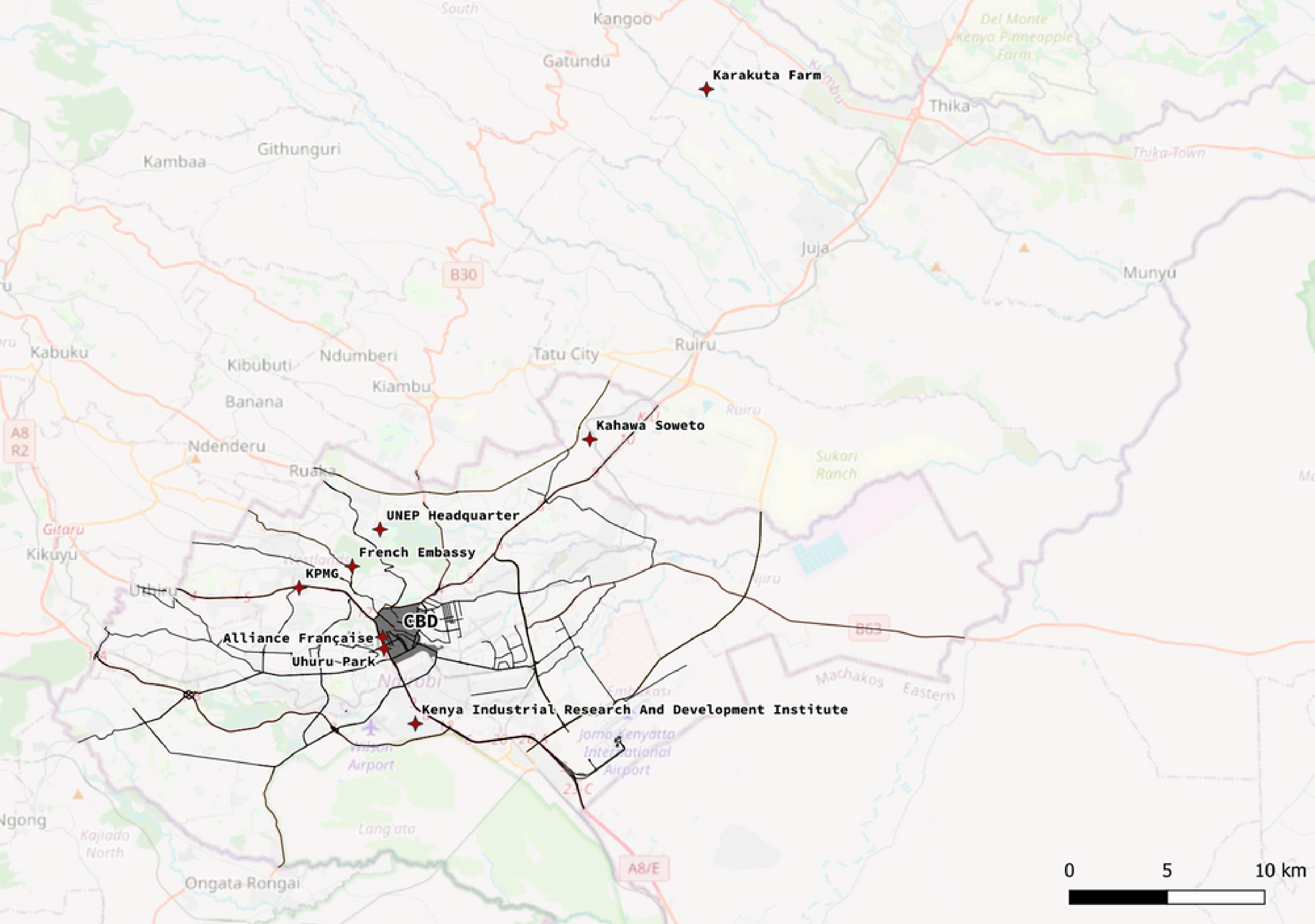

Above: The locations visited by the GLM Cohort. Mapped by Noah Ben Soussen.
Below: The GLM dream team in Uhuru Park.

PREFACE

For GLMers (Governing the Large Metropolis masters students) , 'study trips' create lifelong memories, an unforgettable experience with their cohort, the chance to meet inspiring urban experts, and a glimpse into the inner workings of a city. In 2025, our study trip took us to Nairobi, Kenya where we met urban professionals and experts across sectors - housing, informal settlements, parks and green spaces, transport, international organizations, finance, thought leaders and more.

And what a city! How unique with its colorful matatus emblazoned with cultural icons, its backdrop of giraffes and high-rises (a city with a safari!), East African hub for industry and a key transport node, the legendary Great Rift Valley a short drive away. And yet, how comparable to other cities - a colonial past, a relatively young city urbanizing rapidly, challenges of affordable housing, sites and services of the 1980s, digital boom of the present, large infrastructure projects, plans for bus rapid transit. In Nairobi, many of the concepts we had studied in class came to life - co-design of projects (consultation and active involvement of communities), pilot projects to create replicable models that can be scaled up (experiments, projectification), creation of backbone infrastructure like MPESA that enables digital payments, land registration, and capacity building.

A trip of forty people, students and staff, multiple meetings a day, field trips, buses, taxes, breakfasts, lunches, organizing speakers, conference rooms - it is a formidable task of organization, network-building, and patience. We are especially grateful to Cynthia Isimbi, our Sciences Po representative in Nairobi, for her help in crafting and organizing this stellar lineup of speakers and field visits. A special thanks also to Alliance Française and Director Denis Charles Courdent for providing us a home for our trip, this vibrant, music- and book-filled space where we could

PREFACE

meet experts, have conferences, and experience Nairobi's culture. And our deep appreciation for all the help provided to us by the French Embassy and H.E. Arnaud Suquet, Ambassador of France in Kenya. We are immensely grateful to all the speakers who took out the time to speak with us, shared their expertise, inspired and motivated us and showed us that indeed, urban professionals matter. A full list of speakers is on the next page.

And finally, thanks to our wonderful editorial team for putting together this report, Kashish Gupta, Louisa Hanson, Daria Lysenko and Célie Quenet.

Prof. Sukriti Issar
Academic Director, Governing the Large Metropolis programm

With grateful thanks to the following organizations and individuals who shared their time and insights with us on this memorable study trip to Nairobi (January 2025).

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Martin Aketch and Pranav Singh (Microsave Consulting)
Namata group
Allan Munyua (Meridiam)
Alice Ngatia (Schneider Electric)
Michel Mouamba (Saint-Gobain)
Maureen Oginya (City Taps)
Gwenole Créac'h (Veolia/Seureca)

OVERVIEW

This report offers a multifaceted exploration of Nairobi as a rapidly growing East African capital, situated at the intersection of global development agendas, infrastructural transformation, and local governance challenges. Beginning with a historical and demographic overview, the report charts Nairobi's evolution into a regional hub, before critically engaging with the narratives and realities of capacity building and development finance. It examines the geopolitical dimensions of Kenya's mounting debt, the transformative potential of the 2010 Constitution, and the complex governance of transport systems, land, and informal settlements. Through focused chapters on digital infrastructure, waste management, and environmental planning, the report highlights how innovation and inequality coexist in shaping Nairobi's urban future.

As a cohort, we came to Nairobi with diverse academic backgrounds and a shared curiosity about the dynamics of urban development in fast-growing cities outside of Europe. What we encountered was a city full of contradictions—resilient and fragile, innovative and constrained, globally connected and deeply local. This report reflects our attempt to make sense of those complexities, not as outsiders offering solutions, but as students learning from the people, places, and policies that animate Nairobi today.

Editorial Team
Kashish GUPTA, Louisa HANSON, Daria LYSENKO,
Célie QUENET

MATATUS are privately owned minibuses used as share taxis. Often decorated, many matatu feature portraits of famous people or slogans and sayings. Over 70% of commuter trips are taken using matatu in cities like Nairobi. We were inspired by the dynamism of the matatus in structuring this report, representing the informal and vibrant urbanism of Nairobi.

Follow the matatus!

ROUTE MAP

INTRODUCTION

This chapter provides background on Nairobi, outlining its historical evolution from a colonial railway outpost to a major economic center in East Africa. It reviews key demographic trends, including rapid population growth and urban expansion, and highlights how historical planning decisions, colonial legacies, and post-independence development have shaped the city's spatial and social landscape.

By Pedro BARACAT, Ebou CEESAY, Maxwell GARCIA, & Gilad AVRAHAMI.

Climate and Geography

Kenya, an East African country situated along the equator, enjoys significant geographical advantages. The long coastline along the Indian Ocean poses an ideal location for Mombasa, the main port of the country that connects the sea with landlocked cities both within and beyond Kenya. To the west, Kenya also has a coast along Lake Victoria, one of the African Great Lakes, where Kisumu is located, serving as another major port city. The country is divided by the Rift Valley that runs north-south and is part of the larger East African Rift, a major ridge that creates large valleys and mountain ranges throughout Kenya, Ethiopia, and Tanzania, among others. To the East and North, the country mainly has lowlands, and semi-arid bushlands where temperatures can reach up to 40ºC. On the eastern coastline, however, the climate is tropical, consisting of mangrove swamp ecosystems typical of East Africa. In the highlands located to the west of the country, the climate is temperate (generally around 10ºC to 30ºC), and houses major tropical forest ecosystems are present such as the Kakamega and Mau forests.

Nairobi, the capital city, gets its name from the river that flows through the city. It is located strategically at the intersection of different landscapes in the southern part of Kenya. To the west of Nairobi, lie the Ngong Hills, part of the Rift complex, presenting a green landscape typical of the Kenyan highlands. To the East and South, the city is adjacent to the great plains of the lowlands, characterized by Savanna bush vegetation. The southern border of the city is defined by the Nairobi National Park, which sits a few kilometers away from the city center and is also the meeting point for several rivers, such as the Mokoyeti and Sosian.

Demographics

Today, Nairobi serves as an economic and political anchor for the whole of East Africa. In the recent decades, the city has experienced considerable growth in its economy and population, a success that has come with major challenges. Nairobi is classified as a county by itself (one out of the 47 in total in Kenya) and it is home to more than 4,4 million inhabitants (Kenya Population and Housing Census: Volume I, 2019) It is also the most populous county, despite being one of the smallest in size (only around 700 km2). However, the current urban area extends into the neighbouring counties of Kiambu, Machakos, Kajiado, and nearby Murang'a. In terms of religion, the city is predominantly Christian, though there is also a considerable presence of a Muslim minority.

Five ethnicities comprise the majority of the population (around 80%): Kikuyu, Luo, Kamba, Kisii, and Luhya. The remaining populations are other local ethnicities (such as the Maasai), African immigrants, Asian communities, andor Europeans (who make up around 1% of the city (Ngolanye, 2024)). The northwestern part of the city is where the wealthy neighbourhoods (and international organizations) are located, while the eastern and southern regions contain a majorbig portion of the lower-middle classes.

Nairobi currently struggles with containing its population growth. Due to inadequate planning, large portions of the population are forced towards the periphery, with many even living in cities outside of Nairobi County in areas such as Kitengela, Mlolongo, and Ruiru. This spatial development produces major challenges to ensure basic services such as electricity and water for all Nairobians,, as larger areas must be serviced. This has resulted in large informal settlements (some close to the city center and some further away) that suffer from a severe lack of infrastructure.

In terms of mobility, the city is mainly served by private bus drivers (matatus) that answer the majority of transport demands of the population. This system, however, is semi-formalized and still lacks the desired precision and reliability that is needed for such a large metropolis to transport its residents efficiently, often failing to complete its routes or getting stuck in traffic.

History

Both Nairobi's geography and urban development have traces in Kenya's colonial history. Beginning in the 1890s, the British occupied the highlands to the west of the city, known in Swahili as "the place of cold water," to establish an administrative center for the Uganda Railway Company. The railroad was intended to connect Uganda to the Kenyan coastal city of Mombasa for resource extraction. This colonial occupation marked the beginning of heightened tensions, especially between the nomadic Maasai people, who depended on the fertile land for their livestock, and the new settlers with agricultural ambitions (Owuor et al., 2022).

In 1905, Nairobi became a British protectorate, and in the following decades, the colonial authorities implemented a strict policy of racial segregation. These policies were reinforced by the first master plan in 1948. Under strict zoning regulations, highly valuable and fertile land in the western part of the city was reserved for Europeans, while Asians were required to settle in the northeastern areas. Africans were primarily forced to live near industrial areas in the eastern and southern parts of the city (Owuor et al., 2022).

In addition, Africans faced severe restrictions on access to the city due to the so-called “pass laws”. Authorities also used property laws and public health regulations to frequently remove low-income groups from commercially desirable areas, often pushing them to marginal land with higher environmental risks (Ouma, 2024). The largest informal settlements in Nairobi, such as Mathare and Kibera, emerged in the 1940s due to their proximity to employment centers (Owuor et al., 2022).

With the rise of political resistance and demands for constitutional reform, land rights, and independence, led by organizations such as the Kenya African Union (1944) and the Mau Mau Uprising (1952-1960) against colonial rule, Kenya achieved independence in 1963 (Lewis 2007). During this period, Nairobi experienced rapid urban population growth due to rural-urban migration facilitated by the abolition of the strict segregation laws. In response, the new government established the first housing estates for Africans in Nairobi in the 1960s. However, housing supply, infrastructure, and urban services could not keep up with the growing demand, prompting the expansion of informal settlements (Fransen et al. 2023). Colonial-era policies, such as the Public Health Act, were repurposed under the Kenyatta government in the 1970s to justify the clearance of "slums," further entrenching insecure tenure and intensifying conflicts over land ownership (Kjendseth Wiik, 2014). In recent decades, however, government policy has shifted toward more supportive measures to improve informal settlements through site-and-service schemes, public housing projects, and initiatives such as the Kenya Slum Upgrading Program (KENSUP) in 2004 (Owuor et al., 2022).

Kenya's and Nairobi's past reveals a continuity of colonial policies in today's political climate and urban power relations. It is no coincidence that today's socio-spatial disparities are closely related to the dynamics of earlier colonial practices of urban segregation. This continuity is also evident in the way that under the 999-year rule, large estates are still owned by Europeans of colonial descent. In addition, Kenya's export-oriented economy remains deeply intertwined with British, Western and, more recently, Asian development banks and corporations. Tensions over land ownership persist, as evidenced by the disruption and infrastructural violence affecting Maasai land due to the expansion of the Standard Gauge Railway (SGR), and recent flood-related eviction practices that continue to disproportionately target informal settlements (Wakhungu, 2024).

These historical patterns demonstrate that many present urban challenges contested by contemporary Right to the City movements, issues of governance and accountability addressed by youth-led movements such as #RejectFinanceBill2024, and demands for climate justice intensified after the severe flooding in Nairobi in 2024 are deeply intertwined with Kenya's colonial and post-independence history.

Politics and Governance

Nairobi's political structure has evolved significantly from the centralized system left behind by the British at the end of the colonial period. Following the strong-armed leaderships of Jomo Kenyatta and Daniel arap Moi, the expansion of political freedoms instigated a movement to devolve government powers to the local level (Sverdlik, 2021). The new constitution, which shifted several powers from the national government to the county level, was passed in 2010 (Esho et al., 2025). Although most parts of Kenya acquired new political autonomy and control over revenues more locally, Nairobi was a special case. The locus of local administration simultaneously shifted upwards as well as downwards, as the city was subsumed into a newly empowered Nairobi City County that included areas well outside the urbanized area (Esho et al., 2025). Additionally, national politicians had always exerted particular influence over Nairobi's economic interests and planning decisions, a dynamic that persisted after the devolution. For instance, the Kenyan government preserved a nationally run service provision agency known as the Nairobi Metropolitan Services, which intervened to remove Nairobi Governor Mike Sonko and temporarily took over various municipal functions in 2020 (Sverdlik, 2021).

The newly formed county of Nairobi and four nearby counties – Kiambu, Machakos, Murang'a, and Kajiado – were also unified under a novel regional framework known as the Nairobi Metropolitan Area. In 2011, the five counties of the newly formed Nairobi Metropolitan Area reconstituted their planning mechanisms across the metropolitan area into a single Nairobi Integrated Urban Plan, which combined the functions of disparate planning bodies such as NUTRANS (for transportation), WASSIP (for water and sanitation), and NAMSIP (for service improvement) (Esho et al., 2025). One of the plan's priorities was a series of proposals seeking the decongestion of the central business district (CBD), including the construction of the Thika Expressway, the use of diversification and extension of the CBD southward to the railway, and the development of new business "sub-centres" outside the city. While the first two proposals were implemented, the sub-centres have failed to emerge, and land use for new developments is often determined by case-by-case "spot zoning" rather than the mechanisms built into the plan (Esho et al., 2025).

Since Kenya's shift from an authoritarian state to a multi-party system in 1991, Nairobians have consistently participated in democratic elections, which nevertheless frequently feature electoral conflict. Following a series of ethnically polarized election cycles and the controversial actions of the Electoral Commission of Kenya, violence climaxed in the aftermath of the 2007 re-election of President Mwai Kibaki, resulting in the deaths of over 1,200 individuals (UK DFID, n.d.).

Smaller-scale incidents that likewise involved looting, militia-led reprisal attacks, and police brutality have taken place in national and local elections since then (Human Rights Watch, 2017). The relatively peaceful 2022 presidential election may have been enabled by independent monitoring, publicly available voting tabulation data, increased trust in courts, and candidates overtly discouraging violence or conceding quickly (Nantulya, 2022). However, in 2024, conflict on the streets re-emerged in a sphere more separated from elections. A proposed national finance bill introducing higher taxes on basic goods quickly triggered a youth movement that led to mass demonstrations centered in Nairobi (Nogueira Pinto, 2024). Shortly thereafter, violence from protesters, police and the military provoked a crisis that endured throughout the summer and briefly re-emerged in December (Yusuf, 2024). The movement's success in pressuring President Ruto to nix the bill and remove cabinet members may signal a new paradigm in citizen participation oriented around street protest.

Economy

Nairobi is an economic nexus for East Africa, accounting for 27% of the total GDP of Kenya, which in turn has a major trade and production footprint on the region (Gachanja et al., 2023). The city lies at the crossroads between the major Cairo-Gaborone and Lagos-Mombasa highways, which facilitates its robust national and international trade (Esho et al., 2025). Manufacturing is Nairobi's largest sector in terms of economic output and formal wage employment, followed by areas such as construction and import/export (Sverdlik, 2021; Esho et al., 2025; Gachanja et al., 2023). However, official statistics are unlikely to capture the economic activity experienced by most citizens, as employment in what is considered the "informal economy" is estimated to account for 83% of the city's jobs (Esho et al. 2025). Nairobi has shared in Kenya's consistent economic growth of between 4% and 6% annually since the COVID-19 pandemic (Trading Economics, n.d.), and the unemployment rate in Nairobi was estimated at 12.7% in 2023 (Gachanja et al., 2023).

The strong relationship between the Kenyan government and the private sector has left its mark on Nairobi's economy and built structure. Direct foreign investment, often facilitated by the central government, has become fundamentally ingrained into the operation of many businesses in the formal economy. Economic policy reforms at the national level have largely focused on registering businesses and expanding taxation. The Public Finance Management Act of 2012, meanwhile, seeks to direct more investment into infrastructure (Esho et al., 2025). Often, roads are built by companies and then operated privately for 30 years before being handed over to the government (Esho et al., 2025). The economic relationships being forged and cemented today will thus set the stage for the Nairobi of tomorrow.

Nairobi’s Future

As the world pays greater attention to the African continent, Nairobi’s role as a regional leader reminds them that East Africa is open for business. Success will depend heavily on the city’s ability to invest in the right kinds of infrastructure that will connect people to basic services and facilitate business operations. In 2008, the Government of Kenya launched its Vision 2030 strategy to create “a globally competitive and prosperous country with a high quality of life by 2030” (Government of Kenya, 2025). Its main pillars represent a unification effort: sustaining economic growth at 10 percent; fostering equitable social development; realizing a people-centered and accountable democratic system; and anchoring the foundations of stability in infrastructure, research, land reforms, human resources development, and security. To achieve these goals, the government has launched short- and medium-term programs like the Big 4 Agenda which address immediate needs like manufacturing, food security, universal healthcare, and affordable housing (President’s Delivery Unit, 2025).

With these goals in mind, Nairobi City and County are actively working on spatial planning documents to guide the city in a positive direction. With sustainability at the forefront, multiple programs are offered to protect and integrate the natural environment in the city. For instance, the Nairobi Rivers Commission (2025) is actively working on developing river basin regeneration programs that will stem pollution and kickstart development along river corridors. The Nairobi City County Government (NCCG; 2022), in partnership with C40 Cities, has also prioritized reducing flood risk in their 2020-2050 Climate Action Plan which includes wastewater management and water conservation strategies, new stormwater policies, and low-carbon solutions like public transportation. To support their climate plans, As previously mentioned, the NCCG in collaboration with the Japanese International Cooperation Agency (JICA; 2014) devised the NIUPLAN which has already begun to address a range of challenges that support its vision of building an inclusive city that prioritizes spatial and social equity by creating compact city with multiple core centers and a revitalized Central Business District.

These plans, along with many others, work in tandem to create a more climate-resilient, human-centered, and easy-to-navigate urban environment for newcomers moving to Nairobi. As Grace Munguti Kitheka, Manager of C40’s Chief Financial Officer Network for African Cities, said, “If you test something here [in Nairobi], it will likely spread” (Munguti Kitheka, 2025). If successful, Nairobi’s programs have the potential to be blueprints for urban development across the continent.

Outline of the Report

The following report is divided into nine chapters, examining the different facets of urban life shaping Nairobi and its surroundings. We will begin with a broad outlook, contemplating development in the Kenyan context. How can the public and private sectors work together to facilitate capacity building? What is the role of international aid? This discussion will be followed by an analysis of the 2010 Constitution's implications for cities. We hope to use what we have learned about how Kenya views citizen participation to inform the discourse provided in subsequent chapters on transportation and land use. Who and what goes where and why? How? Answering these questions will mobilize a conversation on informal settlements and community-driven development, forcing us to grapple with intraurban upgrading. Lastly, we will address Nairobi as a pioneer in digital infrastructure, waste management, and nature preservation. Can our four-legged friends thrive here? Will Nairobi's innovations create future challenges? These represent some of the few questions that we will use to start the conversation on a topic that requires continued evaluation.

Downtown Nairobi, as seen from our hotel. Photo credit: Antoine Tisserant.

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CAPACITY-BUILDING

Capacity Building: Development discourse or infrastructural violence?

One of the key questions raised during our time in Nairobi was: What makes good urban development? The answer, as may be intuitive, would differ depending on who you ask... This chapter explores the relationship between development narratives and their concrete manifestations on the ground. These various discourses create a complex ecosystem of urban interventions and we will discuss how each addresses different needs of the city.

By Seynabou DIOP, Arsène GUIEU, & Madeleine MENOUNGA AMBASSA.

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Introduction

Concretely, development initiatives in Nairobi can be analyzed through four distinct frameworks that seemed to shape the wide range of projects we encountered during our study trip:

1. The focus of development varied significantly among actors:
    - Community-centered development championed by SDI and AFD through social infrastructure and community centers,
    - Infrastructure-based/road-based development driven by local government, investment banks, international development agencies through road networks and basic services,
    - Housing-focused initiatives led by UN-Habitat,
    - Environmental approaches incorporating green spaces and climate-conscious solutions.
2. The direction of development illustrated contrasting approaches to decision-making and implementation. Some stakeholders aligned themselves with international frameworks and global development goals, particularly evident in UNEP and UN-Habitat's approaches. Simultaneously, there exist local frameworks made by the local and national government. Others, like SDI or academics like Professor Kennedy Mkutu, championed bottom-up initiatives that prioritized local needs and direct community participation.
3. The scale of interventions emerged as a crucial framework as well. We learned about massive infrastructure projects (SGR, LTWP, BRT) that aimed to transform entire urban systems, existing alongside smaller-scale projects mentioned earlier.
4. Temporal considerations framed how different stakeholders approached their projects' timelines and impact. The question of temporality also encompassed monitoring periods, impact assessment timeframes, and the sustainability of interventions beyond their initial implementation.

Drawing from Amartya Sen's capability approach, which posits that true development should expand human freedoms and capabilities, and Ferguson's critique of development as an "anti-politics machine" that can depoliticize inequality, this discussion raises critical questions about the nature of urban development itself. Throughout our visits, infrastructure repeatedly emerged as a tool for "capacity building" - a term frequently invoked but often vaguely defined. While the concept suggests empowerment and expansion of capabilities, our trip also revealed contradictions in its implementation leaving us wondering who defines what capacities need to be built. How does infrastructure, often presented as a (neutral) technical solution, actually reshape power dynamics within the city?

Infrastructure as a Development Imperative

Modernization and Economic Growth Narrative

During the colonial period, Kenya historically developed a segregationist and extractivist legal and economic system, characterized by differential access to infrastructure networks to the benefit of the land-owning minority in an economy of settler colonial agriculture (Bernards 2022). Independence saw the beginning of land redistributions by the state under KANU (Kenya African National Union) leadership, but this resulted mainly in an elite recomposition, as a new African, mainly Kikuyu elite benefited the most in the transfer.

In parallel, a massive capital flight occurred that increased Kenyan dependence on foreign rather than local capital. In this context, infrastructure is often framed as a symbol of progress and modernization, and a demonstration of state capacity.

By uncompromisingly reducing poverty to a technical problem, and by promising technical solutions to the suffering of powerless and oppressed people, the hegemonic problematic of "development" is the principal means through which the question of poverty is depoliticized in the world today.

Public and Private Infrastructure Development

Public-private partnerships are the norm rather than the exception in the Kenyan infrastructure sector. Since the 1980s Structural Adjustments, Kenya's economic elites have deeply penetrated the State, privatizing state-owned companies and using infrastructure projects as rent-generators. Today, most heavy infrastructure projects are financed and built by foreign, most notably Chinese, actors. Hence, most highways and bypasses built in Nairobi between 2012 and 2022 were financed by the Export-Import Bank of China (EXIM Bank) and built by the China Road and Bridge Corporation (CRBC), both state-owned companies (Lesutis 2022).

Digital infrastructure has also received considerable attention in Kenya, as a central argument for techno-optimism. Both digital payment and credit infrastructure (referred to as fintechs) have expanded dramatically since the early 2000s, with transactions attaining more than 2 billion dollars in 2020. The 2019 Kenya FinAccess Survey shows that urban residents are three times more likely to use mobile borrowing. Within those urban users, those living in Nairobi Metro and Mombasa are twice as likely to use them. Digital infrastructure has expanded financial access and economic opportunities, but poorer and less connected rural populations are excluded from that trend. This disparity reinforces existing inequalities, limiting the transformative potential of digital finance, as it reproduces an unequal development favoring the traditional colonial centers of power, which are Mombasa and Nairobi (Bernards 2022). The theme of digital infrastructure is discussed in more detail in Chapter 8.

Foreign-Backed Megaprojects and Their Promised Benefits Timeline

Mega projects have both a material and symbolic value, and are expected to serve as both an end goal of and a step towards "development". Lestusis argues that they function as "politics of differentiation", creating distinctions between "prospering publics" of urban middle classes, "anticipating populations" that are given unstable hopes of inclusion, as well as "excluded populations" in rural landscapes. The inclusion of foreign backers in this process demonstrates how today's elites are transnational and interconnected in their discourse on development, all benefitting from those megaprojects that reinforce social distinctions not only at the local, but also at the global level.

Global financial institutions have an important role in homogenizing development discourses, having become hegemonic around the 1980's for financial policy with the guiding principles of debt free states and profitable investments provision for global capital. A striking feature of development discourse in Kenya is how closely it aligns with the global consensus on good governance, showcasing technology-driven ecological transition as the natural path towards sustainable development. In president Ruto's words on the 17th of may 2024 "one of the discussions we're going to have with microsoft and G42 from the UAE is how are we going to leverage on our renewable energy in Kenya to establish the biggest 10 billion dollar data center in Kenya, not just to service Kenya, but to service the region".

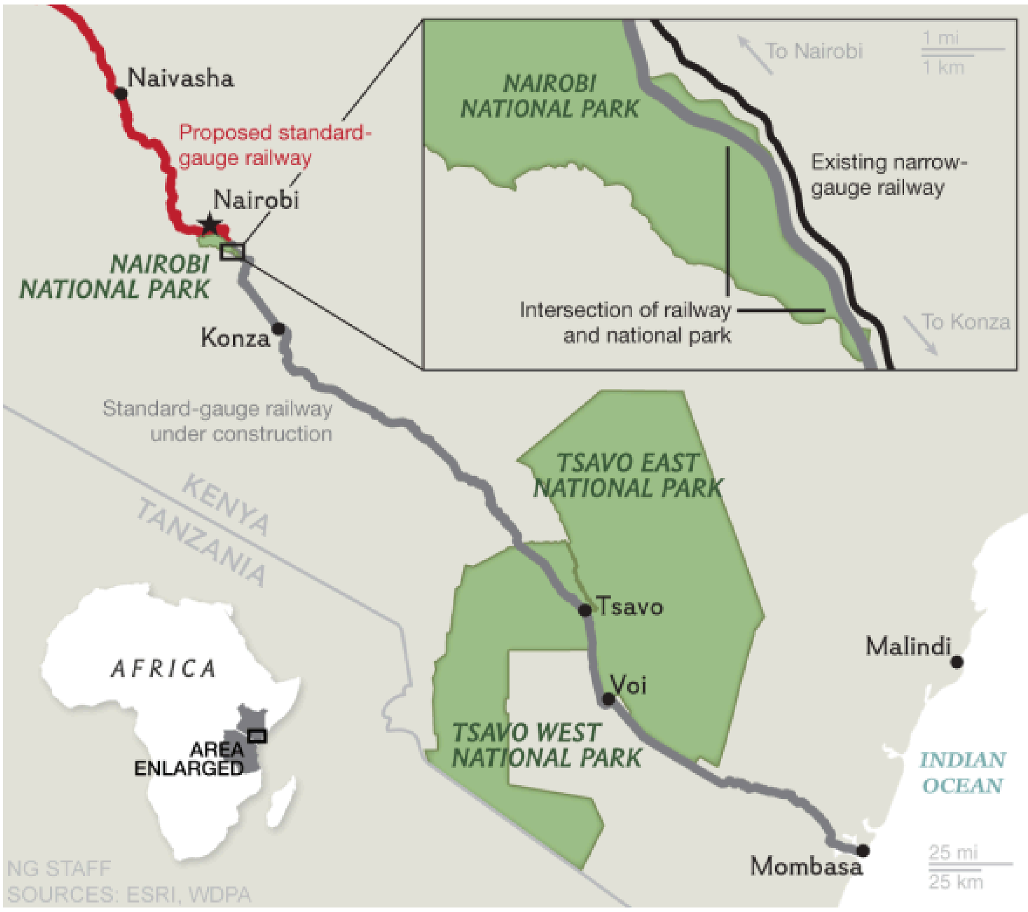
In the next section, we explore the case of a railway project to show how these developmental discourses manifest in particular cases of infrastructure-building.

Development at a Cost: Winners, Losers, and the Fate of Project-Affected People

The SGR, Land, and Locals

The Standard Gauge Railway (SGR) was presented as a transformative infrastructure project aimed at boosting Kenya's economy and regional integration. However, its implementation has revealed disparities in who benefits and who faces harm. Funded primarily by a $3.8 billion loan from China, the SGR has contributed to Kenya's rising debt, which grew from 38% of GDP in 2012 to nearly 70% in recent years. While the railway has improved transport efficiency, its socio-economic impacts have been unevenly distributed.

Professor Kennedy Mkutu highlighted that local communities, like inhabitants of Suswa, or the Maasai in Kedong Ranch, have experienced displacement and economic marginalization due to land acquisitions for these types of mega-projects. Maasai pastoralists, who have historically used Kedong Ranch for grazing, have lost access to critical land, disrupting traditional livelihoods. Many were either inadequately compensated or excluded from the benefits of development. When infrastructure is designed without considering local socio-economic needs, it not only results in infrastructural violence but also excludes communities from the economic benefits it promises.



Standard Gauge Railway Project Phase 1 - Mombasa to Nairobi, Kenya. Source : Global Atlas of Environmental Justice

James Ferguson's analysis of the Thaba-Tseka rural development project in Lesotho provides a useful parallel (Ferguson 1994). Like the SGR, the Lesotho project was framed as a neutral, technical solution to economic challenges. However, Ferguson demonstrates that such projects often fail in their stated objectives while expanding state and bureaucratic powers. Similarly, while the SGR has not fulfilled its initial goal of reaching Uganda, it has strengthened government control over land and infrastructure while increasing Kenya's financial dependence on China.

Minorities, Women and Structural Exclusion

Just as the SGR project has disproportionately affected indigenous Maasai communities, other large-scale infrastructure projects, such as the Lake Turkana Wind Power (LTWP) initiative, have also contributed to structural exclusion, particularly for minorities and vulnerable groups, like women and children. These projects are not gender-neutral; they disproportionately impact women, who face systemic barriers in decision-making and are often excluded from consultations regarding development projects. For example, around 183 families in Sarima village (1180 people) were scheduled to resettle to the new location 1.5 km away in 2014. Women and children have become more vulnerable after being fenced off from land and resources by the LTWP consortium, exacerbating existing inequalities (Danwatch, n.d.).

Sarima children looking outside of their fenced-off village. Source: Danwatch

Amartya Sen's influential book Development as Freedom argues that true development must expand people's capabilities and freedoms. However, women and minority groups affected by infrastructure projects lack the agency to influence decisions that shape their lives. Sen emphasizes that empowering women through agency, education, and economic participation leads to greater social and economic well-being and promotes positive changes in both family dynamics and society. Without integrating justice and equity into infrastructure planning, sustainability remains incomplete, as it fails to uphold the rights and well-being of those most affected by development.

They told the community that they would provide them with jobs, but as of now more than 200 youths are languishing in poverty in the village, without any means to get food.

Ekomwa Benedict, a 20-year-old student at South Eastern Kenya University, now living in Sarima.

Reclaiming the Infrastructural Narrative

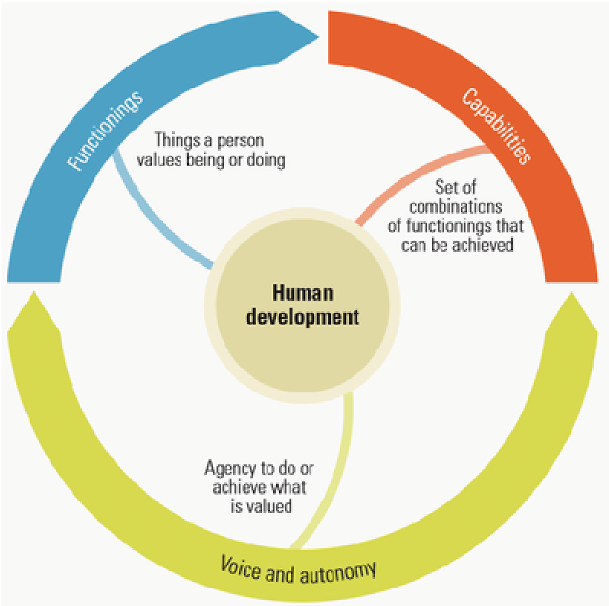
Political participation and civil liberties are not just means to development—they are development in itself. Nairobi has the potential to lead in infrastructure development by adopting a capability-based approach, drawing from Sen's theory, where infrastructure expands the real opportunities available to local communities. Instead of focusing on physical structures alone, development could be measured by whether people can genuinely access opportunities. For instance, ensuring that locals benefit from projects, not just as passive recipients but as active participants, can transform infrastructure into a tool for empowerment.

As Ferguson illustrates, development projects often present themselves as "apolitical" while reinforcing state control and exclusion. Nairobi's infrastructure expansion risks deepening inequalities if it follows a similar top-down, technocratic model. Large-scale projects often push people into precarious informal work rather than providing true economic mobility. To shift from "failure" to purposeful development, adopting a more inclusive governance model that emphasizes local agency and equity, rather than rush and exclusion, could help infrastructure projects to benefit more people. Reclaiming these projects to ensure that people are not the losers of this infrastructural battle.

Rethinking Development for Local Capacity and Inclusion

Moving Beyond the Current Discourse on Infrastructure Development

Conventional development discourse often centers on hard infrastructure—roads, bridges, railways, and power grids—as the primary indicators of progress. However, Sen argues that development should not be measured solely through the presence of physical infrastructure. He emphasizes that infrastructure for education, healthcare, and community is equally crucial for sustainable development. Sen's Capability Approach suggests that development is expanding people's capabilities, which depend on both personal characteristics and the social arrangements that allow individuals to function fully in society. True development would then be about enhancing individuals' freedoms and agency, enabling them to make meaningful choices and improve their lives.



Amartya Sen's theory on Development (Jahan, S. (2017). Human Development for Everyone

Ferguson critiques the myth of infrastructure as a neutral, apolitical solution. He argues that large-scale infrastructure projects are deeply intertwined with political realities, local agency, and historical injustices. A bottom-up approach to infrastructure development helps avoid the bureaucratic and elite capture often seen in major projects. Ferguson suggests that prioritizing low-cost, locally driven infrastructure that meets immediate community needs can reduce the risks of creating "big winners" and "big losers." This approach can help avoid the failures seen in projects like the SGR, where unintended consequences serve the political and economic interests of a few.

Rethinking the Development Imperative

The traditional Western vision of development, often imposed by external agencies, has shaped the global discourse on growth and modernization. Development agencies, such as the World Bank, have constructed some nations as “Less Developed Countries” through misleading narratives. Ferguson, with the example of Lesotho, explains that these narratives ignore the region's complex economic history. Ferguson's analysis highlights that development discourse, rather than accurately representing the challenges of underdevelopment, is often used to justify external interventions and state-led projects that overlook structural inequalities.

Ferguson's critique of historical misrepresentation in development discourse resonates with some African economists who have rejected externally imposed development models. Thandika Mkandawire for example (Africa beyond Recovery, 2015), advocates for self-reliance and state-led development, emphasizing the need for strong institutions and policies that focus on industrialization and human capital. Similarly, Claude Ake stresses that development must be people-centered, rejecting elite-driven models that fail to address local needs (Democracy and Development in Africa, 1996). Samir Amin (Unequal development, 1973) and Dambisa Moyo (Dead Aid, 2009) further call for economic sovereignty and regional cooperation to break free from the dependency fostered by foreign aid.

Concluding Thoughts: Rethinking Trends in Urbanism

One of the key takeaways from our trip was the growing emphasis on experimentation and co-production in urbanism. Across various projects, there was a clear effort to move beyond rigid, top-down planning. This shift holds exciting possibilities, particularly in its ability to foster more locally embedded solutions. This was particularly evident in the projects we visited in informal settlements, where participation was positioned as both a process and a goal. Yet, the temporality of these interventions remains an open question. Will the tools and infrastructures introduced continue to serve communities in the following years? Or does the experimental nature of these projects make them vulnerable to evolving local needs? The challenge, then, is not just embedding participation in planning but ensuring that these interventions remain relevant over time.

Another recurring theme was the question of best practices—the idea that successful urban policies can be adapted and applied across different contexts. This logic was evident in Nairobi's adoption of Bus Rapid Transit (BRT), a system implemented in various cities of the global south. In this case, its implementation intersects with a deeply rooted informal transport network, particularly the matatus. The rollout sparks debates about how to best integrate new systems into existing urban fabrics without disrupting established livelihoods and transport dynamics. Rather than seeing this as a limitation, perhaps the lesson here is that best practices work best when approached as guiding frameworks rather than fixed templates. Their value may lie not in direct replication but in how they are negotiated and adapted to local contexts.

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DEBT AND FINANCING

The Agency of Debt: Development Finance and Geopolitics

.This chapter investigates Kenya’s growing debt crisis and its implications for infrastructure financing and national sovereignty. Against the backdrop of widespread protests over the 2024 Finance Bill, it explores how rising debt levels—now nearing 70% of GDP—have sparked public backlash and raised critical questions about the role of international lenders like the IMF, World Bank, and foreign governments. The chapter traces the history of Kenya’s borrowing and examines the political and economic stakes of international infrastructure financing, with a focus on French, British, and Chinese loans.

By Karidja BAKAYOKO, Kashish GUPTA, Maxwell KILMAN, & Nils LAGREVE.

Introduction

The World Bank's 2024 International Debt Reports cite Kenya as one of the countries with the highest ratios (12.8%) of interest payments on total debt to export earnings (World Bank, 2024). The protests against the 2024 Kenya Finance Bill boldly illustrated the tensions inherent in international borrowing and loan repayments. The protests erupted in response to the proposed tax increase within the new Finance Bill, aiming to raise 346 Billion Kenyan Shillings to settle debt payments and infrastructure loans. The tax increases were enacted in response to Kenya's enormous national debt of around 10 trillion shillings (amounting to roughly 70% of its GDP) (Le Monde, 2024). While the massive public protests successfully led to an eventual repeal of the bill, the events raised severe integral questions regarding international aid and its efficacy. Moreover, the denouncement of international institutions such as the IMF and the World Bank during the protests also brings into question the role played by foreign governments and international lenders (Al Jazeera, 2024).

The following chapter explores how Kenya's national debt problematizes the agency of accepting international aid and financing, particularly for the funding of infrastructure projects. It begins by discussing the background of loans and international financing in the Kenyan context before delving into the specifics of French, British, and Chinese loans.

International Aid in Kenya

As of June 2024, Kenya's total nominal public and publicly guaranteed debt stock had risen to 81.70 billion US dollars, about 65.70 percent of the nation's GDP (Republic of Kenya, 2024, pp. 22–23). The nation's external debt exceeded its domestic debt by nearly 8 billion dollars. Reflecting a more recent trend in Kenyan borrowing, less risky and costly multilateral debt composed nearly 54% of the nation's total external debt, with the shares of bilateral and commercial debt steadily declining since 2019 (Republic of Kenya, 2024, pp. 22–23). This expansion of public debt is, in part, the effect of President Uhuru Kenyatta's heavy borrowing from China and commercial banks, which raised the debt-to-GDP ratio from 42 to 69% (Fergus Kell, n.d..). While Kenyatta's borrowing enabled the financing of infrastructure development (including rail and road construction), it also posed several issues that would stymie the tangible gains of these development projects for the public: the high interest rates that accompany commercial borrowing, the minimal output in project revenue, and the impacts of inflation and supply chain challenges arising during the Covid-19 pandemic.

Indeed, Kenyatta's successor, President Ruto, faced the challenge of managing the side effects of this borrowing, namely the mounting costs of living and unwieldy debt repayments. As a response, Ruto accepted debt relief from the International Monetary Fund (IMF) despite the controversial conditionalities of this aid, which include tax increases and reduction in subsidies and government spending (International Monetary Fund, 2024). Though this aid has yielded some 941 million dollars in disbursements, it has come at the cost of social unrest (Shola Lawal, 2024). .

Kenya's total nominal public and publicly guaranteed debt stock had risen to 81.70 billion US dollars, about 65.70 percent of the nation's GDP.

The policy measures responsive to the IMF's demands have proven to be unpopular with the public. The cancellation of fuel subsidies in 2023 and the failed Finance Bill 2024, which would have brought tax hikes, were both met by heavy protest (Shola Lawal, 2024). In turn, the government has responded with a new wave of austerity measures, including the dissolution of forty-seven state corporations. These outcomes of Kenya's extensive borrowing, including the conditional debt relief offered by the IMF, are not unique to the past decade.

Lending institutions, national superpowers, and Kenyan political elites have historically shaped the conditions and impact of Kenya's public debt. Following the decolonization movement, the United Kingdom remained Kenya's largest aid provider with multilateral donors, like the World Bank and IMF, entering the scene toward the early 80s. Simultaneously, Germany, the Netherlands, Japan, and China have participated in aid provision (Brautigam, 2020; James Shikwati, n.d..). What began as a state-led model of development, whereby objectives and goals were set by the state and aid was used for the most critical projects, would be replaced with a move toward liberalization, heavy debt burdens, and economic stagnation in the early 1970s.

The notorious Structural Adjustments Policies (SAPs) of the 1980s conditioned loans on the adoption of policies of deregulation, liberalization, privatization as well as reductions in government spending within the recipient nation. Kenya was the first Sub-Saharan African country to receive structural adjustment funding from the World Bank (James Njeru, 2003, p. 10). This early adoption of SAP, however, should not suggest that the Kenyan government warmly embraced these measures. The government engaged in debate with donors like the World Bank to seek out loans with more favorable terms and faced aid freezes as the conflict escalated (Mosley et al., 1995). As political economist Deborah Brautigam suggests through her research on China's lending efforts, the well-worn metaphor of the globe as a chessboard on which foreign powers compete neglects the complexity of foreign lending and the agency of local actors (Brautigam, 2020).

Just as in the early 1970s and 90s, today, we observe a disjuncture that has emerged between economic growth and relevant improvement for the general population. While the construction sector has benefited from economic activity, this aid-driven development has not addressed persisting issues of inequality and has enabled the growth of a class of political elites benefitting from corruption. As a researcher in Kenya mentioned to us with a heavy dose of pessimism, the city is changing every day with the rise of new skyscrapers and grand plans for transit-oriented development. One cannot ignore the impact of unequal power relations between the Kenyan government and international lenders, and yet it is necessary to recognize the agency of the Kenyan government in these financing arrangements and the socially differentiated outcomes of these agreements (Carmody, 2020; DeBoom, 2020). These dynamics of foreign lending are the subject to which we now turn in the following two case studies.

Case Studies

European Funding: the Case of AFD (France)

The following section analyses the conditions and rationale behind the presence of the Agence L'Agence française de développement (AFD) in Nairobi by exploring their involvement in the funding of infrastructural projects within the city.

The AFD is a development bank whose action is structured around four main axes: contributing to the structuring and development of the financial sector of a country, promoting access to financial services, diversifying the range of financial instruments available to economic players, and directing financing towards the implementation of public policies (Caupin and al., 2014). This agency is closely related to the French state – which funded over two billion euros of its annual budget in 2023 – however, the roughly ten billion remaining of the budget are directly provided by the activities of AFD, notably on the financial market (AFD, 2025). The AFD claims that its mission is to assist African countries by offering them significantly lower interest rates than on the normal financial market. Indeed, this institution generally proposes a 2% interest rate, whereas private commercial banks generally propose 8% and above (AFD, 2023).

Official AFD logo

Nonetheless, the aim of the agency is still closely linked to French economic and political objectives. There have been concerns about AFD's practices regarding preferential treatment toward French firms in African development projects (CONAC, 2013). Moreover, there is a porous border between the French government and the actions and decisions taken by the AFD.

French, English, and other European investment funds and development banks have historically been used to promote European economic interests in Africa. Critics argue that such practices may create opportunities primarily for European companies, potentially leading to capital outflows from African countries back to Europe.

The surrounding political context hence raises the question of to what extent foreign funding, particularly European funding – often described as development aid – is a factor in the perpetuation of Kenya's economic dependence on debt. Indeed, a key question during our trip in Nairobi was on the development capacity of the country and what fostered it or, on the contrary, what prevented African countries from developing in a sovereign way. In 2005, sociologist and former UN Special Rapporteur on the Right to Food Jean Ziegler wrote that the "the era of domination through debt follows, without transition, the colonial era", hence imposing a regime of constant structural violence pushing African countries to abdicate their sovereignty (Ziegler, 2005).

The lack of fertile conditions for the development of domestic industries has led to a reliance on imported manufactured goods, preventing the development of an efficient internal market and fostering a dependence on European countries. In the global division of labour, African countries primarily export raw materials rather than processed goods. For example, Kenya remains heavily reliant on cash crop production despite its economic diversification since independence. This dependence is evident in sectors like avocado production, where the country remains vulnerable to external buyers and global market prices.

The era of domination through debt follows, without transition, the colonial era.

Chinese Funding: the Kenyan Standard Gauge Railway

In contrast to the Western powers' official development aid (ODA) model (Bolorunduro 2017), China's approach to Africa has been described as a development partnership. The importance of its role on the continent, particularly its economic influence, tends to challenge the position of traditional development partners in the Global South region.

The Kenyan Standard Gauge Railway (SGR) is a perfect acknowledgment of these new dynamics.

China's role in Kenya's economic growth is illustrated by its involvement in the SGR, which is integrated into its broader, ambitious project, the China's Belt and Road Initiative (BRI). A key component of this initiative supports Xi's vision of creating a vast network of railways, energy pipelines, highways, and streamlined border crossings. Therefore, the BRI's infrastructure development goals align with the African Union's own Agenda 2063 which prioritizes on the continent's interconnectivity (Yu 2017). Additionally, it complements Kenya's National Transport Policy, Moving a Working Nation (2009) that shapes a vision to 'provide efficient, reliable, safe and secure railway transport services that are integrated with national and regional railway, road, water, pipeline and air transport services for the transportation of goods and passengers on a sustainable and competitive basis.' The SGR also serves the goal of the Railways Master Plan (2009) for East Africa, which aims to revitalize railways networks in Tanzania, Uganda, Kenya and extending them to the larger Eastern Africa and beyond, in order to reinforce cooperation among East African Community (EAC) member states and stimulate economic development nationally and regionally.

The intended route for the SGR project, published on the official Facebook page of Kenyan Railways

Furthermore, Kenya was strategically selected as the African centre point for the BRI project due to its strategic location along the East African coast. Thus, the SGR represents a mutual development opportunity for both Africa and China, since the first one stands to benefit from infrastructure improvements, job creation, and overall economic growth, while the second one gains advantages such as increased exports and employment for its construction companies (Wissenbach and Wang 2017).

Concretely, the SGR is a railway line that connected Mombasa to Nairobi in 2017 with future phases planned to extend to Navaisha and then to Malaba in Uganda. TAs part of Kenya's most ambitious infrastructure project since its independence (CGTN, 2019), the SGR has been financed through a government-to-government arrangement between the Republic of Kenya and the Republic of China (The East African, 2024). Funding was primarily provided by the Export-Import Bank of China, with 90% of Phase 1's approximate $3 billion cost covered by China and the remaining 10% financed by Kenya. The railway, constructed by Chinese companies, including China Communications Construction Company, under the Belt & Road Initiative, offers a high-end travel experience featuring VIP lounges, dining services, and priority boarding, with ticket prices ranging from KSh 12,000 to 20,000 for travel between Nairobi and Mombasa. The operations are then managed by Kenya at over 98%, aiming to provide more local opportunities (Tuko, 2025).

Moreover, this railway line concentrates numerous benefits for the city and the wider region. Indeed, Kenya is investing in modern infrastructure to attract investors, and the SGR enhances regional transport networks, as it strengthens Mombasa's position as a strategic seaport within the region, provides a competitive advantage in regional trade to improve the regional connectivity with Uganda, South Sudan, Rwanda and Democratic Republic of Congo (Muthoni Githaiga, Nancy, et Wang Bing 2019). Therefore, this increased accessibility fosters regional commerce within the EAC. Additionally, the SGR contributes to lower transport costs for farmers, boosts tourism, enhances mobility, attracts investments, creates jobs and aligns with the objectives of the United Nations' 2030 Agenda for Sustainable Development.

Photo from the launching of the 2A Phase construction of the SGR Project in 2016, by the Railway Gazette International.

Conclusion

Kenya's debt crisis raises questions about alternative infrastructure financing. Exacerbated by reliance on international lenders like the IMF, World Bank, and China, it has led to economic pressure. While foreign funding has driven infrastructure projects, it has also deepened dependency and raised concerns over debt sustainability. Given this context, could pan-African institutions like Shelter Afrique, focused on financing infrastructure, especially housing in their case, provide a viable solution? While it offers regional investment, its financial capacity is limited compared to global lenders. European lenders, such as France's AFD, provide lower interest rates but often prioritize geopolitical interests, while Chinese financing, critical for projects like the Standard Gauge Railway, raises concerns over transparency. These dependencies highlight Kenya's economic vulnerability and the constraints of international lending. A diversified strategy integrating multilateral aid, private sector investment, and stronger regional institutions could offer a more sustainable path, but whether such institutions can scale to rival global lenders remains uncertain.

The Standard Gauge Railway connecting Mombasa and Nairobi, opened in 2017. Source: International Railway Journal.

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THE CONSTITUTION

City Power: The 2010 Constitution and Urban Governance in Kenya

This chapter explores the relationship between Nairobi and Kenya’s 2010 Constitution, a pivotal reform that ushered in a new era of decentralized governance. Drawing from global models, the Constitution empowered local governments, embedded rights-based and environmental principles, and aimed to better equip cities like Nairobi to handle complex urban challenges.

By Ane BAZ LANDA, Alain JABBOUR, Théo MUREAU, and Yussif SULEMANA.

Introduction

Kenya's 2010 Constitution stands as a landmark example of the global trend toward governmental decentralization, strategically empowering local authorities to address regional needs. As Hirschl (2004) observes, this reform emerges from a broader international movement characterized by constitutional borrowing and adaptation. Drawing extensively from global governance models, Kenya's constitutional framework deliberately integrates principles of devolution, human rights protections, and environmental stewardship—particularly within urban contexts. This constitutional approach reflects a calculated response to global governance shifts that seek to strengthen municipal political structures in rapidly expanding urban centers like Nairobi, where local administration increasingly faces complex metropolitan challenges.

As Kenya's capital and main political, economic and administrative hub, the city of Nairobi played a crucial role in the making of the 2010 Constitution. Not only did Nairobi record one of the highest 'Yes' voter turnouts in the referendum that made the Constitution effective, but it was the center of social and political events that created the need for the new Constitution.

Perhaps the major socio-political turnover for pre-2010 Kenya was in 2002, when the first peaceful democratic transition in the country's history took place. Since its independence in 1963, the ruling Kenya African National Union party (KANU) was the country's central political actor, and governed the de facto one-party state from 1969 to 1991. Although multiparty politics were reintroduced that year with the creation of partisan opposition to the Daniel Arap Moi government (1978-2002), during the 1990's, Kenya's political regime reimained neither democratic nor fully authoritarian (Murunga & al., 2014).

Kenya's constitutional framework deliberately integrates principles of devolution, human rights protections, and environmental stewardship.

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Proposals such as a parliamentary system or decentralizing authority through a devolution process were presented by drafting commissions in the later years, facing resistance from the executive. In 2005, opposition to the Wako Draft, seen as favoring executive power, led to the creation of the Orange Democratic Movement (ODM), which campaigned heavily against it and eventually succeeded in the rejection of the draft by 58% of voters. ODM leader Raila Odinga grew to be so popular that he contested Kibaki in the December 2007 elections. The controversial elections sparked violence. Considered one of Kenya's history darkest episodes, 1,500 people were killed, 300,000-plus were left homeless and 600,000 were internally displaced in inter-ethnic clashes. This was especially the case the Rift Valley, and Nairobi became the epicenter of protests and violence (Zeleza, 2014).

ODM partisans with a portrait of their party's candidate Raila Odinga in 2007.
Source: Demosh, 2007

The crisis exposed deep unresolved divisions in Kenya, some inherited from the colonial era , such as post-colonial inequalities, ethnic divisions, land conflicts, and weak institutions, highlighting the urgent need for reform.

The resolution of the conflict resulted from a mediation process in which the international community played a key role, with former UN general secretary Kofi Annan as its main representative. This unique, largely successful mediation process paved the way for a constitutional moment marking progress in Kenya.

The new constitution passed on the 4th of August 2010, and intended to target many of the political challenges that had beset the country since independence. First, it established a bill of rights covering civil, political, social, economic, solidarity, development, and environmental rights, with specific provisions for gender equality and protecting children, people with disabilities, youth, the elderly, minorities, and marginalized groups. Underpinning the conception and implementation of the bill of rights is an inclusive notion of citizenship in which dual citizenship for Kenya's rapidly growing diaspora is explicitly acknowledged. Secondly, the new constitution lays out a clear separation of powers - executive, legislative, and judiciary - their limitations, as well as checks and balances. The third key feature of the 2010 constitution is that it entrenched a new legal framework with the principles and structures of devolved government, which granted counties greater administrative and financial autonomy.

Nairobi, as both the capital and a newly designated county, faced unique challenges in adapting to this shift. The legal framework underpinning this transformation was enshrined in key constitutional provisions that structured governance at both national and county levels, ensuring a new balance of power across Kenya.

This chapter will go over the key changes in the legal text and the implications for urban governance - especially for the capital Nairobi - before ending with reflections on the possible limitations of this document, 15 years after its adoption.

Constitutional Provisions About City Power

The 2010 Constitution of Kenya establishes a robust framework for Nairobi's autonomy through its explicit provisions for decentralization and empowered local governance—a key insight gained during our comprehensive study tour. This constitutional architecture reflects broader democratic trends, as articulated by Hirschl (2008) in his analysis of the judicialization of politics. Within Kenya's constitutional design, the judiciary has emerged as a pivotal institution, increasingly charged with interpreting and enforcing constitutional provisions concerning urban rights, complex land disputes, and the boundaries of local authority. This expanding judicial mandate serves as a critical mechanism for ensuring Nairobi's governance practices align with constitutional principles, creating a system of checks and balances that safeguards the city's constitutionally guaranteed autonomy while promoting accountability in urban administration. This is consecrated in Article 6.1,2,3 which states the following:

> **(1) The territory of Kenya is divided into the counties specified in the First Schedule.**
>
> **(2) The governments at the national and county levels are distinct and interdependent and shall conduct their mutual relations on the basis of consultation and cooperation.**
>
> **(3) A national State organ shall ensure reasonable access to its services in all parts of the Republic, so far as it is appropriate to do so having regard to the nature of the service.**

As such, not only does decentralization become a constitutional necessity, but the political equality between all the different counties in their relationship towards the nation is enshrined through the establishment of the Senate. Additionally, their equality in terms of service provision and budget allocation is theoretically guaranteed in paragraph 3 but voluntarily kept vague (“ensure reasonable access”) in order to permit greater governability and flexibility.

The mechanisms of the new decentralized organization are detailed in its own chapter. Chapter 11 on Devolved Government includes 7 different parts that translate the will to correctly frame the new mechanisms and ensure that the process is not implemented at the expense of harmony and governability.
Concerning the legal implications on urban governance, it is stated in Article 185.4 that “(a) the management and exploitation of the county’s resources; and (b) the development and management of its infrastructure and institutions” remain a county’s responsibility. This statement has direct consequences on urban governance in Nairobi as the city is constituted as a county as mandated by the First Schedule. Nairobi City is thus organized as a county , following its administrative boundaries regardless of the geographic urban extent of the city.

The Second Schedule details the competencies of the different counties which includes, inter alia, agriculture, health services, transport, trade development and regulation, planning, natural resources and environmental conservation, public works, as well as ensuring and coordinating local participation.
The decentralization of power under the 2010 Constitution reshaped governance structures across Kenya, particularly in urban areas. Counties assumed greater responsibility for managing resources and providing services, creating both opportunities and challenges.

Implications for Urban Governance

The 2010 constitution's fourth schedule, part two, outlines the county government's functions and powers. The ultimate aim was to enhance the effectiveness and responsiveness of public services by bringing governance to citizens' doorsteps and attempting to address enduring problems like waste management, road maintenance, and public health services. Wambua and Kiruthu (2014) discovered, however, that county governments lacked the resources required to provide the necessary services.
The 2010 constitution's fourth schedule, part two, outlines the county government's functions and powers. The ultimate aim was to enhance the effectiveness and responsiveness of public services by bringing governance to citizens' doorsteps and attempting to address enduring problems like waste management, road maintenance, and public health services. Wambua and Kiruthu (2014) discovered, however, that county governments lacked the resources required to provide the necessary services.

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Additionally, the constitution brought local economic development back into the spotlight. The empowering of county administrations made the creation of local economic plans suited to Nairobi's particular requirements possible. The immediate objective was to create an atmosphere favourable to economic activity to promote job creation and economic growth. However, efficient resource allocation and coordination were necessary for these initiatives to achieve their objectives.

Promoting citizen participation in governance was one of the 2010 Constitution's main tenets. The constitution's Article 174, (C) required citizens to participate in decision-making procedures so that their opinions were heard on issues that affected their daily lives. Uraia, the leading national civic education organisation in Kenya, claims that the devolution prompted the creation of several civic education and public engagement programs to involve locals in service delivery and urban planning. Although the effectiveness of these initiatives varied, the immediate effect was a greater emphasis on transparency and accountability in government.

The establishment of county governments required strong anti-corruption and transparency-enhancing measures. Measures like frequent audits, open forums, and the creation of oversight committees were put into place (Ouna, 2017). The immediate impact was a heightened focus on ensuring that public resources were used efficiently and that officials were held accountable for their actions (Utafiti Sera., 2022).

Despite these efforts, corruption and inefficiency remained challenges that manifested as “elite capture,” “incompleteness,” and “lack of inclusion in project planning.” This was highlighted in the research findings of the “infrastructural violence” within the Standard Gauge Railway (SGR) project presented by Prof. Kennedy Mkutu during our trip.

Kenya's 2010 Constitution had significant implications for urban governance in Nairobi at the time of its enactment. Research findings show that Nairobi City County has experienced notable improvements in service delivery due to public involvement and information exchange, which resulted from the 2010 constitutional devolution (Gathumbi, 2024). To fully realise the possibilities of devolution, efficient coordination, resource allocation, and ongoing citizen participation were essential. Continuous efforts to resolve these issues were crucial for sustainable urban development as Nairobi continued to negotiate the difficulties of decentralised government.

The Standard Gauge Railway is Kenya’s biggest invetsment in rail infrastructure since 1901.
Source: Global Railway Review, 2017.

Limitations of the 2010 Constitution

The Constitution has implemented new challenges for the governance of cities, and most of all Nairobi. Indeed, particular attention was given to the decentralization of political power to the cities. Following the 2011 Urban Areas and Cities Act, the cities of Nairobi and Mombasa were upgraded to counties. However, now, towns and municipalities are managed by a board appointed by the county council. Thus, with the fundamental and constitutional top-down desire of political decentralization to provide more local autonomy and local democracy, the 2010 Constitution followed by the 2011 UACA has led to a political municipal representation (including the mayor) that is not directly elected by the local citizens but appointed by the central government: the county council has taken over the municipal power.

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Moreover, according to Article 43, Economic and Social Rights, in Part 2, Rights and Fundamental Freedoms, all Kenyan citizens have the right to "accessible and adequate housing, and to reasonable standards of sanitation". This right is considered fundamental by the constitution and thus must be considered as a constitutional right to every Kenyan. Even though the concept of "accessible and adequate housing" remains unclear and blurry, it must relate to housing conditions that are humane, sustainable, and safe. Even though there is an explicit constitutional provision with the proclamation of the "housing right" as a fundamental constitutional right, the housing market remains at the margins of the law since most of it is informally produced (Mwaniki et al., 2015). Furthermore, according to the last figures given by the Kenyan Ministry of Health in 2022, 46% of Nairobi (land area) is covered by a sewerage system, and 65% of the population living in informal settlements rely on on-site sanitation systems.

This figure has not improved since the housing census of 2009 when 47.7% of the land area of Nairobi was connected to the main sewer system (Mwaniki et al., 2015). These figures show that the local government of Nairobi is struggling to provide Water and Sanitation Systems to all its inhabitants, even though this is one of their constitutional rights, along with "adequate housing".

Finally, the 2010 constitution insists on the need of public implication and participation at every level of the society. In Chapter 11, 'Devolved government' Part 7, 'General", article 196 "Public participation and county assembly powers, privileges and immunities" implies that the county assembly should "facilitate public participation and involvement in the legislative and other business of the assembly and its committee". Public participation is at the heart of the legislative process-making at county levels. However, the repression that succeeded last year during the 2024 riots can mitigate this perception of the role of public participation.

Indeed, the Kenya Finance Bill Protests that started in Nairobi in June 2024 were against the corruption in the political class and against the finance bill proposed by the Parliament that would increase taxes. With over 50 fatalities, 230 injured, and 283 arrested, these riots followed the ones that occurred in 2023. The "anti-government protests" led by the former Prime Minister left 6 people dead and dozens injured.

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PUBLIC TRANSPORT

Beyond the Commute: Public Transport and the Making of Metropolitan Nairobi

This chapter examines Nairobi's public transit system, focusing on the coexistence of informal modes like matatus and boda bodas with formal planning efforts such as the Bus Rapid Transit (BRT) master plan. It explores the potential for hybrid models that integrate informal transit into formal systems, highlights private-sector innovations in green mobility, and critically assesses the Nairobi Expressway as a reflection of the city's evolving and contested mobility landscape.

By Jeanne FOLTZER, Mica HIOT, & Ian Piolo MIRANDILLA.

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Introduction

This chapter will dive into the variety of public transportation modes that shape Nairobi's mobility landscape. A first part will present Matatus and Boda Bodas' essential role in the city's mobility landscape, assess the objectives of the Bus Rapid Transport (BRT) masterplan and explore potential avenues for a hybrid system integrating matatus in the future BRT. A second part will reflect on the emerging role of the private sector in governing public transportation, by selecting examples of innovation in the field of green transportation. A critical examination of Nairobi's Expressway will offer a final perspective on the capital's complex mobility landscape.

Current and Future Modes of Commuting via Public Transport in the Capital

Matatus' Controversial Dominance of the Transit Sector

The transportation sector is one of the main challenges of the urban governance of the City of Nairobi. On a daily basis, 5 million commuters travel from the outskirts of Nairobi (from Kiambu, Kadjiado...) into the city, in addition to the 5 million Nairobi residents who also commute in the city. In the absence of efficient public transport services, the informal transport sector is responsible for the majority of these commutes. The data reveals that 14% of the economically advantaged population opt for private vehicles, while 40% of the middle and low-income bracket utilise matatus, 40% walk, and 5% resort to boda-bodas (Mitullah, 2025). The informal transport sector not only caters to the mobility needs of the populace but also provides employment opportunities for a significant proportion of the youth seeking employment.

The matatu sector accounts for 70% of the demand, despite representing a mere 15,000 of the 55,000 vehicles in circulation in Nairobi. The name 'matatu' is derived from the Swahili word for 'three'. When the service was initiated in the 1960s, the fare was equivalent to three 10-cent coins (Lea Wester, 2017). The demographic profile of the sector's workforce is characterised by a significant proportion of individuals aged between 17 and 35 years, with educational attainment levels ranging from less than primary school to college graduation.

The buses are the property of individual operators who provide their vehicles to matatu drivers. A matatu team consists of a driver and a crier (called a “namanba”) who announces the bus's destination and attempts to attract passengers by standing at the bus door. Matatus operate on 135 routes inherited from the old system established in 1973, as well as on new routes created as required. The fares range from 30 to 50 shillings, equivalent to €0.23 to €0.34.

A matatu with a sports theme. Photo credit: Nils Lagrève

Matatus are readily identifiable by their vibrant paintwork, which serves as a canvas for expression of support for diverse causes, including politics and sports (for instance, football teams). These artistic expressions are crafted by local artists. Since its inception, the matatu has been subject to various policies that have, to varying extents, been repressive in nature. A notable example is the legalisation of the matatu in 1973, when President Jomo Kenyatta abolished the requirement for obtaining a licence. However, in 2004, the Michuuki regulations were introduced with the aim of controlling the matatu sector and combating illegal behaviour. These regulations included the requirement for government documents to prove 'good behaviour' and the mandatory use of seat belts. Nevertheless, these policies did not achieve the desired result. Presently, the Power Matatu Vehicle Owners Association is consulted by the government to manage informal transport in Nairobi (Ference, 2016,).

Boda-Bodas' Rise to Legitimacy and Omnipresence in the City

The motorbike taxi, known as the boda-boda (a derivative of the term "border"), has emerged as the second informal transportation system in Nairobi. In 2003, the government's decision to impose a zero-rated import duty on motorcycles led to a decline in their cost, rendering them affordable to a wider segment of the population.The influence of the motorcycle industry has been observed not only in rural areas but also in urban centres such as Nairobi, Mombasa, and Kisumu (Murunga, 2023). According to the National Crime Research Centre, as of 2019, 97.4% of boda-boda drivers in Kenya are male, with a mere 2.6% being female. A similar trend is observed in the matatus sector, where men constitute the majority of drivers. In the case of boda-boda drivers, 70% are aged between 18 and 25 years, with varying levels of educational attainment, including 43.7% with primary education, 42.5% with secondary education, 5.7% with college education, and 6.3% with no formal education (Kinyanjui, 2024).

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Boda-Boda drivers on the side of the road.
Source: Facebook, 2022.

The boda-boda drivers are easily identifiable by their fluorescent vests, and their ability to navigate traffic congestion is a key advantage. On a good day, they can earn between 1000 and 1500 shillings (€6.81, €10,22). However, there have been numerous reports of accidents and incidents of theft by these operators, leading to calls for greater oversight and regulation of this activity, particularly in high-density areas such as the Central Business District (CBD) in Nairobi County. In August 2024, Tony Kimani, Chief Officer Security and Compliance, proposed the introduction of an identification number for boda-boda operators in the CBD, with the aim of enhancing safety and regulating the activity.

This policy follows other policies established in recent years that have been of varying severity. For instance, in 2015, the former governor of Nairobi, Evans Kibera, banned all boda-bodas from operating in the Central Business District (CBD). In 2018, a more flexible law was implemented, allowing boda-bodas to move around the CBD without picking up or dropping off people. However, these measures have not been adhered to, and in 2022, the government initiated a new programme to integrate boda-boda drivers into the CBD by establishing designated routes and parking lanes (Kevin Cheruiyot, 2024).

Despite the predominance of matatus and boda-boda as primary transportation modes in Nairobi, formal transportation systems such as taxis and Uber are also used by the population.

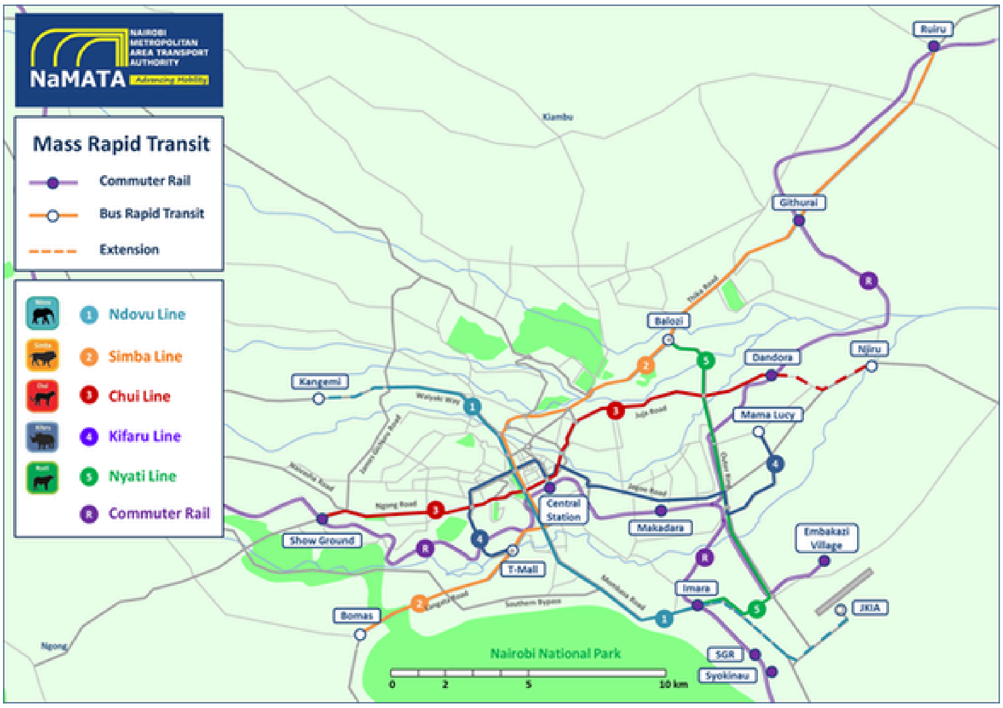
A Masterplan in the Making: Nairobi's Bus Rapid Transport (BRT)

Although it's hard to imagine the city of Nairobi without its iconic matatus, the state of transport in this city has not always been dominated by these privately-owned minibuses. Prior to 1992, the public government controlled transport in the city, managing buses that had set schedules, and offering a commuting experience that's significantly different from today's. Kenya Bus Services, established in the 1970s, originally offered scheduled bus services, but by 1975, only 55 of its 367 buses were still operational. Overcrowding and unbearable wait times naturally came as a result and by 1992, the system had completely collapsed. Private operators stepped in and the matatu culture that dominates Nairobi's streets was born.

Prior to 1992, the public government controlled transport in the city, managing buses that had set schedules, and offering a commuting experience that's significantly different from today's.

While the government-owned bus system was far from perfect, the matatus of today are no less chaotic. Walking around Nairobi, one easily sees how overcrowded they are, with passengers squeezed tightly at the interiors and some having parts of their bodies hanging off the sides. There are no designated bus stops and passengers are not completely informed of matatu numbers and routes. Generally, service quality has remained low as operators tend to merely focus on hitting daily revenue targets over improving passenger experience.

With the aim of bringing more order in the transport system, the government had been gradually stepping in, with the most pronounced effort being the formation of the Nairobi Metropolitan Authority (NaMATA) in 2017. Today, the responsibility of overseeing the public transport system in Nairobi falls under this singular body, with its establishment anchored in Kenyan law. One of NaMATA's flagship projects is the establishment of a Bus Rapid Transit System (BRT) that attempts to satiate the transport demands of Nairobi's rapidly growing population. In a dialogue with Francis Kitao from NaMATA, he has stated that the city is ripe for mass rapid transit and they are at a crucial stage where this is not merely desirable, but necessary.



Map of Nairobi's BRT system
Source: Nairobi Metropolitan Area Transport Authority (NaMATA)

As a result, five key transit corridors have been identified by NaMATA: Ndovu Line, Simba Line, Chui Line, Kifaru Line and the Nyati Line. The Chui Line, in particular, has been identified as the most high-impact transit corridor, attracting significant international investment. The European International Bank is investing 210 million Euros for this line, with an additional 70 million Euros coming from the French government. These international partnerships, along with private sector involvement, have been actively pursued by NAMATA to ease financial strain and avoid having to impose higher taxes on Kenyans.

It must also be noted that these investments are not just about improving commuter experience, but also about pursuing sustainable transit. The Chui Line is set to be a fully electric corridor with an accompanying electric mobility policy currently under development. To ensure its success, both Agence Française de Développement (AFD) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) are standardizing the corridor. According to NaMATA, the procurement of the electric buses is currently in motion, with the first fleet expected to arrive in November 2025.

Additionally, government authorities are trying to work with data-driven business insights to create a transition model as a way to establish stable revenue streams. A core element of this approach is the integration of land-use planning with transit-oriented development (TOD) which tries to maximize the value of land around transit stations and corridors.

Still, despite these advancements, NaMATA had stated that mass rapid transit is always a capital-intensive venture that could take up to a decade to fully materialize. Financing maintenance and operational costs thus becomes a crucial factor in ensuring the project's sustainability. In another dialogue with Everlyne Otieno from the European Investment Bank, they are currently debating whether to impose a flat fare or a variable fare, where the fare is based on the distance traveled to passengers. There's also the challenge of having to compensate landowners and business owners along BRT corridors which may not be covered by the EIB's loan as this is a local government issue. Still, despite the complexity of the issue, the project remains attractive. EIB states that public transport projects are normally unattractive to investors as they tend to offer low financial returns but for organizations such as the EIB, their high economic returns due to reduced traffic congestions, decreased pollution and curtailed commuting times cannot be understated.

And these benefits are not just theoretical. The success of BRT systems in cities like Bogota with the TransMilenio and Curitiba prove that these systems do work and that they are able to convince people to set their cars aside and take public transport. In terms of environmental benefits, Bogota's BRT has also been shown to reduce the overall fuel use and energy consumption of the city as compared to previous transport modes. But even in Nairobi itself, the benefits of BRTs and TOD have already been documented, with TOD leading to increased land values around transit hubs and along the Thika Road corridor. To add to this are the documented social benefits of BRTs worldwide, with a study on Lima's Metropolitano BRT System showing how employment rate increased by 3.9%, hours worked increased by 19% and monthly income increased by 39% between 2010 and 2017 for residents living within a 1.5km radius of the BRT trunk line.

However, while the benefits of a BRT are clear, implementation is far from straightforward. Large-scale infrastructure projects can be magnets for delays, corruption and mismanagement. Kenya's road infrastructure sector has been historically plagued by inefficiencies and this will be a tremendous obstacle for the BRT project to overcome. The Kenya Anti-Commission has exposed serious irregularities within the Ministry of Roads and Public Works and the Kenya Roads Board. Procurement abnormalities like bid rigging and conflicts of interests, inflated project costs, substandard construction materials, and even direct theft of resources have been observed in the implementation of projects across the country (Kenya Anti-Corruption Commission, 2018). But even after projects do materialize, there are still some contentions related to land use. Public officials would, from time to time, outright approve encorachment on road reserves by private developers which reflects the generally weak political will of the government. Even among private individuals, corruption is rampant. Overloaded trucks would sometimes pass through weighbridges thanks to bribes, which only damages these structures which are meant to last decades (Kenya Anti-Corruption Commisson, 2018).

Procurement abnormalities like bid rigging and conflicts of interests, inflated project costs, substandard construction materials, and even direct theft of resources have been observed in the implementation of projects across the country.

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It is thus the overcoming of these historically-entrenched governance obstacles that will decide whether this ambitious BRT project will really live up to its promise.

Opportunities and Limits for the Integration of Matatus in the BRT System

The implementation of the BRT in Nairobi raises questions about the future of the matatu industry within the transport sector of the Kenyan capital. According to NaMATA, the launch of the BRT in Nairobi aims to improve the shortcomings of matatus in providing safe and reliable transportation, and become the principal means of mobility for all Nairobians in the long-run ().

Nairobi's Vision 2030 has clear ambitions for the city to become a "world-class city region", through economic growth, global competitiveness and infrastructural development (Vision 2030 Delivery Secretariat, 2024). The launch of BRT lines across the capital would contribute to the goal of Nairobi to become a 'world class city'. However, the plan makes no mention of the matatu industry, leaving one to wonder if narratives of global competitiveness do not come at the expense of ignoring the importance of matatus in connecting millions of Nairobians to the economic and social opportunities of the urban core (Myers, 2015).

In addition, the support of international agencies such as the European Investment Bank, French Development Agency and KPMG implies that the BRT loosely inspires itself from Western standards of modern infrastructure ideals, where a single network provides uniform coverage for a whole city (Furlong, 2014). However, the scope and scale of Western transport models overlook the merits of coexistence between different infrastructure systems that define much of the lived realities in Southern urban contexts (Furlong, 2014; Klopp & Cavoli, 2019). In turn, the tendency for governments in Southern metropolises to engage in the top-down formalization of paratransit networks such as matatus, has often failed to garner support from paratransit businesses or users (Schalekamp & Behrens, 2013). Attempts at regulating the paratransit sector tend to prioritize operators and vehicle owners over drivers and conductors, and lead to higher operational costs that are passed on to workers and commuters (Ference & College, 2016). Besides, recognizing the cultural significance of the matatu industry for Nairobi's social fabric is essential for crafting policies that respect and build on local practices (Myers, 2015).

Various conversations with planning agencies and organizations involved in the development of BRT revealed that significant consideration has been put into envisioning a future where the matatu industry remains a key stakeholder in Nairobi's transport sector. As a young transportation agency dedicated to the launch of BRT, NaMATA is aware of the danger of excluding matatus from future transportation plans. Examples from Johannesburg and Lagos have taught Nairobi that increased competition and tensions between BRT lines and the paratransit takes place when the integration of paratransit is sidelined from BRT pilot projects. The agency is therefore leaning towards a hybrid system where matatus act as a feeder and mass transit act as the main supplier for Nairobi's roads (NaMATA, 2025). In other words, matatus would feed smaller roads such as residential areas and informal settlements while the BRT would cover key axes of the capital. This multi-modal system would achieve a realistic compromise between diverging interests.

On the other hand, a talk with a representative from the European Investment Bank indicated that “more integration” between the railway system and the BRT is set to take place than between matatus and BRT, since matatus are a privately owned system (EIB, 2025). This poses the question of the extent to which local authorities and project sponsors will put efforts into achieving a consensus with transportation operators from the matatu industry to create a multi-modal system. Other practical limitations such as the narrowness of existing corridors places additional pressure on the need to correctly coordinate efforts between matatus and the BRT to avoid overcrowding and traffic congestion. Only time will tell how the matatu industry will evolve in the upcoming years to accommodate the launch of the first BRT lines, which is set to happen in 2035 at the earliest.

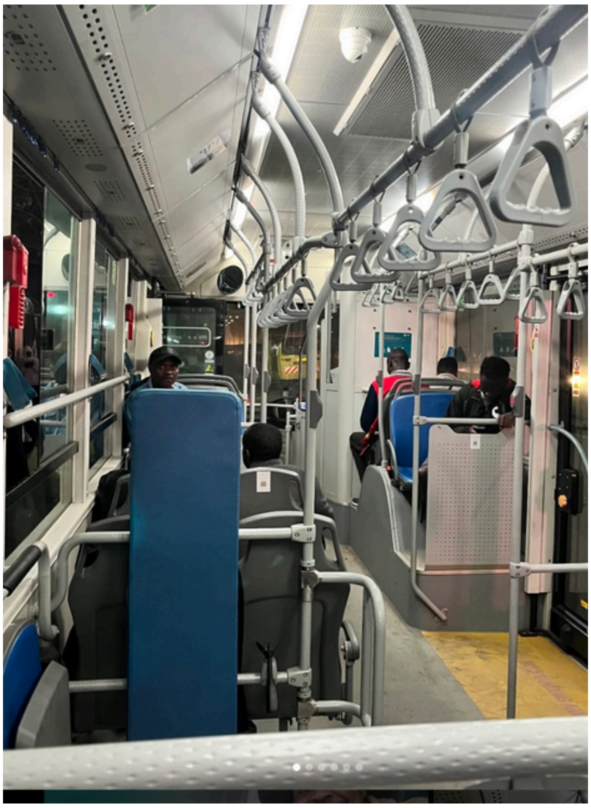
The Emerging Role of the Private Sector in Innovating Public Transportation

Amidst the rapidly developing transportation needs in the region, there are often gaps left that the public sector does not yet have the capacity to fill. As such, actors in the private sector have turned to innovative business models to expand mobility access in the region. This section will overview two of those many businesses - SPIRO and e-moti, each who have found their niche in the market. On our trip to Nairobi, we had the pleasure of speaking with the founders of each individual company and getting an inside view of their goals and daily operations.

E-moti’s Mission for Greater Efficiency in the Transport Sector

Founded in 2023 by Kirera Denis Muchoki and Billy Mwangi Ng’ere, E-moti Ke is a fully electric bus fleet operator that strives to provide “affordable, convenient, and eco-friendly” transportation services to Kenya for both personal and group travel. As a young company, they are primarily active in the Nairobi Metropolitan Region, with hopes to eventually expand into other parts of the country. Matatus, the primary form of ‘public’ transportation in Nairobi, are known for discontinuity in their routes, fees, and levels of safety. The founders’ goal was to create a form of public transportation with customer satisfaction and the environment in mind, something they felt matatus lacked.

An E-Moti elctric bus.. Source: Instagram, 2024.



Inside a bus. Source: Instagram, 2024.

The company's low operational costs - nearly 40% less than other bus companies - allows them to offer stable and competitive rates to their customers, as they believe that high cost of living can be an inhibiting factor for people accessing transit. In addition to this, E-moti also has their own personalized integrated digital platform, available as a phone application, called Manara. Manara provides passengers with real time updates on bus routes, fares, and safety conditions on the buses. Passengers can also use Manara to book their ride, pay fares, and provide feedback on their user experience. Along with customer satisfaction, E-moti's dedication to sustainability shines through their business model. The fully electric fleet emits 60% fewer carbon emissions compared to traditional buses. The company is also partnered with Nature Lover Consultants on a program called 'A Trip for Trees.' This initiative dedicates 2% of E-moti's revenue to planting and nurturing trees in Kenya - aligning with the national government's goal to do just that.

SPIRO's Pilot Launch of Eco-Friendly Motorbikes in the Two-Wheel Vehicle Sector

Outside of matatus, another commonly used form of transport in Nairobi are motorbikes. Amidst the transition to electrification in the transportation sector, SPIRO, an electric motorbike company launched in Benin in 2019. Since then, the company has expanded its reach to Togo, Rwanda, Uganda, Nigeria, and Kenya. SPIRO's mission is to champion sustainable urban mobility in Africa, reduce carbon emissions, and promote a cleaner environment. They have become the largest EV player in Africa and have found notoriety as one of TIME's 100 Most Influential Companies of 2024 and receiving the Financial Times' Resilient Infrastructure Award. SPIRO's entrepreneurship, along with their commitment to local economic and social development, made us eager to learn more about their operations.

During our visit to Nairobi, we had the privilege of touring one of SPIRO's factories and seeing the production cycle of their bikes. As of now, bikes and their corresponding materials are received from China, where they are then thoroughly inspected, multiple times over, by SPIRO employees. It was evident on our tour that quality control was a priority for the company. There are not many industry standards for e-bikes in Africa, so SPIRO, as an industry leader, plays a key role in setting said standards, a role they take seriously.

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There are many moving parts in the factory, but the production process has been tailored to ensure peak efficiency. Once the bikes and batteries are received, they are stored separately due to different temperature requirements. Bikes are assembled by several employees at a time, including a leader who does quality checks at each step of the process. Batteries go through an extensive testing process, ensuring each cell is performing at its highest capacity.

Once the bikes and batteries are assembled and inspected, they are shipped off to customers. Customers receive instructions on how to use the bike, and there is a QR code on the bike that explains the intricacies of the battery. A unique aspect of SPIRO's business model involves these batteries. Each battery is encoded to work with only one specific bike. Customers can either have a battery charging station at home, or make their way to one of SPIRO's battery charging and swapping stations. At these stations, there are garages for maintenance, as well as charging stations for the batteries. However, seeing as many of the customers use the bikes for their businesses, SPIRO has created a unique alternative to waiting for the electric batteries to recharge. Each bike comes with two batteries that are encoded to it. One battery stays at a charging station, ready to go, so when a driver comes to the station, they can quickly swap one battery out for the other and continue on with their work day. The batteries are designed to be quite long-lasting, but SPIRO is proactively designing a battery recycling system for when the time comes.

SPIRO is actively operating 22,000 electric motorbikes across their six countries of operation with 40,000 batteries currently in use, and over 15 million battery swaps having taken place. The company is continuing to expand into other countries throughout Africa and constantly seeks ways to increase their customer base and improve satisfaction and efficiency. As such, SPIRO acts as another great example of innovation in the transportation industry in Nairobi, as we have seen as a common trend in other industries as the push for sustainability intensifies throughout Kenya.

Speeding Past the Majority: Nairobi's Expressway and Urban Inequality

Starting from October 2019, the skyline of Nairobi was drastically changed by a huge infrastructural project crossing the city in its entirety. The Nairobi Expressway is a 27.1 km toll road, connecting Mlolongo, in the south-eastern area of the city, to the Jomo Kenyatta International Airport and its CBD, before terminating in the vibrant neighbourhood of Westlands. The highway was built under a Public-Private Partnership (PPP) with China Road and Bridge Corporation (CRBC), which invested $560 million and will collect toll fees for 30 years from the beginning of its construction (until 2049), before handing it over to the Government of Kenya (Africauptodate, 2022). It was inaugurated in July 2022, less than three years after the start of its construction and since the conception of this project, it was aimed to ease urban mobility and solve the severe traffic congestion crisis affecting the Kenyan capital, in particular along the main artery of Mombasa Road.

Expressway view from Uhuru highway
Photo credit: Davide Cerella.

The new and modern expressway dramatically reduces travel time, cutting the commute from the airport to the CBD from 2 hours during peak hours to 20 minutes. During our visit to Nairobi, we had the possibility to use this highway several times, enjoying the ease of moving around the city it allowed us and the panoramic views it provided since the majority of the highway is built on viaducts above Mombasa Road that cross the city center. However, it imposes very high tolls, from 120 to 360 Ks (around 1-3€), depending on the route length. This makes it inaccessible for the majority of Nairobi's citizens, who continue to commute on the still congested (and now even narrower in some traits) Mombasa Road, right below the Expressway. As a result, urban mobility in Nairobi is segregated by economic status, and this is easily observable when walking in the Nairobi CBD or in one of its parks, where it is impossible not to notice the two different layers moving through the city at very different speeds.

In a city where 46% of the population moves by public transport and less than 13% commutes by car (Deloitte Insights, 2018), the presence (or absence) of matatus on the road is a great contribution to traffic congestion. As a result, the debate about whether or not to allow matatus on the Nairobi Expressway has been very animated since the opening of the highway. In July 2022, following several accidents involving the matatus on the highway, the Transport and Infrastructure Cabinet Secretary temporarily banned matatus on the Nairobi Expressway (Makong, 2022). One year later, during the huge protests that took place in the Kenyan capital against the rise of living costs, the Expressway was one of the main targets of the protestors (Kimani, 2023) and became the symbol of a two-speed country, that while building massive infrastructure for its economic development through the partnership with the private sector, makes it inaccessible for the majority of its citizens. This project indeed, distances itself from the infrastructural ideal, since starting from its conception, it was not meant to serve the Nairobi population equitably: the huge amount of money spent in its realization could have been used to develop public transportation infrastructure that would have benefitted a much larger slice of the population. However, relying on private companies to finance urban public transportation projects is much more complicated because the latter are less economically viable and require public intervention for their realization, which is often constrained by limited budget availability. As Nairobi rapidly becomes one of the world's fastest-expanding metropolises, with 5 million people expected to commute across the city by 2030, rethinking infrastructure priorities is essential to ensure an inclusive and equitable urban development.

One year later, during the huge protests that took place in the Kenyan capital against the rise of living costs, the Expressway was one of the main targets of the protestors (Kimani, 2023) and became the symbol of a two-speed country, that while building massive infrastructure for its economic development through the partnership with the private sector, makes it inaccessible for the majority of its citizens.

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LAND USE

Land, Power, and Plans: Uneven Urban Development in Nairobi

Nairobi's land use has evolved from a colonial railway depot to a major industrial and economic hub for East Africa, shaped by policy, rapid growth, and planning struggles. This chapter explores how land has been used, governed, and contested over time.

By Louisa HANSON, Daria LYSENKO, Natalia MONTEJO & Marie SORS.

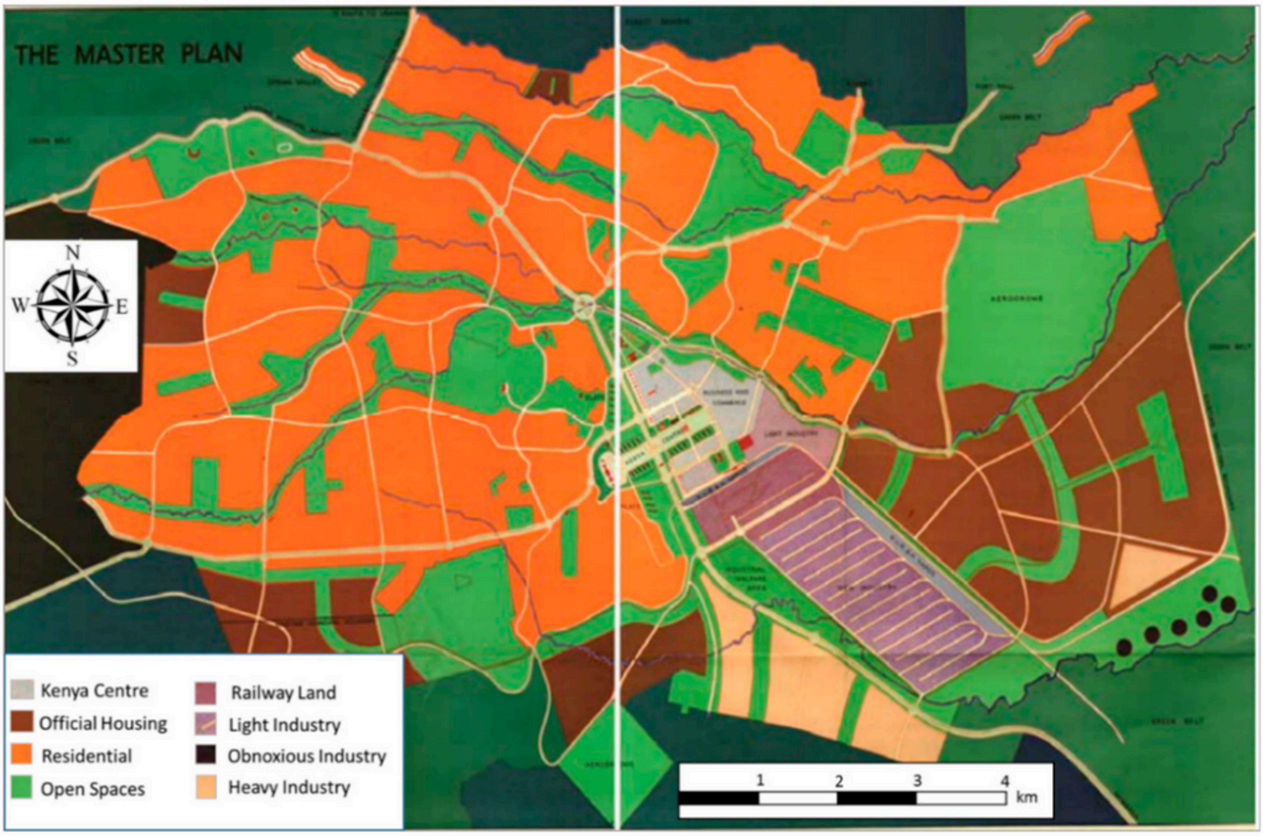
Historical Land Use and Colonial Legacy

As we started familiarizing ourselves with Nairobi, our first day opened with an introduction to the planning history of Nairobi. Joan Nyagwalla Otieno, assistant lecturer at TUK and planning professional, underlined the foundation of the city under the colonial system. As it is known today, Nairobi was originally developed as a railway supply depot, but its origins can be traced back to the indigenous Maasai people. The pastoralists used the local river as a source of drinking water for their livestock - resulting in the name "Enkare Nyrobi", literally "cool waters" (Ametu, 2023). However, the 1904 and 1911 Anglo-Maasai treaties forced them into reserves, losing almost half of their life-sustaining land, and paved the way for urban growth under British rule. The effects of colonial spatial organization and land use policies can be felt in the city to this day.

Sir Charles Eliot may have named Nairobi the capital of the British East Africa Protectorate in 1905, reinforcing its status as an administrative and commercial center, but the beginnings of the city were characterized by haphazard urban development. Labelled as a "no man's land", private land ownership and speculation dominated the city rather than planned urban growth. Under Governor James H. Sadler (1905-1909), tensions escalated between settlers and indigenous communities - Maasai herders relied on the river for their livestock, while the Kikuyu faced increasing land dispossession and agricultural exploitation. By the 1920s, the city was divided into European and Indian

Maasai people outside of their kraal (small community) in the early 1900s. National Geographic Image Collection. Source : American Museum of Natural History.

quarters, with Africans excluded from urban rights. The Great Depression further cemented these inequalities, as development funding prioritized white settlements. Nairobi gained city status in 1950, but investment in services remained focused on white neighborhoods while the Mau Mau rebellion spread across the country. The 1948 Master Plan, drafted by South African planners, formalized racial segregation, shaping both the urban landscape and rural areas. In 1953, the Lari Massacre - where Mau Mau rebels killed 74 people, members of the Kikuyu Home Guard and their families - marked a turning point, leading to negotiations for independence from 1959 to 1962. Despite infrastructure expansion, segregation was deeply ingrained in the city's fabric, reinforcing social and spatial divides that persist beyond colonial rule.



Nairobi Master Plan for a Colonial Capital. Source : Wanjiru-Mwita, 2020.

Post-independence, the transition away from colonial governance opened the door to an era of urban restructuring, although land access inequalities continued to persist. The 1968 Master Plan marked a shift in planning methods, focusing on infrastructure and housing, but retained colonial-era zoning principles and failed at adequately addressing informal settlements and rapid urbanization. Finally - as William F. Banyikwa (1990) calls out a "consistent obsession of moving the underprivileged about" - the reliance on state intervention to dictate land use patterns reinforced socio-spatial divisions in the city.

There is much historical heritage in the urban scape of Nairobi that persists today, apart from residential neighborhoods reflecting socio-economic divisions. One of them is the Central Business District (CBD): established as the economic hub in the 1947 Master Plan and following the Burgess Concentric Model, it continues to be the focal point of commercial, administrative, and financial activities within the city. Similarly, industrial areas were zoned near the railway in the south of Nairobi for logistical convenience, and have largely remained there. The Maasai people are still fighting to reclaim their land today, as post-colonial policies did not restore it to them. Instead, ongoing land dispossession, privatization, and the growth of natural reserves have forced them to abandon their traditional nomadic way of life and turn to agriculture (Riamit et al., 2021).

Nairobi's CBD. Photo credit: Cyriel Pelletier

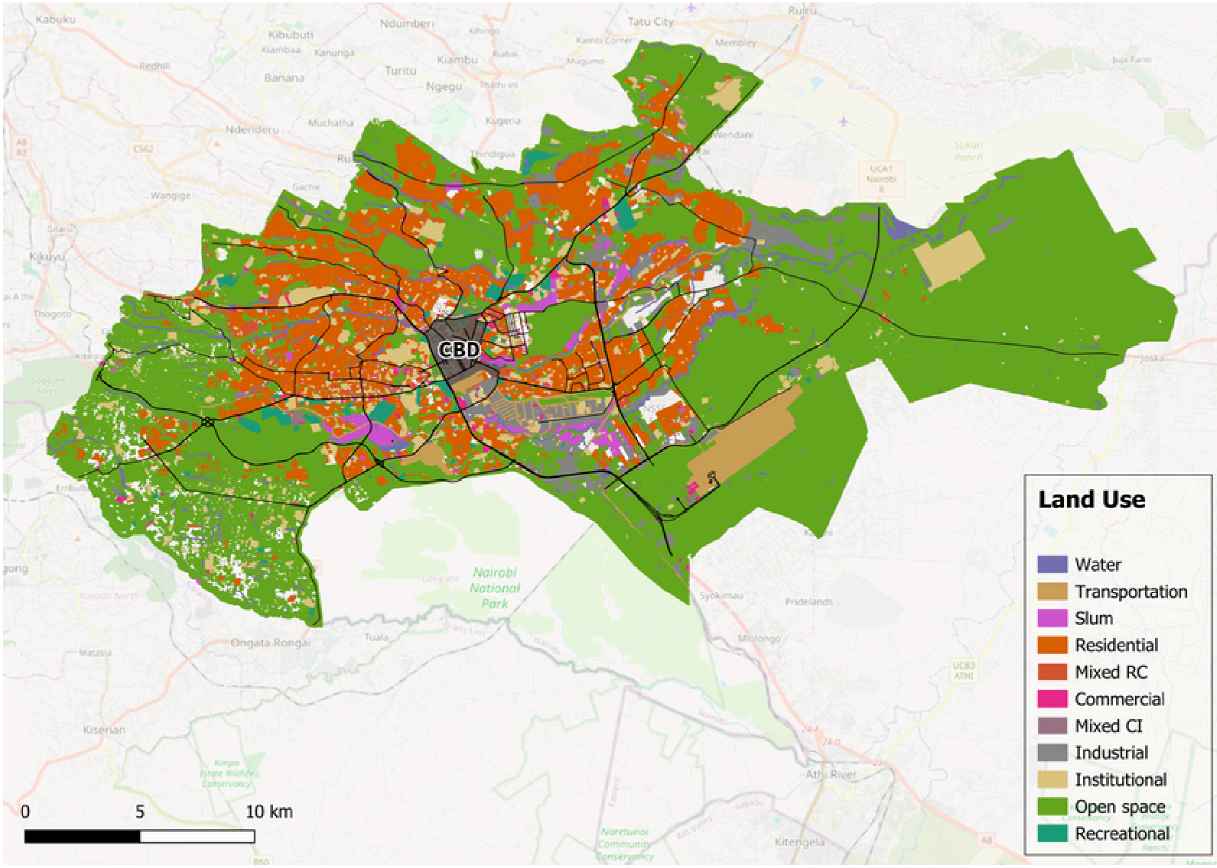
Contemporary Land Use Patterns

Nairobi's contemporary land use is shaped by a combination of historical legacies, economic pressures, and evolving urban planning policies. The city contains a diverse range of land use typologies, each subject to ongoing transformation due to rapid urbanization and infrastructural development.

One of the most significant influences on Nairobi's land use planning has been Kenya's Vision 2030, launched in 2008. While this development blueprint aimed to modernize Nairobi and position it as a global city, it has been criticized for prioritizing elite-driven projects over equitable urban development, particularly in terms of affordable housing (Huchzermeyer, 2008). Similarly, the Nairobi Integrated Urban Development Master Plan (NIUPLAN 2014-2030) sought to address spatial planning issues through infrastructural upgrades, including road expansions and a bus rapid transit (BRT) system. However, its implementation has been hindered by political interference and resource constraints, limiting its impact on equitable land distribution (Kitur, 2019). More recently, climate action policies introduced in the 2020s have incorporated climate resilience into urban planning, emphasizing the importance of green spaces and nature-based solutions (NBS) to mitigate environmental degradation (UN-Habitat, 2022).

Nairobi's land use can be categorized into several key typologies:

- **Central Business District (CBD)**: Nairobi's CBD is characterized by high-rise commercial and office buildings, with ongoing densification efforts aimed at maximizing urban space. However, congestion and land speculation continue to present challenges to effective land use (Huchzermeyer, 2008).
- **Industrial Zones**: Primarily located in the eastern part of the city, industrial zones serve as hubs for manufacturing and logistics. However, they face increasing pressure from encroaching residential developments, leading to conflicts over zoning regulations (Ngayu, 2011).
- **Informal Settlements**: An estimated 60% of Nairobi's population resides in informal settlements, a trend fueled by housing shortages and economic migration. These settlements, such as Kibera and Mathare, continue to expand despite government efforts to implement slum upgrading programs (Huchzermeyer, 2008).
- **Agricultural Land**: Historically, large-scale farms in the east played a crucial role in Nairobi's food supply. However, these lands are being rapidly subdivided for urban expansion. Small-scale agricultural activities persist in the northern peri-urban areas but are increasingly threatened by urban sprawl (Ngayu, 2011).
- **Protected Areas**: Nairobi National Park, located to the south of the city, remains a unique wildlife sanctuary. However, urban encroachment has increasingly isolated the park, raising significant conservation concerns and challenging its long-term sustainability (Mwangi et al., 2022).



Land use in Nairobi.
Source: Noah Ben Soussen.

Despite the dramatic expansion of Nairobi's urban footprint over the past 28 years, the southern region, where Nairobi National Park and agricultural lands are located, has retained significant green open spaces (Mwangi et al., 2022). However, urban expansion continues to encroach upon agricultural lands and small villages, particularly along the rural-urban fringe. The transformation of these peripheral areas is closely linked to development pressures in Nairobi's central and affluent districts, where rising demand for land exacerbates housing shortages and speculative development (Mutsiya & Yarime, 2011).

The rapid urbanization of Nairobi's periphery has raised concerns about food security, as agricultural lands are converted into urban spaces. Given that Nairobi is situated in a region with historically strong agricultural activity, the loss of productive land to urbanization poses risks not only to the city's food supply but also to broader national food security (Kitur, 2019). The discourse around relocating Kenya's capital to a less agriculturally significant region has gained traction in recent years, reflecting broader concerns about land use priorities and sustainable urban development (Mutisya & Yarime, 2011).

Another critical dimension of land use distribution in Nairobi is the extent to which housing and international organizations occupy urban space. While residential areas, including informal settlements, dominate Nairobi's land use, the presence of numerous international agencies, embassies, and corporate headquarters raises questions about land allocation efficiency. The transformation of productive agricultural land into urban developments underscores the competing demands for space, further intensifying land use conflicts (Kitur, 2019).

Nairobi's contemporary land use patterns reflect a complex balance between urban expansion, infrastructural development, and environmental conservation.

Urban Governance and Land Management Challenges

Nairobi's urban governance and land management challenges are deeply intertwined with political, economic, and social dynamics. Since the devolution of power to Nairobi County in 2010, governance reforms have aimed to improve urban planning, yet land use remains highly contested due to entrenched political and economic interests. Corruption and political instability have undermined consistent urban management, with frequent leadership changes and governance scandals affecting decision-making. As Nairobi contributes approximately 30% of Kenya's GDP, control over land and development remains a politically sensitive issue, often subject to national government intervention.

Despite the 2010 update of zoning maps, rapid urban expansion and speculative investments have outpaced regulatory frameworks, leading to inconsistent enforcement of land use policies. The dominance of the informal economy—where 83% of Nairobi's workforce is employed—further complicates governance efforts, as rigid zoning regulations often fail to accommodate the city's dynamic economic realities.

Additionally, the persistence of informal urbanism in Nairobi highlights how official planning frameworks struggle to meet the needs of residents, leading to widespread informal modifications to land use and housing. Anyamba (2011) argues that informality is not necessarily illegal but emerges as an adaptive response to the gaps in formal planning. The case of Buru Buru, a planned middle-income estate, exemplifies this phenomenon: initially developed with standardized housing units, residents altered their dwellings to address deficiencies in space and social amenities. This demonstrates how urban governance in Nairobi must reconcile formal regulatory frameworks with the realities of informal adaptations.

Initiatives such as the Nairobi Integrated Urban Development Master Plan (NIUPLAN) were introduced to promote structured urban growth, integrating transportation planning, mixed-use zoning, and environmental sustainability. However, critics argue that NIUPLAN's implementation suffers from bureaucratic inefficiencies, weak enforcement, and the influence of private interests in land allocation (Anyamba, 2011). Moreover, urban sprawl and land speculation continue to challenge sustainable development, highlighting the need for comprehensive regulatory reforms to balance economic growth with equitable land distribution and environmental considerations.

Nairobi faces significant challenges in managing rapid urbanization, informal settlements, and infrastructure expansion while balancing environmental concerns and sustainable planning strategies.

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Land Value and Informality

Although Nairobi's urban planning regulations and projects increasingly incorporate concepts such as the 15-Minute City, Transit-Oriented Development (TOD), and Affordable Housing Initiatives to address informality and urban sprawl, the challenge of providing truly affordable housing for the lowest-income populations persists. As in many cities around the world, inflated land values significantly hinder the construction of affordable housing, as they drive up overall costs and reduce accessibility—Nairobi is no exception to this trend.

In Kenya's capital, rising land prices can be partly attributed to rapid demographic growth, driven by an influx of people—mainly from rural areas—seeking employment and better opportunities. This surge in demand for housing has outpaced the ability of both the government and private developers to supply adequate units at affordable prices, pushing many newcomers into informal settlements. The city's rapid spatial expansion and shrinking availability of buildable land further increased pressure on the remaining parcels, making them more expensive and underscoring the need for public intervention to regulate land prices.

While both local and national governments—alongside nonprofit organizations and investment banks—have made reducing informality a stated priority, little was mentioned during our visit about concrete efforts to curb rising land values. This gap raises questions about the effectiveness of current strategies in addressing informality in a comprehensive and sustainable manner.

One of the key initiatives currently being implemented by the municipal government, with support from the Agence française de développement (AFD), involves granting property rights to residents of informal settlements. These programs aim to provide tenure security, reduce the threat of eviction, and enable residents to invest in improving their living conditions. However, without strong urban planning oversight and accompanying policy safeguards, titling programs can inadvertently lead to gentrification and further price increases—ultimately displacing the very populations they are intended to support.

It is worth noting that within the framework of the Kenya Informal Settlement Improvement Program (KISIP 2), the AFD is also financing small-scale public space upgrades and community infrastructure projects. These interventions are co-designed and co-produced by residents and urban stakeholders, in close coordination with both local and national authorities (AFD, 2023). The Urban Fabric Initiative (UFI), as it is known, reflects a more integrated approach to improving living conditions without displacing communities to the urban periphery. However, scaling up this initiative to reach a broader range of neighborhoods remains a key challenge. Chapter 7 explores upgrading of informal settlements in greater detail.

Other ongoing efforts in Nairobi include micro-lending initiatives led by local start-ups and large-scale housing projects backed by investment banks such as Shelter Afrique. However, these projects also lack mechanisms to regulate land values—an omission that may ultimately limit their ability to deliver sustainable housing affordability over the long term.

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INFORMAL SETTLEMENTS

Community-Driven Development: 'Slum Upgrading' in Nairobi

This chapter examines the evolution of informal settlements and slum upgrading in Nairobi. The chapter delves into how informal settlements have emerged, the governance of these areas, and the strategies employed for slum upgrading, highlighting the interplay between state intervention, community initiatives, and the pressures of urban growth.

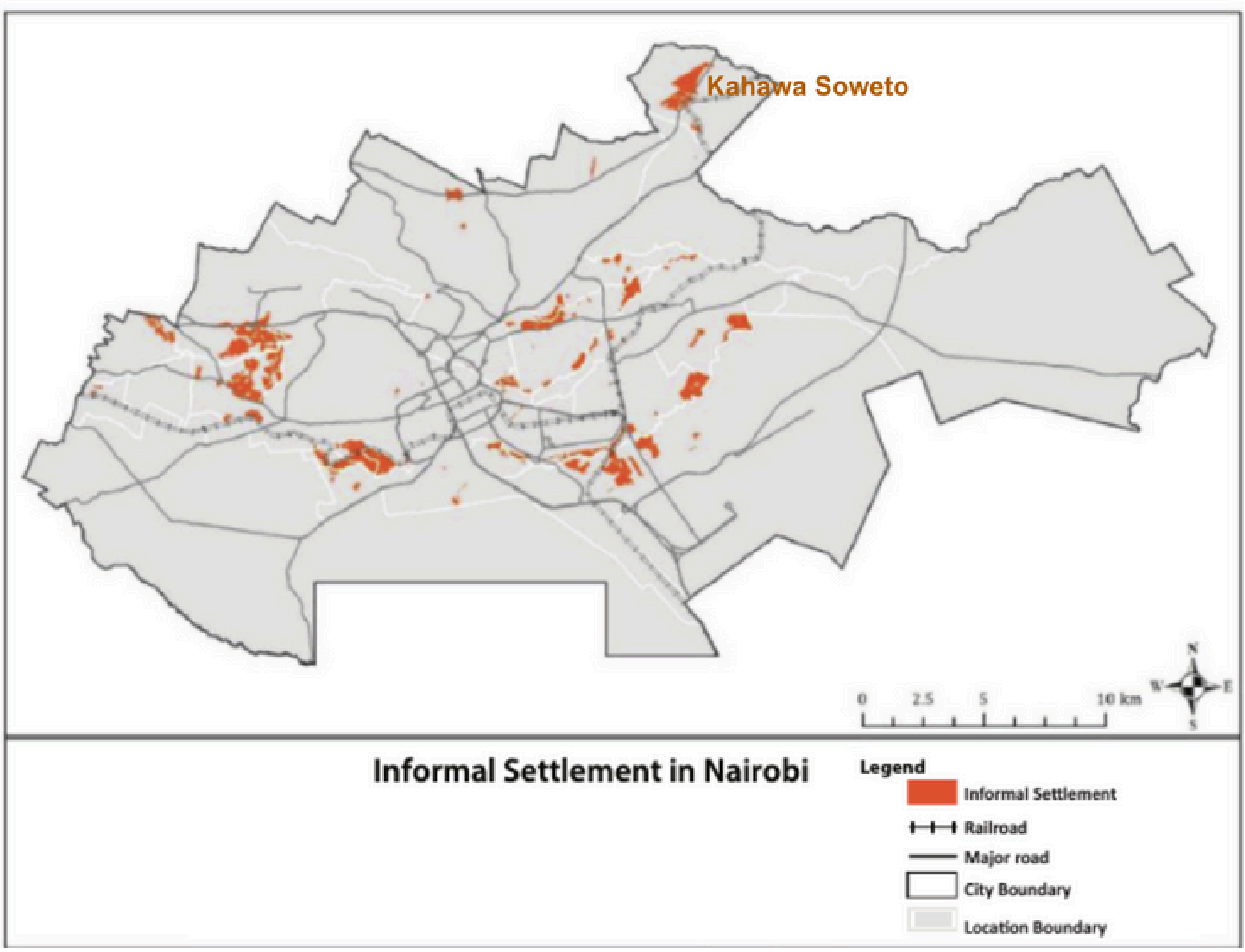
By Célie QUENET, Gabrielle LAUMET, & Ella AKANATI.

Informality in Nairobi

Urbanization Trends and Informal Settlements

Nairobi, one of the fastest-growing cities in Africa, generates 27.5% of Kenya's national GDP, with a 4.7% annual growth. While the formal economy makes up 78% of GDP, the informal sector employs a massive 83% of the workforce — and many of these workers live in informal settlements. Today, between 3.5 and 4 million people — about 60-75% of Nairobi's population — live in informal settlements, or 'slums', yet these areas only occupy 5-10% of the city's residential land (Figure 1). Meanwhile, the wealthiest 5% of residents control 52% of Nairobi's total land. These overcrowded, precarious neighborhoods often sit right next to high-end developments like Tatu City, some of which are so expensive that they remain partially empty.

Figure 1 : Informal settlements in Nairobi City County



Informal settlements across the city and county of Nairobi. Source: Cira, D. (2015). Kenya Urbanization Review. World Bank.

Inequities in Informal Settlements

Informal neighborhoods face severe inequalities in access to education, food, clean water and sanitation, energy, safety, and financial stability. These areas are often invisible in official planning, leaving residents highly vulnerable to eviction and deprived of essential services. Only 22% of residents have direct access to water connections — most rely on shared toilets in open communal spaces for sanitation. Electricity access is also limited, with only 1 in 5 households connected to the grid, often receiving power for less than 12 hours a day. In many cases, public officials lack clear data on these neighborhoods; for example, estimates of the population of Kibera, Nairobi's largest informal settlement, range from 170,000 (Kenya National Bureau of Statistics, 2009) to 700,000 (UN-Habitat, n.d.). The informally housed population is expected to double within the next 15 years. Socio-economic exclusion is deeply rooted, with gender inequalities, socio-spatial discrimination, and widespread stigmatization further marginalizing residents. Additionally, informal settlements face significant climate vulnerability, making them particularly susceptible to environmental hazards and extreme weather events like floods.

Unsuccessful and Flawed Previous Housing Policies

In response to the proliferation of informal settlements, the government has proposed the construction of 250,000 units per year, but the demand for adequate urban planning continues to grow. Historically, housing provision and slum upgrading in Nairobi has proven to be insufficient and often counter-productive. During the colonial era, the British administration deliberately neglected housing for Africans, limited their free-movement and treated their presence in cities as temporary, leading to the emergence of informal settlements like Mathare Valley.

After independence in 1963, rapid rural-urban migration exacerbated the housing crisis, and despite active efforts through the creation of the National Housing Corporation, the government failed to meet housing demand, especially for low-income residents.

In the 1970s and 1980s, site and service schemes, funded by the World Bank, attempted to provide serviced plots with paved roads, electricity, water, and sewerage and facilitate access to finance for housing units. However, they largely failed due to corruption and market-driven displacement.

In the 1980s and 1990s, Structural Adjustment Programs further reduced state involvement in housing, leading to private-sector dominance and the rise of low-quality tenements. "Decent housing was prioritised for wealthy households and the middle class, creating an exclusive formal housing market." (Mwau, 2020). During the same period, private rental markets took advantage of housing deregulation and "produced substandard shelters at scale" which poorer tenants were forced to occupy due to no alternative options. "It was a take-or-eave sort of situation (...) Now occupying such units is considered as a norm. They [tenants] do not know that it ought to work differently." (KII, senior planner, State Department of Urban Development). In the 1990s and 2000s, the government attempted large-scale housing projects, such as Nyayo Estate, but these primarily cater to middle-income groups. Devolution under Kenya's 2010 Constitution gave county governments more responsibility for housing, yet financial constraints hinder their effectiveness. President Kenyatta's 2017 Big 4 Agenda emphasized affordable housing, but socio-spatial inequalities persist. Parallel to that, informal settlement upgrading projects led by NGOs and community groups like Muungano wa Wanavijiji, have had limited success due to financial constraints, governance issues, and intra-community conflicts (Mwau, 2020).

Current Governmental Strategies: Long-Term Capacity-Building Programs (KISIP)

Recent Government Strategies and the KISIP Program:

Recently, the government of Kenya has been implementing slum improvement projects through two national programs : the Kenya Slum Upgrading Programme (KENSUP) and the Kenya Informal Settlements Improvement Project (KISIP).

In 2004, the national government, in partnership with UN-HABITAT, initiated the KENSUP programme, managed by the State Department for Housing and Urban Development, under the Ministry of Lands, Public Works, Housing, and Urban Development. The program was aiming at easing housing pressure and improving living conditions, while limiting displacement. However, its implementation raised concerns over affordability for low-income residents.

The KISIP programme was then launched in 2011, to complement those efforts. Its goals were twofold: directly improving living conditions for residents through infrastructure upgrading and land tenure regularization; and ensuring institutional capacity-building, especially through building records and methods for regularization projects. However, the program was heavily impacted by the Covid-19 pandemic.

In 2021, KISIP 2 was introduced as a five-year project, drawing on lessons from the first phase. While retaining KISIP 1's main goals, it placed greater emphasis on county-level action, and local community engagement. The site selection process began with identifying settlements located on public land, with active community networks and associations, to ensure local participation in planning and decision making. The program was broken down into two stages. The first phase aimed at providing secure land tenure including mapping and surveying of informal settlements, often involving youth training initiatives. The second phase focused on infrastructure upgrading and ensuring the longevity of the project through community workshops. Additionally, pilot. projects were also developed under KISIP 2, to explore public participation strategies, like those undertaken by the non-profit organization Kounkuey Design Initiative (KDI) in the Kahawa-Soweto settlement.

Financing Informal Settlement Improvement Programs

The KISIP program is operated through a multi-stakeholder approach, including national and county governments, international organizations, development banks, and local communities. The State Department for Housing and Urban Development oversees the program at the national level, while county governments are in charge of local implementation and coordination with local communities.

International organizations and development banks offer financial and technical support to the project. The financial structure combines grants, loans and government contribution, with funds allocated based on priorities in targeted settlements. Partners include the International Development Association (IDA) with a credit of US$150 million, the Agence Française de Développement (AFD) for up to 45 million euros, and the government of Kenya contributing to US$15 million.

Slum improvement projects require significant funding, often obtained through loans and grants from international partners like the World Bank and other development banks. Therefore, building local capacity by improving institutional frameworks is a key aspect of the project. They aim at reducing Kenya’s reliance on external financing over time, and building long-term autonomy and sustainability.

Community-Driven Development in Kahawa Soweto Settlement

The Creation and Process of the Kahawa Soweto Upgrading Programme

Kahawa Soweto, in the North-East of Nairobi, is home to 40,000 people and faces similar chronic challenges to other informal settlements, such as inadequate sanitation, lack of public spaces, high unemployment, and social issues like alcoholism and youth marginalization (World Bank, 2021). However, Kahawa Soweto is also a unique example, as it benefits from its recently built hospital, which serves not only its own community but all the surrounding region. A local organization responded to a ‘Call for Initiative’ upgrading program from the Urban Fabric Initiative (UFI) and suggested upgrading the existing hospital with new facilities, to relieve pressure on it while improving basic living conditions. The project was selected and funded by the AFD. In this pilot project, public officials, funders and NGOs are working closely with local organizations to test a more inclusive approach to urban upgrading, making it a potential model for future projects in other informal settlements. It is meant to be community-driven, but ultimately shaped by donors and authorities (AFD, 2024). We were fortunate enough to visit the neighborhood with KDI and AFD representatives and meet with local stakeholders involved in the project, who gave us insight on the process and the challenges they faced.

Each stakeholder in this pilot project has different priorities and interests. Residents seek improved services and security of tenure. However, they have limited decision-making power and often fear that the upgrading project will lead to rising prices and displacement or that the improvements will not be sustained over the long term, especially given the reliance on external funding (AFD, 2025). The government aims to demonstrate progress in urban upgrading while controlling informal settlement expansion. However, bureaucratic inefficiencies and the lack of clear roles and communication between the national and county levels of government often slows down the process (GoK, 2020). International Donors (AFD, World Bank, UN-Habitat) fund the project, emphasizing efficiency and scalability, but sometimes at the expense of durable community ownership (AFD, 2024; UN-Habitat, 2010). Architects and urban planners (Kounkuey Design Initiative (KDI), NGOs, private sector consultants) provide the technical expertise while promoting co-design but their technical priorities sometimes clash with community needs (KDI, 2025).

Students and Prof. Sukriti Issar walking in the Kahawa Soweto informal settlement. Photo credit: Jiangnan Wang.

A laundromat under construction in the Kahawa Soweto settlement. Photo credit: Jiangnan Wang.

The co-design process began with a series of workshops where residents shared their needs, such as better sanitation, safer spaces for children, a canteen and places for women to gather and breastfeed. From these discussions, a hybrid construction model emerged, combining traditional building methods with sustainable materials and temporary-use buildings that residents could help build themselves (KDI, 2025). Residents would indeed benefit from this project in the long term, with the creation of new facilities, but also in the short term, by being able to work on the site and get paid. KDI, the firm in charge of the project design, hires in priority residents who attend all the participatory meetings to give an incentive to local inhabitants to participate actively in the co-design process, without costing them too much. This strategy also ensures capacity-building, since residents learn technical skills while working on site which will be useful for long-term maintenance.

The new hospital facilities. Photo credit: Jiangnan Wang.

Stakeholder showing students how the new facilities are built. Photo credit: Jiangnan Wang.

However, the process isn't without its challenges. Residents disagreed on which priorities should come first, as some focused on immediate needs like waste management while others wanted to secure legal land rights first (AFD, 2025). Designers also had to change their approach several times to adapt to resident's concerns and practical considerations. For instance, they had to abandon the idea of using old shipping containers as they ended up being more expensive and unsustainable in the long term than traditional cement structures. Negotiations with the government were also slowed down by bureaucratic inefficiencies and uncertainty regarding the county's involvement in maintaining infrastructure (GoK, 2020).

Successes and Limitations

The project of slum upgrading in the Kahawa Soweto settlement will significantly improve land tenure security, providing residents with greater stability and legal recognition of their properties. Enhancing land ownership security enables inhabitants to make long-term investment commitments in their homes and communities. This also improves the livelihoods of the beneficiaries and facilitates the access to finance credits from financial institutions. Beyond land security, the project also focuses on upgrading urban facilities services and public spaces, such as access roads and water facilities. These enhancements contribute to better living conditions and greater connectivity within the settlement. Furthermore, the initiative promotes socio-economic development by directly involving residents in the process, which fosters a sense of ownership and community empowerment.

However, this pilot project also faces several challenges. First, its long-term viability remains uncertain. Moreover, potential conflicts can occur during the project, as some residents advocate for infrastructures development that are not directly linked to the project's original scope. In the Kahawa Soweto settlements, persistent issues such as inadequate waste management and recurring floods can further complicate the upgrading efforts. Another key challenge is the maintenance of the improved infrastructure. While residents are expected to take on this responsibility, the effectiveness of long-term community-led management remains untested. Finally, the project's success also depends on sustained public support, which may fluctuate over time.

Walking through the settlement. Photo credit: Jiangnan Wang.

INFORMAL SETTLEMENTS

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DIGITAL INFRASTRUCTURE

The Silent Revolution: Building Digital Infrastructure in Kenya

This chapter examines Kenya's rapid development of digital infrastructure, driven by a government policy to expand access to digital services. Starting with the connection to undersea cables in the late 2000s, Kenya has grown into East Africa's digital hub, with 97% of the country covered by 4G and expanding 5G. Kenya's thriving tech scene attracts global companies and investments, solidifying its role as a key player in the digital economy.

By Stanislas PROUTEAU, Roman BENROUBI-MAURICE, & Sophie HAUGEN.

Introduction

For the past two decades, the Government of Kenya has pushed forward a comprehensive policy framework to develop, both quickly and substantively, the population's access to digital services (International Trade Administration, 2024) — a major move towards a capacity-building paradigm, which was a recurring theme throughout our study trip in Kenya. Starting in the late 2000s, Kenya has been connected to the international backbone of digital infrastructure, that is, undersea Internet cables. From then on, the country has significantly diversified and improved its information technology landscape — facilitated by the creation, in 2019, of a comprehensive Digital Economy Blueprint. High-speed Internet coverage has been drastically expanded: Safaricom (2025), the leading telecom provider in Kenya, boasts a 4G/LTE coverage of 97%, and is currently rapidly increasing 5G coverage — already present in all of the 47 counties of the country. By 2027, the government-promoted "digital superhighway", a network of 9000km of fiber-optic cable running throughout the territory, is expected to further boost coverage and Internet speed, especially in rural areas (Kenya Accreditation Service, 2024). Moreover, it will further the Kenyan government's efforts to digitize government services, namely on matters related to healthcare, transport, taxes, administrative certificates and legal services.

Such capacity-building through information technology infrastructure development has turned Kenya into the technical and digital innovation hub of East Africa, increasingly connected to wider, global networks of innovation, investment, and by extension, opportunities for its population, along with international actors (Ndemo & Weiss, 2017). In fact, the "Silicon Savannah" has become a test bed for emerging technologies, pushed forward by local companies and small entrepreneurs, along with global powerhouses of the digital economy — by the likes of Amazon and Microsoft setting up data centers in the country, or Uber and WhatsApp providing transportation and communication services available to all. Such a booming digital economy has generated special interest from public actors as well: namely, the United States, China, the UAE, and India (Kenya National Bureau of Statistics, 2023) — all with different underlying intentions.

Profiting from the country's very high mobile penetration (over 80%), digital service providers have turned Kenya into a leader in digital finance solutions to facilitate online access to financial products and services, from payments and transactions to credit — this paper will explore the now well-established mobile money system, M-PESA, set up by Safaricom. Moreover, we will also study the framework leading to the emergence of new technologies, designed for the Kenyan context, for instance, in the public transportation sector in the capital, Nairobi. However, such a rapid expansion of information technology infrastructure also brings about a series of underlying issues and challenges, which have come to the fore in recent years, especially related to cybersecurity, foreign involvement, and social control.

M-PESA and the Digitization of Payments in Nairobi

Nairobi's rise as a pioneer of digital financial inclusion is tied to the story of M-PESA, the mobile money platform launched by Safaricom in 2007. Over nearly two decades, M-PESA has not only transformed Kenya's financial ecosystem but also catalyzed the digitization of payment infrastructures and services across Nairobi and Kenya, setting a blueprint for emerging markets globally.

M-PESA on a Nokia phone. Source : Harfard (2017), BBC.

Initially conceived to enhance customer loyalty for Safaricom's mobile network, the service rapidly evolved into a cornerstone of Kenya's financial ecosystem, driving financial inclusion from 26% in 2006 to 84% in 2021 (McKinsey, 2022). By enabling users to deposit, withdraw, and transfer funds via basic mobile phones, M-PESA democratized access to financial tools for unbanked populations, particularly in rural and low-income urban areas. Its success catalyzed a broader digital finance revolution across Sub-Saharan Africa, where mobile money accounts now represent 33% of adult financial holdings, surpassing traditional banking in 11 economies (World Bank, 2023). In Nairobi, M-PESA's integration into daily life has been transformative, facilitating over one billion monthly transactions across seven African nations and becoming the primary channel for remittances into Kenya (World Bank, 2023).

But how did mobile money reshape Kenya's capital city? How did Nairobi become a living laboratory for digital finance — a transformation with lessons for policymakers and innovators worldwide?

M-PESA was launched on March 6, 2007, by Safaricom, a subsidiary of Vodafone, to address the pressing need for secure and accessible money transfers between urban workers and their rural families. The service emerged during a period when traditional banking infrastructure was severely limited, with only 1.5 bank branches or ATMs per 100,000 people in Kenya (Harvard, 2015). Within eight months, M-PESA attracted 1 million users, a figure that tripled to 3 million by June 2008 (UNCF, 2022). By 2011, the platform handled more domestic transactions than Western Union did globally, serving over 70% of Kenya's adult population (McKinsey, 2012).

The initial design focused on SMS-based peer-to-peer transfers, allowing users to convert cash into electronic currency (e-cash) via a network of authorized agents. These agents — often small shopkeepers — played a critical role in bridging the gap between digital and physical economies. Safaricom's decision to recruit agents directly from informal retail networks, rather than relying on established financial institutions, ensured widespread accessibility and fostered grassroots adoption (Harvard, 2015).

Building the Agent Network

A cornerstone of M-PESA's success was its agent network, which grew from 28,000 agents in 2011 to over 262,000 by 2022, 40 times the number of traditional ATMS in Kenya (GSMA, 2024). Agents facilitated cash-in/cash-out transactions, earning commissions that supplemented their primary incomes. McKinsey's analysis highlights that maintaining an optimal transaction volume per agent (around 1,000 monthly transactions) was crucial for sustainability. Early challenges included educating agents and users on fraud prevention. For instance, agents initially struggled to maintain sufficient liquidity, while customers often mishandled phone numbers during transfers, leading to errors and fraudulent activities (McKinsey, 2012). However, Safaricom's investment in customer service and back-office systems gradually mitigated these issues (McKinsey, 2012).

The company's strong brand reputation, deeply rooted in local communities, bolstered user trust. A 2011 study noted, for example, that Kenyans perceived M-PESA as a "homegrown" solution, contrasting with foreign-led banking institutions.

Expansion of Services and Technological Innovation

From its origins as a money transfer tool, M-PESA evolved into a multifunctional financial platform. In 2013, the introduction of Lipa Na M-PESA enabled direct merchant payments, transforming mobile phones into point-of-sale devices. This innovation catalyzed Nairobi's shift toward a cashless economy, with Lipa Na M-PESA accounting for 5% of all transactions of goods and services by 2020 (DPI Africa, 2025). Additional services, such as bill payments, microloans (M-Shwari), and international remittances, further entrenched M-PESA's role in daily financial activities.

The recent platform's interoperability with banking systems recently marked another important milestone. In 2024, Safaricom integrated

M-PESA with PesaLink, an interbank payment system, allowing seamless transfers between mobile wallets and bank accounts across different financial platforms. This year, the Central Bank of Kenya (CBK) advanced this integration through the Fast Payment System (FPS), designed to unify all financial institutions under a real-time transaction framework (DPI Africa, 2025).

Digitization of Government Services and Infrastructure

Nairobi's payment infrastructure expanded beyond commercial use to encompass government services. The eCitizen platform, launched in the 2010s, digitized payments for licenses, passports, and taxes, reducing bureaucratic inefficiencies. By 2026, over 80% of person-to-government (P2G) transactions occurred via mobile money, driven by partnerships between the government and telecom providers (GSMA, 2024). The M-Akiba bond platform, introduced to democratize access to government securities, allowed citizens to invest as little as KSh 3,000 ($23) through their mobile wallets, with interest disbursed digitally (DPI Africa, 2025).

Safaricom's infrastructure investments also played a pivotal role. The company extended 4G coverage to 97% of Kenya in 2025, ensuring reliable access to mobile financial services even in remote areas (GSMA, 2025). Meanwhile, the CBK upgraded the Kenya Electronic Payment and Settlement System (KEPSS) to comply with global ISO 20022 standards, enhancing transaction security and data richness (DPI Africa, 2025) .

Furthermore, the success of M-PESA catalyzed broader digital transformation initiatives across Nairobi and Kenya. The government increasingly adopted cashless disbursement for social benefits, aligning with the high citizen preference for mobile money services. This shift towards digital financial services dovetailed with Kenya's Vision 2030 development blueprint and the National ICT Policy 2020, which emphasized the role of technology in economic development and public service delivery.

Policy and Regulatory Framework

The Central Bank of Kenya (CBK) has played a key role in shaping the regulatory landscape for digital payments in the country. The CBK's "test and learn" approach allowed M-PESA to operate while under close monitoring, striking a balance between innovation and risk management. This adaptive stance evolved over time, culminating in the 2013 E-Money Regulations, which provided a formal framework for mobile money services (FSD Kenya, 2023).

The regulatory environment continued to evolve with the National Payments Strategy 2022-2025, which envisions a secure, fast, efficient, and collaborative payments system supporting financial inclusion and innovations. This strategy aims to address challenges in the payments ecosystem, including the need for enhanced interoperability, cybersecurity, and consumer protection (FSD Kenya, 2023).

The government's commitment to digital transformation is further evidenced by initiatives like the Digital Readiness Assessment launched by Nairobi City County in collaboration with UNDP in 2024. This initiative aims to guide Nairobi's transformation into a smart and digital hub, enhancing connectivity, data management, and service delivery through strategic technology investments (Nairobi City County, 2024).

Economic and Social Impact

M-PESA's spread reshaped Nairobi's economic landscape. By 2022, mobile money transactions totaled KSh 7.91 trillion annually, averaging KSh 21.7 billion per day (DPI Africa, 2025). The service has also been a powerful driver of financial inclusion, with the rate of financial exclusion - that is the percentage of adults who have no access to either formal or informal financial services - dropping from 38.4% in 2006 to 17.4% in 2016, bringing basic financial services to an additional 5 million people (Direction générale du Trésor, 2018). 96% of households outside Nairobi had at least one M-PESA account, while women gained greater control over their finances through discreet savings and loan products (GSMA, 2024).

By 2022, mobile money transactions totaled KSh 7.91 trillion annually, averaging KSh 21.7 billion per day.

Moreover, the digital economy's growth spurred job creation, particularly in technology and financial technology sectors. While the M-PESA platform today accounts for 8% of national formal employment, GSMA projects that Kenya's digital economy will contribute KSh 662 billion to GDP by 2028, supported by 300,000 new jobs and KSh 150 billion in additional tax revenues (GSMA, 2024). This success also catalyzed the growth of Kenya's startup ecosystem, particularly in the fintech sector. By 2017, Kenyan startups had raised $32.8 million, making the country the third-largest recipient of startup funding on the continent (World Bank, 2018).

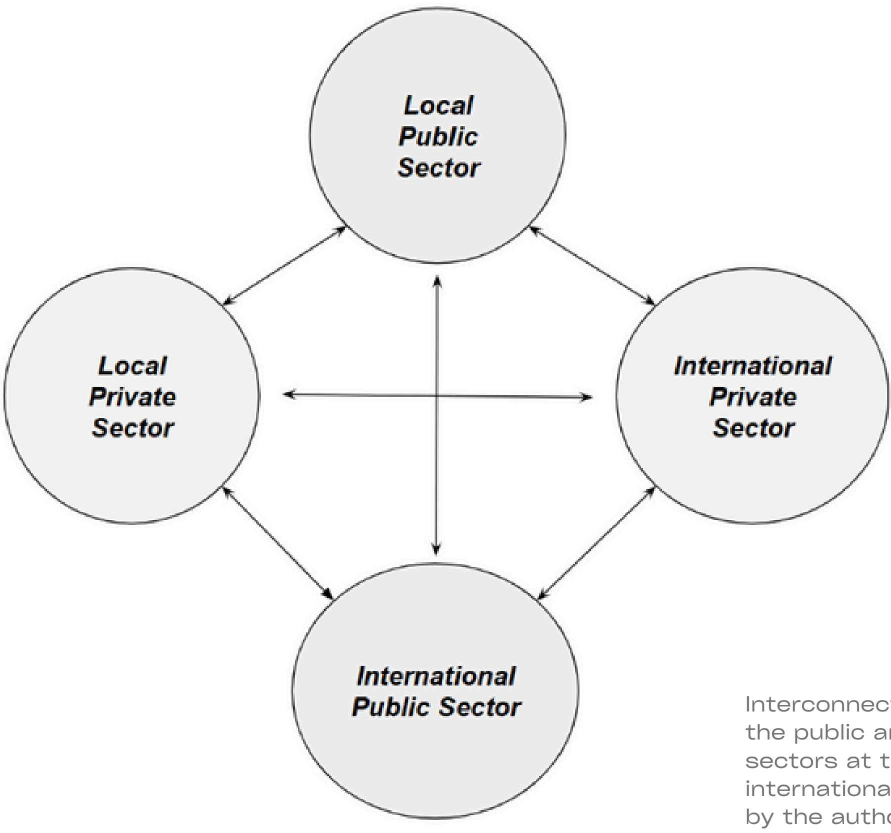
In terms of social advancement, M-PESA improved household resilience to economic shocks. An NBER working paper from 2011 has shown that households using M-PESA are better equipped to withstand sudden income declines due to easier access to remittances and increased savings (World Bank, 2018). Perhaps most strikingly, research has demonstrated that M-PESA has contributed to poverty reduction in Kenya. A study by Vodafone found that the service has lifted 2% of Kenyan households out of poverty, directly contributing to the United Nations Sustainable Development Goal of poverty eradication (Vodafone, 2025).

Looking ahead, Nairobi aims to solidify its position as Africa's fintech capital. Initiatives like the Digital Africa Index, which ranks Kenya among the continent's top performers, underscore the importance of sustained investment in infrastructure and policy frameworks (GSMA, 2024). As Michael Joseph reflected in 2011, M-PESA's legacy lies not only in its technological innovation but in its democratization of financial power—a model now emulated across emerging markets (UNCDF, 2022).

In less than 15 years, M-PESA has catalyzed a digital revolution in Nairobi, transforming payment infrastructures, government services, and economic opportunities. Its success underscores the synergy between private-sector innovation, strategic agent networks, and supportive regulatory environments. As Kenya advances toward a fully interoperable, instant-payment ecosystem, the lessons of M-PESA's history remain instructive for policymakers and entrepreneurs aiming to replicate this success elsewhere.

Transport Infrastructure and Digitization

Transport infrastructure in Nairobi, and Kenya at large, is shaped by a complex interplay between public and private sector actors, with private investment playing a significant role in its development. Due to limited public sector funding, many large-scale projects rely on public-private partnerships (PPPs), enabling international and local companies to influence both physical and digital infrastructure. This convergence of transport and technology comes at a crucial time when Nairobi is rapidly emerging as a tech hub, offering new opportunities for investment and innovation.



Interconnection between the public and private sectors at the local and international level. Created by the authors.

These interactions between actors reveal the ways in which the economy is structured and gives valuable data about the roles and limitations of each actor. In this case, examining the connections between these actors tells us about the role of the state in the transport sector.

It is important to note that while these four different actors have different motivations, strategies and goals, these decisions have real consequences on the livelihoods of the public who depend on shared transport everyday to get to work, school, medical care, and all other places that sustain and enrich life. While transport can appear to be a banal topic, the social, political and economic impact and importance of a well functioning public transport system cannot be overstated. That is why the decisions made in this sector of policy must be carefully considered and balanced between these different actors, so that any one actor cannot push forward their agenda at the expense of the public.

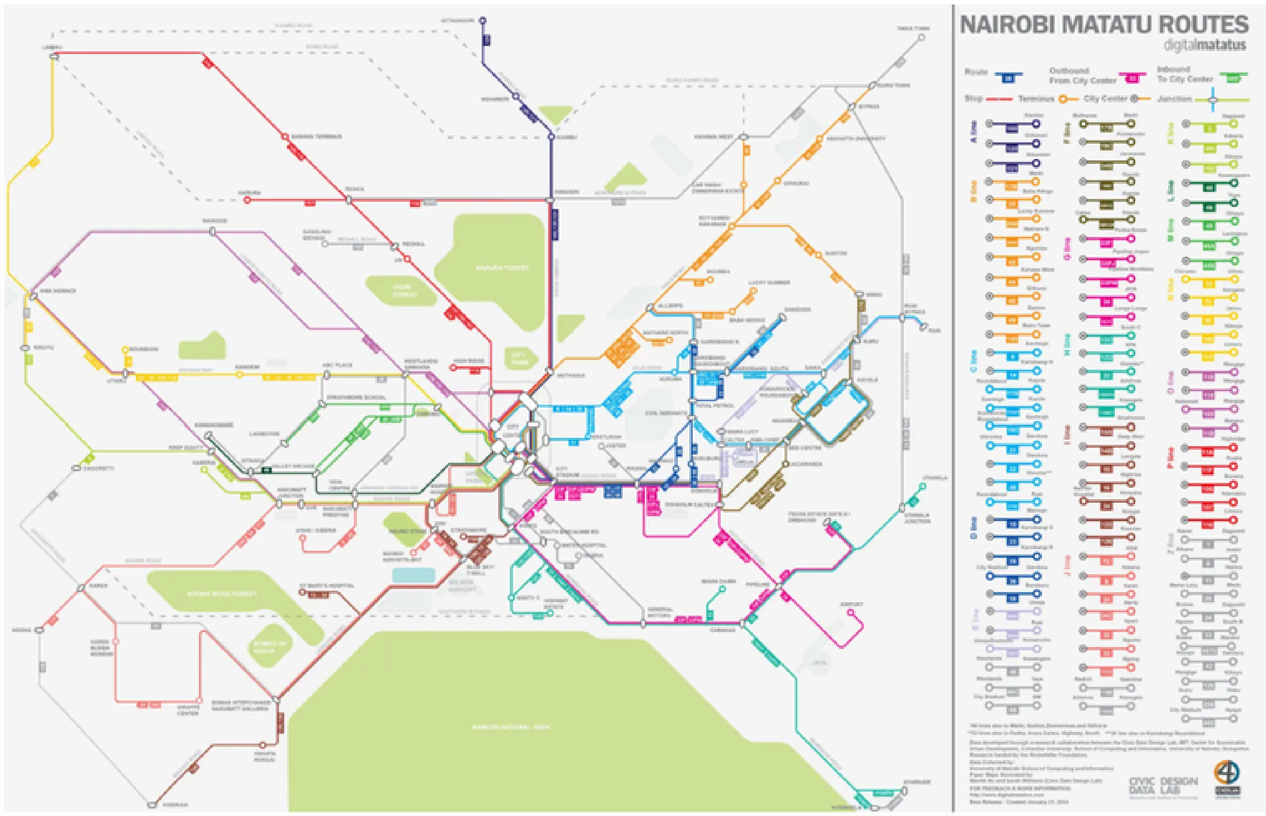
With foreign and local investments in digital mapping, road infrastructure, and ride-hailing services, Nairobi's transport landscape is transforming. While technology integration offers solutions to congestion and accessibility challenges, it also raises concerns about equity, data privacy, and urban sustainability. The following sections explore these developments, highlighting both the challenges and opportunities associated with digitizing Nairobi's transport sector.

Foreign Private Investment Role in Digitizing Nairobi's Transport Sector

Due to the high density of international tech companies that have their African headquarters in Nairobi, there have been various phases of investment by these companies in public transport in the city, most notably by Google through their project to map the matatu private bus system, and the China Bridge and Road Corporation and their construction of the Nairobi expressway. Along with these digital and physical infrastructure projects that are specific to the context of Nairobi, there is also the global phenomenon of the "Uberization" of transport, to which Nairobi is no exception.

Google's Matatu Map

Through a collaboration with American and Kenyan universities, as well as a smaller transport tech company, Afrikonekta, Google launched the first map of an "informal" (as in not state or locality run) public transport network in Nairobi by mapping the Matatu system (Wired, 2015). This project was following the already established "Digital Matatu" team that a researcher at Columbia University's urban lab, Jacqueline Klopp and tech entrepreneur, Adam White had started in collaboration with the Technical University of Kenya to map the public transport network in Nairobi as it was, not as it was planned to be. In collaboration with an MIT design lab they transformed their raw data nto the following map:



SARAH WILLIAMS AND WENFEI XU, MIT CIVIC DATA DESIGN LAB

Through producing this map and conducting the study on the informal network of matatus, Google was able to utilize it as a framework to create the first Google Maps route feature for an informal public transport network. The digital matatu team has already received requests from other cities to do a similar study in their country for their informal transport networks, in hopes of integrating them into a digital map platform like Google Maps (Williams & Xu, 2015).

Having the Matatus as an option on Google Maps is an important step in increasing transport equity in the city, where people who rely on matatus everyday for transport are now able to optimize their routes, estimate arrival times, and plan ahead of time more efficiently. It also constitutes a step towards formalizing the transport network in Nairobi, without excluding or replacing the matatus which are an essential part of Nairobi's street culture.

China Bridge and Road Corporation and the Nairobi Expressway

Another example of the foreign private investment developing transport in Nairobi is the Nairobi Expressway that was built and developed by the China Bridge and Road Corporation. This 27.1 km dual carriageway road was built and financed under the build-finance-operate-transfer model where the China Bridge and Road Corporation constructs and finances the expressway, keeps the income from the expressway tolls for 30 years, and then transfers the operations and maintenance of the road to the Kenyan Government. The expressway utilizes a number of technologically savvy solutions to track road utilization, deliver the best service possible, and optimize tolling (MOJA, 2023). This project showed the capacity that can be increased by utilizing foreign investment to develop large infrastructure projects in Nairobi, and by integrating technology into these infrastructure projects the projects are more commercially viable as investments as well as integrate new projects such as the Bus Rapid Transport (BRT for short) by creating a space for the BRT to have a dedicated lane. Large infrastructure projects require a huge investment and typically have an extremely long delivery timeline, but the public private partnerships such as this one is one way for the locality to increase capacity without requiring a massive increase in governmental funding, especially when it comes to furthering the digital infrastructure in the transportation sector.

This project is not without controversy, as it has been criticized for deepening inequity in the city, as it increases the connectivity for private vehicle owners and those who can afford the increase in transport costs from the road toll, but not for the thousands of residents who rely on Matatus, walking, cycling and motorbikes who have an extremely limited budget for transportation. To combat this, CRBC (China Bridge and Road Corporation) expanded its plans to assist in developing the space under the expressway by planting trees, improving the sidewalk access and pedestrian crossings (CRBC, 2022). While these plans are a good start, activists urge the local officials to prioritize equity in approving large infrastructure projects, and move away from a car-centric city model. So, while the expressway shows an impressive example of what can be accomplished on a relatively short timeline using a PPP model, this model can also be used to advance technologically integrated public transportation models.

Nairobi expressway cutting across green spaces. Source : SMEC.

"Uberization" of Private Transport

In a 2019 study done on transport in Nairobi that surveyed 2,540 people, 58% had responded that they had used a ride hailing application in the past 6 months, citing speed as the primary reason for using the service over other options (Weru & Mugo, 2023). While the increase of ride hailing service options may increase the connectivity for a subset of the population in Nairobi, people overwhelmingly responded that they used private shared transport (matatus), motorbikes, cycling or walking as their primary mode of transport, with individual vehicles and ride hailing services as the vast minority of people's daily choices for transport (Weru & Mugo, 2023).

So while there has been a rapid increase the number of people using ride hailing applications, there is again, a large equity concern in the expansion of these services in the landscape of the city, as it massively increases the number of individual vehicles on the road, which increases pollution, commute times, and worsens road traffic safety concerns. From the responses from the study, it appears that there is a high level of connectivity to the internet in the city and a massive need for shorter commute times, which can be achieved through technologically integrated public transport programs, not solved through ride hailing services.

The Role of the Foreign Public Sector in Digitizing Nairobi's Transport

There are a number of foreign agencies such as the European Investment Bank, World Bank, and Agence Française de Développement that are investing in Nairobi's transport sector, specifically in the ongoing development of a bus rapid transit line (NaMATA, 2023). In this section we will not go into too much detail about the specifics of the BRT project, but rather how this project fosters collaboration between both the local and international governments, the ways that tech is integrated into these kinds of large scale projects, and the potential risks of that integration.

These large infrastructure projects that are launched as a collaboration between the Kenyan and foreign governments are undertaken strategically as an arm of Kenyan foreign policy, furthering the goal of increasing bilateral and multilateral trade agreements, as there are a plethora of investment offers due to the desirable positioning of Kenya in East Africa. All this is to say, foreign investment in Kenyan digital (and physical) infrastructure is not merely a donor-recipient relationship, but a mutually dynamic partnership between countries.

China's investment activities in Kenya have come under particular scrutiny, especially regarding its involvement in mobility corridors and investment in digital infrastructure,igniting concerns over potential issues of data sovereignty. Recent scholarship, however, has challenged this perspective for its essentialist view, arguing that it oversimplifies the complex dynamics between Kenya and foreign investment. (Huang, 2023).

The Role of the Local Public Sector

Largely, the local public transport authorities have been positive about the role that digitization could play in increasing efficiency and reducing congestion in the city, also meaning that they have been receptive to foreign investment in large infrastructure projects that integrate technology into transport. There is a genuine concern over data privacy, transparency and tracking that is managed by local governments. Nairobi City government has proactively and strategically taken on projects with foreign governments, private companies and local companies, communities, as well as managing relationships with the federal government. Managing these stakeholders is no small task, and the planning department is largely concerned with internal capacity building to manage these different projects and actors.

The Role of the Local Private Sector

About 85% of Kenya's citizens are employed informally, meaning they operate independently or within a company that is not registered with Kenya's Registrar of Companies. (Murunga, et.al, 2021). When such a large majority of the population (about 16 million people) do not work for a listed company, it calls into question the legitimacy of the registrar and the boundaries of "formal" and "informal" work. One important distinction must be made between the informal and formal sector: informal work is difficult to tax, which becomes an issue when it comes to providing public transport or other public services. The informal sector also typically provides substantially lower wages than the formal sector, meaning that taxes or fares could be regressive — taking up a much larger share of lowest paid people's income — which is precisely why local governments are particularly hesitant to institute new tax policy in Kenya.

That being said, Nairobi has a large local economy, making up 27.5% of Kenya's GVA (gross value added) with about 5 million nighttime residents, and over 6 million daytime residents (Kenya National Bureau of Statistics, 2023). Nairobi also boasts strong tech, finance, and education sectors. Nairobi's metropolitan strengths make local entrepreneurship particularly well suited to take on the challenges of public transportation with ingenuity. Matatus currently make up the majority of mass transport in Nairobi, most of which are considered a part of the informal economy, but are consistently moving towards formalization, especially with the inclusion of new technologies such as real time tracking and digital payments, which are widely accepted now on most matatus.

E-MOTI - An Interview with a Local Entrepreneur

Denis Muchoki Kirera and Billy Mwangi Ng'ere saw a window of opportunity to provide ecologically sustainable transportation to Nairobians, and formed the company E-moti. As two young entrepreneurs, the prospect of buying and running an electric bus in a country with limited electric vehicle infrastructure was no small task, but they were able to successfully run the service on a trial period, as well as develop a state of the art application that tracked ticketing and the buses' daily path. Billy was kind enough to agree to a short interview to give us more insight on the transportation landscape in Nairobi.

Where do you see your work going in the future?

I'm happy we are talking about digital infrastructure because that's where we want to go. A lot of people look at us as if we want to get in the traditional business of transporting people from one point to the other, but really, I think the opportunity lies in trying to optimize and make [digital infrastructure] better and more importantly make that more accessible, not just to native Nairobi public transportation users, but also private vehicle owners in the city.

How does the digital infrastructure in Nairobi connect with the digital banking system?

Nairobi has come from far when it comes to making the infrastructure digital. A while ago when MPESA was starting around 2000, it was very difficult to get on a bus and then pay with MPESA. You'd be surprised, This was up until, like, 2015-16 that's when you would see operators actively including payment details using MPESA, and not only MPESA because there are many other mobile money providers in Nairobi like Airtel, and others... I'd say MPESA did most of the hard work when it comes to getting people to acknowledge a new form of getting around. People have already accepted that most things to do with transport can be found on the phone and they've already started working within it.

For instance, myself- I don't remember the last time I held physical cash for anything- It's been a very long time- more than a year, and you see this is the same situation for most Nairobians. So when it comes to accepting the shift in terms of how we carry on in transport, it's going to be very easy and that's why we are so confident in the software we are developing, Manara.

In a rapidly digitizing city, what do you see as the role of cyber security?

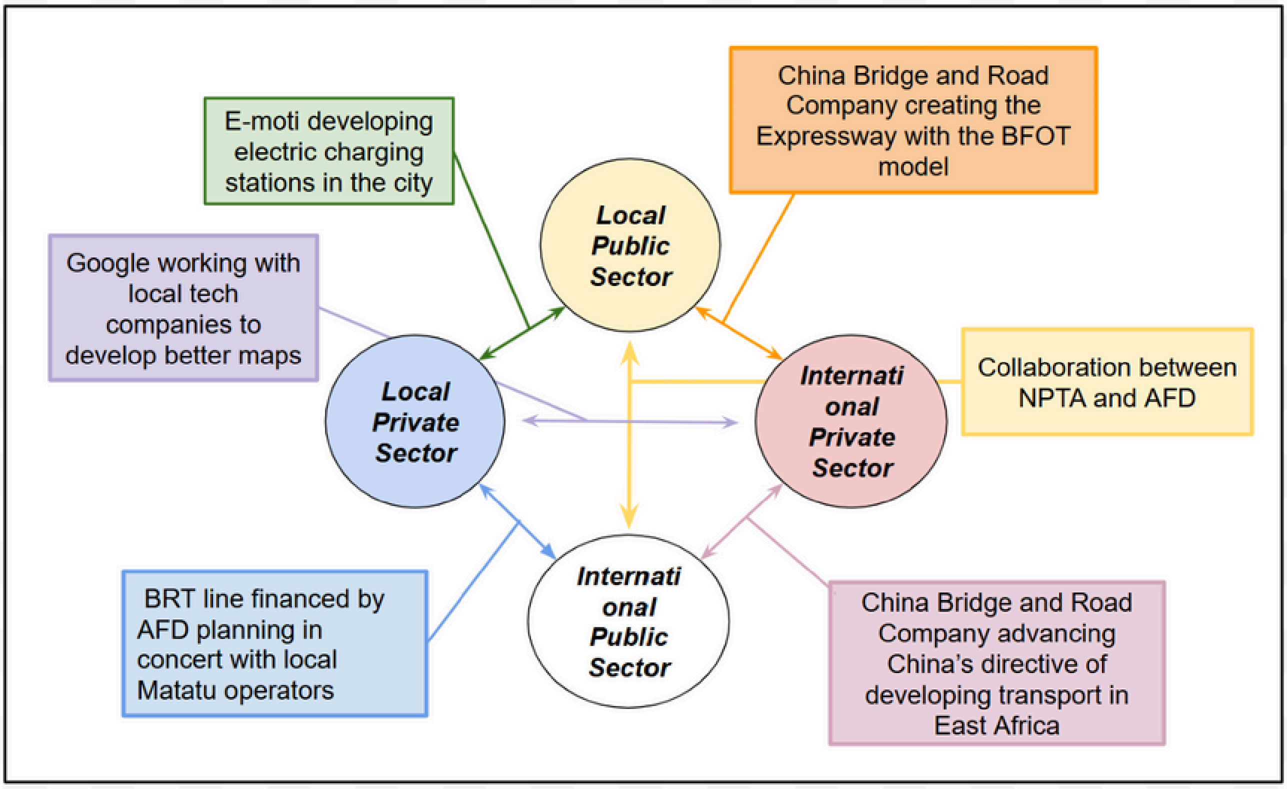
As I said, the only player that has been at the Herald of the digital revolution in the transport sector has been MPESA, and MPESA literally throws money at cyber security. So to that end not so many people have been exposed to cyber security threats, of course. Elsewhere, you know, in other capacities that do not involve transport, there have been more threats. But it's not typically involving transport. However, when we look at what we want to do with Manara, we see cybersecurity as more of a present threat, not a future threat.

People are especially wary of their locations being tracked. People have gotten very sensitive and rightfully so of their data and especially to video coverage. So right now, if you go somewhere in Nairobi and try to take a video photo of someone without their consent, it is quite frowned upon. So people do understand the threat of surveillance without consent and as a transport company we have been trying to figure out how to work with this and truly seriously think about how we manage it. We anonymize the data onboard the data and delete the rest so we don't have to store it in the cloud and use other measures like this to maintain people's security while still collecting the data we need to make our system work as a smart bus.

Billy Mwangi is an tech entrepreneur working in Narobi's transportation sector. More information about Billy and his company can be found at https://e-moti.co.ke/ and nhttps://cchora.com/work/e-moti/

Bringing It All Together

The digitization of Nairobi's transport infrastructure demonstrates the intersection between public and private sector interests, both local and international. While technological advancements offer the potential for improved efficiency and sustainability, they also raise concerns about equity, data security, and reliance on foreign investment. As shown in this section, the success of these initiatives depends on how well the government can regulate and integrate technology to serve the entire population rather than just specific economic classes. The role of digital infrastructure, from electronic payment systems to smart tracking and mapping technologies, is quickly changing the way people can navigate the city. Unfortunately, if mismanaged, these developments could risk exacerbating existing inequalities in urban mobility, particularly for lower-income commuters who rely on informal transport networks.



The diagram above illustrates the complex network of stakeholders involved in Nairobi's transport digitization. It highlights the interplay between local and international, public and private sector actors, each contributing to different aspects of infrastructure development. For instance, the China Bridge and Road Company plays a significant role in expressway construction and regional transport policy, while local private firms like E-moti focus on electric charging stations. There are also government agencies such as the NPTA and international organizations like AFD that demonstrate the importance of public-private partnerships in funding and implementing transport projects. Google's engagement with local companies to enhance digital mapping shows the role of data-driven innovation in transport planning. This interconnected framework underscores the need for a coordinated approach to transport digitization—one that balances all actors' roles to ensure all Nairobi residents benefit from a strong public transport system.

Conclusion

The expansion of digital infrastructure in Kenya, while hard to miss, can be easily underestimated. The silent revolution of digitization, led by public authorities, but financed by companies both local and international, well-established and, increasingly so, emerging, has developed an ecosystem of services, made available and accessible in record time. Safaricom has arguably spearheaded this process, establishing a now full-fledged, comprehensive digital banking system, accelerating financial inclusion, supporting the emergence of local businesses and entrepreneurs — all while building initially on their mobile service infrastructure.

Nairobi's status as a tech and fintech hub can be largely attributed to the contribution of innovative and game-changing private initiatives like M-PESA, supported by public actors. This interplay of private and public stakeholders, as well as national and international ones, has contributed to build a complex framework of service provision and infrastructure development: as can be seen with the case of transportation, such arrangements seem appropriate to provide solutions adapted to the Kenyan context — in terms of scale and adaptability (to the high level of informality for instance). The Government of Kenya, along with the Nairobi city government, plays a facilitating role, building partnerships and going the extra mile to secure long term investments in key infrastructure.

Nevertheless, some underlying issues remain. Despite significant investments in green energy, Kenya's energy grid remains unreliable: expanding digitization without guaranteeing energy stability would be putting the cart before the horse. Furthermore, data privacy concerns have become increasingly prominent, particularly in the realms of digital healthcare and mobile money — although, it must be said, significant investment is increasingly going to cybersecurity. These concerns are compounded by issues of interoperability, as Kenya's digital infrastructure is fragmented, influenced by the diverse actors involved, and driven by private sector competition (International Commission of Jurists Kenya, 2024).

Finally, and somewhat crucially, public trust in both public and private entities has been significantly undermined, particularly in the wake of the June-July 2024 protests. These protests, which opposed the Finance Bill that introduced higher taxes on essential goods, reflected a broader dissatisfaction with the government's ability to translate increased taxation into tangible improvements in public services and opportunities. The role of digital infrastructure in these protests was multifaceted — on the one hand, enabling online activism, while on the other, facilitating crackdowns on movement leaders by government authorities. The #KeepItOn campaign also put to the fore concerns about the potential for internet shutdowns, and a lack of transparency and accountability in such actions (Owino, 2024). There seems to be for some a growing disconnect between large-scale public investments in infrastructure and the immediate needs of the population, particularly among the youth, who prioritize stable employment and economic opportunity over long-term digital infrastructure development. This raises critical questions about the political feasibility of prioritizing digital infrastructure investments, in a context where immediate socio-economic needs remain pressing.

Protests against 2024's finance bill and the internet shutdown that accompanied the protests.
Source: IT Edge News Africa.

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WASTE MANAGEMENT

Inequalities and Innovation: Nairobi's Approach to Waste Management

This chapter explores the socio-spatial inequalities of waste management in Nairobi, revealing how class, geography, and governance shape the city's sanitation landscape. It traces the path of garbage from its generation to its disposal, exposing the environmental injustices embedded in Nairobi's waste infrastructure. From overflowing landfills in informal settlements to spotless sidewalks in elite enclaves, this chapter unpacks the actors, policies, and politics that determine who lives with trash and who gets to look away.

By Claire AMENYAH, Beatrice BRUNORI, Isabel CRONIN, & Iona HADINOTO.

Waste Inequity: A Tale of Two Cities

In Nairobi's Korogocho informal settlement lies Dandora, a 30 acre landfill that receives roughly 850 tonnes of solid waste daily from the city's residents, making it the largest dump site in East Africa. Korogocho is one of the largest informal settlements in Nairobi, with 150,000 to 200,000 inhabitants (UNEP, 2018b). It is known for high rates of poverty, crime, HIV/AIDS, and bears the brunt of Dandora's adverse effects. Images of Dandora provide a visual aid to witness the sheer scale of trash generated by those living in Nairobi.

These snapshots reveal sprawling mountains of rubbish, informal waste pickers who sift through trucks for goods to sell, and smoke from burning plastic. What these images can't show are the odors emanating from the landfill to St. John's School next door. As a school directly adjacent to Dandora, the ever growing waste pile means that toxic fumes infiltrate classrooms, endangering teachers and pupils. The spatiality of Korogocho and Dandora underscores the ties between class and cleanliness in Nairobi, wherein impoverished neighborhoods suffer adverse impacts from trash generated by the entire city, including upscale areas.

The Dandora dumpsite, a famous urban landmark in the city, which plays host to hundreds of waste pickers who comb its smoking hills every day for scrap to sell or recycle. The mound is so large it has even blocked the Nairobi River which flows next to it. Source: Unequal Scenes, Nairobi.

A far cry from the Dandora dump site is Nairobi's CBD and other wealthy neighborhoods of the city, such as Gigiri, the diplomatic quarter that houses embassies. While taking a stroll in the CBD, one will notice how empty the streets and pavements are of trash even at peak hours of business. Any bins found on the street also seem to never overflow with rubbish, leaving newcomers curious as to how such a busy part of Nairobi can seemingly remain spotless. Gigiri in North Nairobi (where one of four UN headquarters is located) bears even a starker contrast to the dump site than the CBD. While the latter is bustling with passersby and shops beckoning visitors with their goods, Gigiri is primarily a residential expatriate neighborhood full of imposing embassies, wide and clean sidewalks, and beautiful foliage blocking the hostile sun rays.

These well-off parts of Nairobi are one half of the 'tale of two cities' that characterizes the city's waste management. These neighborhoods enjoy more effective waste collection offered by city authorities and private companies alike in contrast to poorer, and often informal, quarters. As recently as January 2025, Johnson Sakaja—the governor of Nairobi City County (NCC)—mandated businesses in the CBD to "subscribe to licensed waste management service providers and maintain cleanliness within a 10-metre radius of their premises" (Kinyanjui, 2025). In a supposed effort to curb dumping in Dandora, the NCC in accordance with this new mandate may contract a Chinese company (China National and Engineering) to convert waste at the dump site into energy. As a residential expatriate neighborhood, Gigiri is markedly different from the CBD in that its inhabitants are largely foreigners and there is relatively much less economic activity. As a quieter, wealthier part of Nairobi, cleanliness is expected. Particularly as a diplomatic neighborhood, embassies in Gigiri need to maintain propriety if they receive any guests.

The Nairobi waste management system relies heavily on the involvement of private firms, informal waste pickers and community-based organizations. Once considered a temporary response to state failure, the provision of services by non-state actors has been institutionalized by Nairobi City County. The 2015 Solid Waste Management Act assigned sub-counties responsibility for solid waste management (SWM), however, local authorities sometimes prefer to establish multiple partnerships, shifting the cost of workforce and infrastructure investment onto private stakeholders (Ogutu et al., 2020). In the last decades, the city has also received support from the Japan International Cooperation Agency (JICA) to develop its SWM master plan.

This strategy, along with public investments, has increased collection capacities since the 2010s, with 65% of waste now being collected according to UN-Habitat (2021). However, major challenges persist regarding sustainable financing, regulation enforcement, and institutional coordination.

The case of the weighbridge, installed in 2010 at the Dandora dump, reflects these issues. The tool, used to measure the quantity of waste disposed of by each truck, has encountered maintenance issues, sometimes resulting in a paralysis of the system. When the weighbridge is not operational, firms cannot be paid for the waste they have collected and loaded trucks start forming a queue, sometimes for many days. While the trucks station at Dandora, the collection process is significantly disrupted. Additionally, the dysfunctioning of the weighbridge is associated with cases of corruption, as some empty loads are invoiced or some trucks are invoiced multiple times, which indirectly affect the cost borne by households, municipalities, and businesses (Global Initiative, 2021).

To address the challenges of waste management, recent policies have stressed the role of civic responsibility. For example, the county governor has adopted the slogan “My Waste My Responsibility” and has encouraged public participation in community clean-ups organized on the last Sunday of each month. Praise for such operations in neighboring Rwanda — with Kigali being hailed as the “cleanest city in Africa” — may explain this renewed interest in community engagement. Governance frameworks for SWM also emphasize the need to develop circular economy and recycling solutions, and support the concept of waste as a resource. The Sustainable Waste Management Act (2022) integrates this ambition, with references to producer responsibility, public participation, and the reduce-reuse-recycle approach, although it lacks concrete implementation. Currently, 15% of waste generated is treated in controlled facilities, while the rest is disposed of in open dumping sites (UN-Habitat, 2021).

The evolving urban metabolism of the city is also expected to require an upscaling of the SWM system in Nairobi. As the city grows, households and businesses will generate more waste, thereby requiring the upscaling of the current SWM system. Changes in the composition of waste are also major factors. Waste coming from Nairobi consists mostly of food and, to a lesser extent, paper and plastics (Njoroge et al., 2014). The proportion of the latter is very likely to increase because of the expected population growth as well as the evolution of consumption habits towards more goods made of plastics. Similarly, the disposal of textile materials is expected to grow. In this respect, a visit to Toi Market in Nairobi reveals the contribution of imported second-hand clothing – mitumba in swahili. Bales of clothing coming from Europe or the U.S. contain non-degradable waste that municipal infrastructures are ill-equipped to treat. Regulating waste generation can therefore be as important as improving the collection and recycling processes. This objective is at the heart of Kenya’s recent ban on plastic bags. The recent plastic ban in Kenya intends to achieve this.

Plastic Bag Ban

In August 2017, Kenya introduced its toughest ban on plastic bags yet, a bold step in the fight against pollution that was years in the making. The law, which criminalizes the manufacture, importation, and use of polythene single-use plastic bags, carries severe penalties: violators face up to four years in prison or fines of up to four million Kenyan shillings (almost €30,000).

For many, the move was long overdue. The 2017 law was the culmination of over a decade of efforts by environmental activists, scientists, and policymakers who had been raising alarms since the early 2000s. Kenya's first attempt to regulate plastic bags came in 2005, following a United Nations Environment Programme report highlighting the environmental and health hazards posed by plastic waste. Plastic bags in particular had become a ubiquitous challenge, clogging drainage systems and endangering livestock and humans. The discarded bags also create stagnant pools of water — ideal breeding grounds for mosquitoes — exacerbating the spread of malaria. It was also a matter of inequality — the populations most burdened by plastic waste are those with the fewest resources and SWM infrastructure to cope (Njeru, 2006). In response to the joint report on plastic waste with the UNEP, the Kenyan government prohibited the production of plastic bags under 30 microns. Yet the measure had limited impact. The Kenya Association of Manufacturers (KAM) soon pushed back, arguing that such restrictions would threaten jobs and burden consumers with additional costs.

[Plastic bag waste] was also a matter of inequality — the populations most burdened by plastic waste are those with the fewest resources and SWM infrastructure to cope.

Subsequent policies followed the same pattern. In 2007, a new set of regulations banned plastic bags below 30 microns while imposing a 120% excise duty on the remaining varieties. In 2011, authorities attempted to raise the threshold to 60 microns. But enforcement remained weak, and plastic production continued to rise with sustained lobbying efforts from manufacturers (Behuria, 2021). It wasn't until 2017 that the government, under growing pressure from environmental groups movements and actions taken by neighboring countries like Rwanda, which banned plastic bags in 2008, made the decisive move to criminalize polythene bags outright.

Kenya's ban follows a global precedent, with more than 100 countries having introduced full or partial bans on plastic bags. Its punishments, however, are among the strictest yet. But implementation has been far from seamless. While police have cracked down on major manufacturers and distributors, illegal trade persists. Although the East African Legislative Assembly passed the East African Community (EAC) Polythene Materials Control Bill the same year, reports suggest that plastic bags continue to enter the country by smugglers through neighboring countries including Ethiopia and Uganda (Lillian, 2023 and UNEP, 2018a). Traders in informal markets still find ways to access banned bags, slipping them into shipments of legally permitted plastic materials or taking advantage of porous borders.

The law also spurred unintended consequences. In the absence of polythene, demand surged for polypropylene bags—marketed as a more durable and recyclable alternative. Yet, some manufacturers began blending polypropylene with polythene, effectively circumventing the ban and ensuring the so-called 'recyclable alternative' could not actually be recycled. Recognizing the loophole, the Kenyan government introduced minimum standards for polypropylene bags in 2019, tightening regulations once again. The government has also expanded its anti-plastic efforts by prohibiting single-use plastics in protected areas, including national parks, forests, and beaches, since 2020.

For many Kenyans, adjusting to the new reality has simply entailed collecting durable woven or polypropylene bags for their shopping and daily use. Some, however, express their frustrations with the policy and the speed of implementation. Plastic bags were cheap and convenient for small-scale vendors, and their replacements — cloth bags or biodegradable alternatives — often come at a higher cost and more importantly, are also discarded (Omondi & Asari, 2021). While the National Environment Management Authority touted an 80% compliance rate in the reduction of plastic bags in the country (NEMA, 2019), keeping single-use bags out of landfills does not solve the country's waste management challenges. As of 2024, single-use plastic garbage liners, once exempted from the 2017 ban, are also prohibited, opening new concerns for the ripple effect on already fragile SWM systems.

Innovative Solutions: the Case of HyaPak

As Nairobi continues to struggle with waste management and the national plastic ban fails to provide affordable, widespread alternatives to single-use plastics, private enterprises have stepped in to bridge the gap between policy ambition and practical solutions. One notable example is HyaPak, a startup that transforms invasive water hyacinth and agricultural waste into biodegradable products. Our visit to HyaPak's research center provided insight into how these sustainable alternatives can reduce plastic waste while fostering economic development. Additionally, by repurposing these harmful materials, HyaPak not only offers an alternative to single-use plastics but also addresses the pressing environmental issues of water hyacinth proliferation and, to a lesser extent, agricultural waste.

The process of transforming water hyacinth into biodegradable seed bags. Photo credit: Antoine Tisserant.

Water hyacinth is one of the world's most problematic invasive species and has been plaguing Kenya's water bodies by forming mats over water surfaces which depletes oxygen levels and ultimately disrupts aquatic ecosystems and fishing activities. HyaPak's innovative approach transforms this ecological threat into bioplastic. According to founder Joseph Nguthiru, their harvesting efforts have contributed to restoring over 20 hectares of Lake Naivasha, located north of Nairobi. Their flagship product, biodegradable seedling bags facilitating the tree planting process by conserving water and protecting young saplings, have been used in large-scale reforestation efforts, with over 30,000 seedlings planted nationwide. Overall, this process demonstrates the potential for circular economy models to address Nairobi's waste management challenges while reducing Kenya's reliance on imported plastic alternatives.

The finished seedling bags. Photo credit: Antoine Tisserant.

Sciences Po students with the lab researchers. Photo credit: Antoine Tisserant.

Additionally, by collaborating with local fishermen to remove water hyacinth, HyaPak not only rehabilitates freshwater ecosystems but also creates new income opportunities for communities dependent on these lakes. The startup has also developed eco-friendly sanitary pads made from banana pseudostem waste, a byproduct of banana production in Kenya and Uganda. Unlike conventional synthetic pads, which contribute to landfill waste, these biodegradable alternatives decompose within two to three months, reducing long-term environmental impact. However, as HyaPak researchers have shared with us, several challenges hinder their widespread market adoption, especially regarding customer acceptance and affordability as these eco-friendly pads can be more expensive than standard options. The product's initial market has also been skewed towards wealthier individuals who are more familiar with sustainability concepts. Beyond its core innovations, HyaPak has also been actively engaging in community-driven sustainability initiatives, such as river cleanup projects along the Nairobi River and River Kandisi, as well as community education campaigns in surrounding areas.

Along with E-moti, the tech-enabled transport solution provider mentioned in Chapter 5, our visit to HyaPak showed us how private enterprises in Nairobi have stepped up to fill policy voids and introduce sustainable alternatives where government action falls short. The example of HyaPak's innovations highlights a crucial lesson extending beyond the city of Nairobi: bans alone are not enough to drive sustainable change. While Kenya's plastic ban has reduced visible pollution, its full and long-term success requires comprehensive policies that offer alternatives by addressing economic feasibility and infrastructure gaps, and ensure that innovative solutions like HyaPak's can be scaled and made accessible to all.

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NATURE AND THE CITY

From Concrete to Canopy: Nairobi's Green Agenda

Nairobi has long held a reputation as a "Green City in the Sun," with its parks, forests, and urban biodiversity. However, it now faces mounting challenges, including rapid urbanization, habitat loss, pollution, and unequal access to green spaces. Balancing conservation with growth demands coordinated governance, public engagement, and sustainable planning.

By Alice LORD & Iris MARTET

Urban Green Spaces and Their Significance

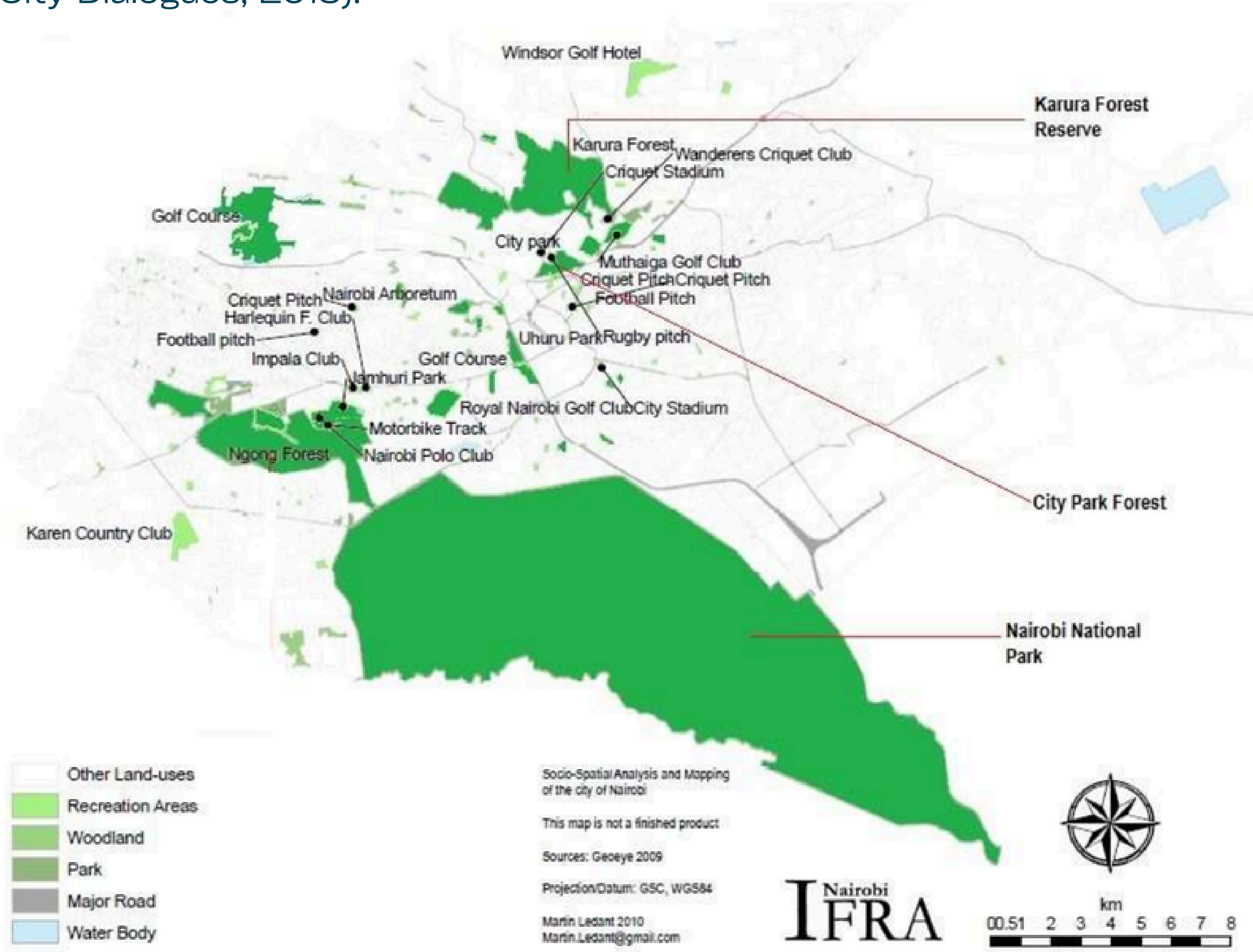
During our research trip, we learned how protecting and nurturing nature in the city of Nairobi forms part of the response to the climate crisis at the local level. Referred to with compassion by an environment officer of the City County during our visit to Uhuru Park as "Mother Nature", the natural environment of Nairobi, its parks, forests and national reserve, is cared for and discussed by many actors in the city pursuing a philosophy of a beneficial coexistence between humans, nature and wildlife. Dedication to the sustainable management of these urban green spaces in coordination with human and animal users contribute to the ambition of Nairobi becoming a more livable and resilient urban area.

Walking through City Park and visiting Uhuru Park, we rested, spoke with one another and enjoyed the benefits of nature in the city as the Nairobians present did too. Protected in the cool shade on a warm day, the social value of Nairobi's urban green spaces was evident to our senses. The benefits of nature in the city to humans, also known as “ecosystem services” (Russo & Cirella, 2021), are fragile and must be future-proofed. Our professor Sukriti Issar observed that the air quality was relatively good in comparison to her visits to other large metropoli such as Delhi, India. This reflection reminds us that public health is inextricably intertwined with the health of nature in the city: green spaces serve to cool humans, give them land to exercise and take care of their mental health. In turn, green spaces need to be served by humans. The One Health framework, endorsed by the World Health Organization, recognises this interdependence and mutual benefits of nature and humankind and has increasingly influenced public policy in the late 20th and early 21st century. This has led many scholars and policymakers to think of humans and nature as one, rather than two separate forces to be reconciled. In addition, we have reflected in our classes at SciencesPo on the importance of liberating nature from being solely a product of human consumption.

Walking through Uhuru Park. Credit: Student photography team.

As Mbatia (2016) details, Nairobi is an important case study for understanding the role and governance of greenery and green spaces. Indeed, it has a reputation as the Green City in the Sun. In contrast to many large metropoli, Nairobi hosts, within its city boundaries, natural green spaces like the Ololua, Korura and Ngong Forests, and man-made centrally located City Park and Uhuru Park, to name but a few. Overall, a 2021 study estimated the green space in Nairobi at 9.86% of the Metropolitan Area (Okech and Nyadera, 2021). Green spaces are predominantly located in the west of the city, where the European reserved areas were located under British colonial government planning (Obudho, 1997 in Mbatia, 2016). To the south of the city is the Nairobi National Park, unique in the world for being located in the country's capital city.

A number of bodies own and manage the different greenery of the city. Notably, Nairobi City County manages City Park, Kenya Wildlife Service, a state corporation, manages the National Park, whereas some green spaces like golf courses are owned privately (Mbatia, 2016). Beyond green spaces, plant nurseries, trees and flowers noticeably feature in the streets of Nairobi. Lilac jacaranda trees can be seen across the Central Business districts, for example. Plant nurseries, located in riverbanks and roadsides are often managed by flower vendors (NPR, 2022; Patinkin & The Rockefeller Foundation's Informal City Dialogues, 2013).



Public Urban Greenspaces in Nairobi. Source : Ledant, M and French Research Institute in Africa, 2011.

Nature is a crucial part of Kenya's political history and social fabric and is ever recognised as the green in the country's flag. It is essential that urban green spaces are managed sustainably for the benefit of present and future generations. Air, water and plastic pollution, human encroachment on wildlife habitat and the presence of invasive species are all key issues to address. From a social standpoint, the benefit of these essential communal goods, including green spaces, is only as real as their accessibility for all (Okech & Nyadera, 2021). Key issues of affordability, opening hours and the number of entrances are thus significant for Nairobi residents, whereas Nairobi's flora and fauna require other strategies. As illustrated in the case of Nairobi National Park, managing the stark threat of green space depletion is evidently a necessity.

Conservation and Infrastructure Conflicts at the National Park

The Nairobi National Park protects its biodiversity, flora and animals, through laws such as the KWS Protected Areas Planning Framework. Nairobi National Park hosts over 100 mammal species, including lions, leopards, cheetahs, buffaloes, giraffes, and black rhinoceroses. It also recorded more than 500 bird species, encompassing both migratory and endemic birds (Nairobi National Park, 2025). While exact numbers fluctuate due to migration and seasonal changes, the park supports thousands of individual animals across its diverse ecosystems. The management is made by the Kenya Wildlife Service (KWS), who mostly operate on a scientific aspect (making research), medical aspect (veterinary) and logistics (rangers to control the tourists). There are in fact regulations made for the tourists coming to visit : the entry of the park has a certain price (€40), and you can’t enter without a guide and his car. They have to remain in the car at all times in order to minimize disturbance to wildlife.

Even though the park is controlled, it is threatened. Between 2000 and 2019, the city lost approximately 6600 ha of forest cover, representing a loss of about 11% in 20 years, according to scholars at the Technical University of Kenya (Mbuthia et al., 2022). With the park’s wildlife populations, such as the wildebeest, having declined by over 90% in the last few decades, and migratory routes blocked by urban expansion, the need for impactful conservation has never been more urgent (Nairobi National Park, 2024). However, the park only covers 100 square kilometers and does not include the surrounding 1,000 square kilometers dispersal areas used by wildlife to migrate. As Nairobi expands, these dispersal areas are increasingly built on for agriculture uses, residential neighborhoods, and industrial enterprises, posing a significant threat to the park's wildlife. This urban expansion had


Giraffe in Nairobi National Park with a backdrop of the city. Photo credit: Antoine Tisserant

several consequences on the ecosystem, disrupting critical wildlife corridors through the destruction and through the isolation of existing habitats, fragmenting the areas necessary for biodiversity to thrive. Let's remind ourselves that the percent of urban areas in Nairobi county went from 28.41% in 2013 to 43.11% in 2033 (Mubea, Goetzke and Menz, 2014). This increase occurs at the expense of agricultural and natural land. Residential areas, roads, and commercial developments are increasingly built near or on the fringes of the park. This directly reduces the available space for wildlife and disrupts migration routes, forcing animals to adapt to smaller, more fragmented habitats. The park's relatively small size makes it particularly vulnerable to habitat fragmentation. When new infrastructure is built nearby, it can divide the park's ecosystems, making it harder for wildlife to move freely between different areas of the park or to connect with other conservation areas. Animals that rely on migratory routes, like wildebeests and zebras, now struggle to access grazing lands outside the park. This isolation reduces genetic diversity, increases inbreeding risks, and makes wildlife more vulnerable to local extinction. The third phenomenon is exacerbated by the development of safari for the tourists, which develop many forms of pollution (air, water, sound etc.) and change the conservation area to a tourist attraction, at the expense of safeguarding the park's biodiversity. This reduction of their living space leads to more human-wildlife conflict. As wildlife roams beyond the park's boundaries, conflicts with humans have increased. Lions, for example, are responsible for livestock predation, leading to retaliatory killings by affected communities. These threats are compounded by Nairobi's rapid urbanization, turning the park into “an ecological island” (Nairobi National Park, 2024). Another threat to biodiversity is indirectly linked to urban expansion. A significant amount of water is diverted to support urban development—such as construction, daily consumption, and energy production—contributing to water scarcity, which is further intensified by climate change and the frequent droughts affecting the country. The lack of water already pushed wild animals into residential areas in other Kenyan cities, something that could happen in Nairobi (The Star, 2022).

These issues require a variety of actors to coordinate and conserve the natural green resources of the city and to regulate their use.

Management Strategies of Nairobi's Central Parks

City parks, like many urban green spaces, are subject to security concerns and acts of vandalism, both of which can significantly affect its ability to function as a recreational and environmental asset to Nairobi's residents. Security issues not only undermine the physical state of the park but also influence how the public perceives the park and its role in the community. A common form of vandalism that impacts the park's upkeep is littering. Visitors who disregard waste disposal regulations leave behind trash, further harming the environment. Not only does this affect the park's aesthetic value, but it can also result in pollution that affects local wildlife and ecosystems. Improper waste disposal may also contribute to soil degradation and water contamination, both of which can have long-term consequences for the health of the park (3Es Experience, 2021). Squatting is another common issue in Nairobi's urban green spaces : managing the parks becomes particularly challenging in that case. Finally, parks and green spaces often provide secluded spots where drug deals or drug use can take place without drawing attention from authorities or the public. Repairing or replacing damaged park facilities and infrastructure comes at a financial cost. This diverts much-needed resources away from other areas of park maintenance, such as landscaping, environmental management, and wildlife conservation. (Bench Africa, 2025). Parks are supposed to be spaces where the community feels welcome and can connect with nature. However, when the parks become associated with neglect and security problems, the community's trust in the park's management diminishes.

Uhuru Park managers and a number of Nairobi City County officers highlighted their management strategy and key challenges. For them, the parks are important buffer zones for air quality, cooling spots and spaces for relaxation. With the goals of environmental and conservation resilience, they are working on nature-based solutions in order to promote the existing nature in the city, yet point out that many locals desire the decentralisation of green spaces, such as growing neighbourhood parks and greening other parts of the city. This move to make nature accessible to all communities. Currently, the City Council in collaboration with UNEP and AirQo maintain 39 air quality monitoring systems, a minimum of one per sub-county and have collaborated in renovating a few parks.

These policies cannot be understood separately from the social context and the citizens who have pushed for nature to feature as a priority on the local political agenda. This is illustrated by the history of environmental activists in Kenya.

Environmental Activism

The urban green spaces of Nairobi represent significant sites of civic engagement and social transformation in the history of Kenya, both as places to gather and mobilise as well as places to defend and nurture. An ambition to effect policy change is shared by the organisations we met. Notably, the work of these organisations aim to accelerate change, according to one speaker at Uhuru Park, "things tend to go quite slowly".

Environmental activist Elizabeth Wathuti spoke to us about her youth-led movement, the Green Generation Initiative, and its place in a rich history of environmental engagement in the country. Elizabeth is inspired by the late Professor Wangari Maathai, who became a Nobel Peace Prize laureate through her work as a community organiser improving the livelihood of women, political rights of Kenyans, and the rights of nature. Elizabeth's work upholds community involvement as essential and advocates for policy change, a strategy echoed in the literature: community involvement in maintenance of green spaces and policy change is a key pillar of sustainable green space management as it involves its potential users (Odhengo et al., 2024). The movement she created looks to develop an environmentally conscious generation and provide future leaders with ideas of local climate action and regenerative solutions. She spoke to us about the importance of equitable access to green spaces. Elizabeth advocates for the protection and expansion of green spaces, and discussed with us residents' protests in Nairobi against the cutting of trees, which showcases the values and importance of trees for the community. By placing people at the center of environmental initiatives, citizens gain more direct benefits from the projects and are more likely to engage in the long-term protection of green spaces.

Elizabeth Wathuti. Source : Green Generation Initiative

Another compelling initiative was presented during our visit to Uhuru Park: the Go Green Network based in Mukuru Slum. The representative of this community-based organisation, Nelson, told us about how the Go Green Network educates local residents about the environment. Having already carried out extensive awareness training in primary and secondary schools, the network, which also has planted 10,000 trees, seeks to educate politicians going forward. Furthermore, the ambition to protect nature can take on innovative forms. Go Green Network is eager to build affordable "green toilets" and is currently seeking partners for funding. Beyond caring for nature in the city as simply the protection of urban green spaces, we can also see the work in material recovery and to reconnect human life to nature and invest in ecosystem health. This involves the production of biogas for electricity in schools and human waste as fertilizer. This recalls our visit to the ecologically-oriented bioplastic startup Hyapak. Both Hyapak and the Go Green Network demonstrated methods of caring for nature other than conservation. They aim to link nature into the consumption chain and urban services in a sustainable manner. This diversification in the strategies to conserve nature in the city highlights the adaptation, investment and embrace of actors in Nairobi of contemporary technological innovations.

Conclusion

Building upon the legacy of Professor Wangari Maathai and her fellow activists, many groups and individuals are protecting nature in Nairobi. Legislation against plastic pollution, educational grassroots initiatives and sustainable management of green spaces all form part of the mosaic of Nairobi's green future. With its existing endowment of green space, albeit unevenly distributed, Kenya's capital holds promise to provide sustainable sanctuary to all those who inhabit it. Historic unjust urban planning, social and economic inequalities and competing interests must continually be repaired, mediated and managed in order to foster a healthy urban future.

Going forwards, as urban and environmental enthusiasts, we are keen to see how Nairobi will balance rapid urbanisation with its commitment to green space preservation and continue to develop dialogue between local communities and policymakers in conservation efforts.

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ASANTE SANA!

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