

URBAN RESILIENCE REPORT ON NAIROBI

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URBAN RESILIENCE REPORT PRINCIPLES

Cities play a crucial role in the world, serving as engines of economic growth, innovation hubs, and centres of cultural diversity. The importance of cities is evident from the statistics: more than half of the world's population currently resides in urban areas, projected to reach 68% by 2050. Cities generate around 80% of global GDP, attracting investment, creating job opportunities, and driving technological advancements. They also contribute significantly to energy consumption, with cities accounting for approximately 70% of global greenhouse gas emissions. Recognising the significance of cities, sustainable urban development has become a pressing global priority, emphasising the need for eco-friendly infrastructure, efficient transportation systems, affordable housing, and inclusive urban planning to ensure a high quality of life for urban dwellers while minimising environmental impacts.

As municipal authorities, cities are significant employers in their own right, with a wide range of departments and services requiring a diverse workforce. However, cities' impact extends beyond their immediate boundaries. The decisions made by city governments have far-reaching consequences, not only for their residents but also for people living in other territories.

In our work, we aim to select metrics that cumulatively characterise a city's resilience. We assess cities by 19 categories and individual indicators to draw a "resilience" portrait of the town, highlighting successful policies implemented in the city. We also provide policy hints (based on successful examples of different cities) for problematic topics identified during analyses. We provide a city with the Urban Resilience Index and other sub-indexes such as the basic needs index, natural risk exposure index, transport resilience index and urban sentiment index.

The Urban Resilience Index (URI) comprehensively assesses over 150 indicators. The city rating blends the E, S, and G components for a holistic evaluation. The methodology for the Urban Resilience Index involves evaluating cities based on Environmental (E), Social (S), and Governance (G) components. They are assessed considering the city's current performance (current state) and expectations for the future (ability & willingness). The weighting of these categories is set at 35% for E, 45% for S, and 20% for G due to the perceived more significant impact and interaction with social aspects of development in municipal entities, especially in the Global South.

The initial analysis starts with anchors for E, S, and G components set above or at the middle of the assessment scale. Notch downs and caps from these anchors may occur based on material exposure from industries or companies significantly impacting the city's economy. This includes industrial output, total employment, or tax contribution. The downward revision of anchors is also possible based on industry-specific impacts and anchor strength. The assessment involves analysing the city's current state and its ability & willingness in each E, S, and G component, considering key and supportive indicators. This assessment uses a 'very low', 'low', 'average', 'strong', and 'very strong' scale.

SUMMARY OF CITY RATING

Nairobi is Kenya's capital and the country's largest city, with a population of over 7 million people residing in its larger urban built-up area. The Green City in the Sun, named because of the mix of rainforest and savannah, is the largest urban area in East Africa. Its projected growth will lead it to join the TOP-30 global cities by 2050.

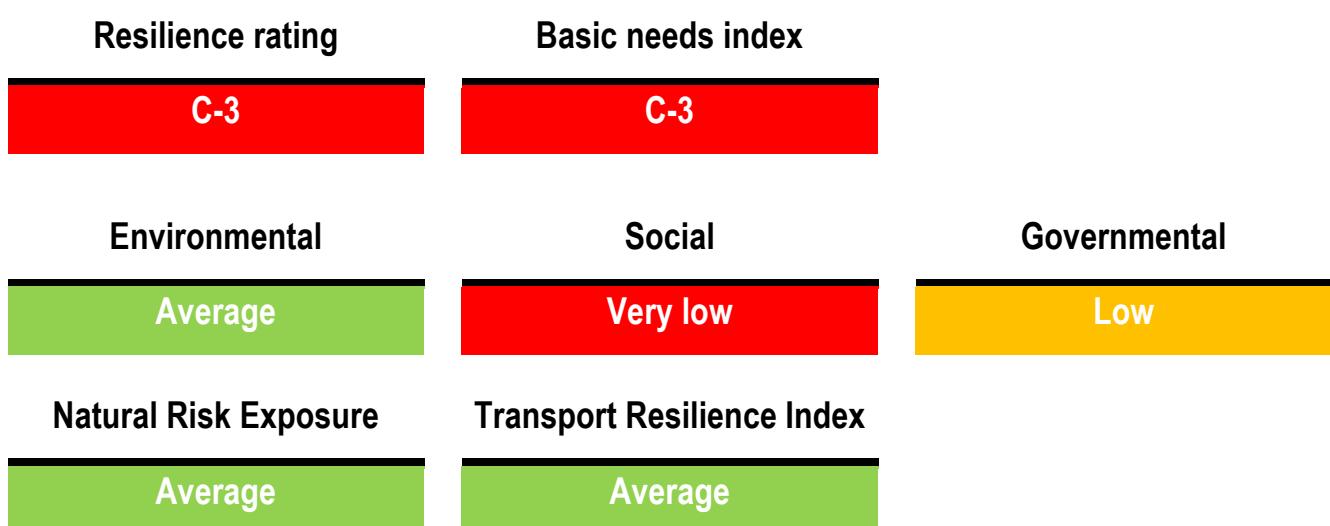
The city boasts a rich history. Established as a railway depot in the early 20th century, it quickly evolved into a significant urban centre in East Africa, hosting more than 50 regional offices of the largest international corporations and organisations.

Given its ongoing urban expansion, strategic geographic position, and economic appeal, Nairobi is destined to sustain its growth trajectory and potentially increase its prominence regionally and globally.

At the same time, the city faces many «growth diseases», such as lagging municipal, social, and transport infrastructure. Expansive urban growth leads to rising crime rates and uncontrollable growth of slum housing. As a large urban centre of an emerging economy, Nairobi struggles with significant inequalities. In Nairobi, the wealthiest 10% of the population accrues almost half of the income.

Nairobi contributes significantly to the Kenyan economy, accounting for around 21.7% of the national GDP compared to 13% of the country's population. The city's economic profile includes manufacturing, financial services, and real estate. In recent years, Nairobi has also emerged as a centre for technology and innovation in Africa, often referred to as Silicon Savannah, with numerous tech startups and major tech companies establishing a presence there. This tech boom is complemented by robust telecommunications infrastructure, such as Safaricom company, which contributes to the growth of IT and related services. The service sector, including finance, real estate, and cultural services, employs a substantial portion of Nairobi's workforce, further diversifying its economic base.

INTEGRAL RATING



Scales

C-3	C-2	C-1	B-3	B-2	B-1	A-3	A-2	A-1
5 (very low)	4 (low)	3 (average)	2 (strong)	1 (very strong)				

NAIROBI: KEY FACTORS IMPAIRING URBAN RESILIENCE

Nairobi's resilience rating and basic needs index are classified as C-3, reflecting significant challenges in infrastructure resilience amid rapid urbanization and environmental instability. The city's environmental resilience is average, indicating a basic level of preparedness against environmental challenges. In contrast, social resilience is very low, highlighting substantial gaps in community support and social infrastructure. Governmental resilience is also low, pointing to deficiencies in institutional frameworks and public resource management. Nairobi's natural risk exposure and transport resilience are both rated as average, showing a moderate ability of the transportation system to handle disruptions. These assessments underscore the urgent focus areas for Nairobi as it strives to enhance its resilience and sustainability. The city is actively investing in sustainable transport and infrastructure improvements to withstand climate-related challenges such as flooding better, demonstrating a commitment to building a more resilient urban future.

Parameter of the urban cluster	Performance
Total area, sq. km.	985.3
Build-Up area, % total area	17.1
Area of devastated and degraded land requiring reclamation, % total area (excluding waste deposits)	1.0
Green spaces, % total area	45.6
Total population, people	7,277,069



Nairobi is already the sixth most populous urban area in Africa, and it continues to grow both in terms of population and built-up. Over the past two decades, Nairobi has experienced an annual population growth rate of 3.9%, a figure that is exceeded only by Dar es Salaam's growth rate of 5.6%. The main drivers for such rapid growth are urbanization and high fertility rates. Such a demographic shift presents challenges and opportunities for Nairobi, emphasizing the importance of proactive measures to

Nairobi's population is projected to double by 2050, exceeding 14 million people.¹

¹ Socioeconomic Pathways and Regional Distribution of the World's 101 Largest Cities // URL : <https://shared.ontariotechu.ca/shared/faculty-sites/sustainability-today/publications/population-predictions-of-the-101-largest-cities-in-the-21st-century.pdf>

effectively enhance the city's capacity to manage urban expansion. This anticipated growth underscores the urgent need for strategic urban planning and investment in infrastructure to accommodate the increasing population density and ensure sustainable development.



Nairobi emits nearly 24,000 tonnes of CO₂ annually, growing by 3.6% yearly. This figure is 18 times bigger than in Brazzaville, which is only 2 times less populated than Nairobi. The city is not heavily industrialized, so this high level of carbon emissions primarily stems from the rapidly increasing motorisation rate and urban sprawl. Both these factors directly affect carbon emissions, given the poverty in the city. Motorization rates are growing due to cheaper secondhand diesel-powered vehicles, and many drivers mix fuel with cheaper kerosene. Urban sprawl, in turn, is almost entirely slum housing growth compounded by roadside rubbish fires and indoor cooking stoves in such neighbourhoods.

In Nairobi, air quality indicators reveal a complex interaction between urban activities and environmental health. While the city currently complies with WHO norms for most pollutants, including sulfur dioxide and nitrogen oxide, thanks primarily to the absence of heavy industry. Rising concerns are due to steadily increasing carbon dioxide levels and close-to-threshold ozone concentrations, both exacerbated by rapid motorization. Carbon monoxide levels remain above normal, driven by the prevalent use of fuels for cooking and transportation, although trends show improvement as electricity access expands. Despite the generally positive trajectory in managing particulate matter and volatile organic compounds, continued.

Vigilance and adaptive measures are necessary to address these pollutants' variable and potentially harmful impacts on public health and urban livability.

Nairobi's water quality data shows challenges with pollution: a very high dissolved oxygen level of 16.2, while a normal pH level of 7.3 indicates possible organic contamination. Despite this, the city has a water management strategy that suggests effective measures to tackle these problems.

The concentration of dissolved oxygen in water is alarmingly high at 16.2 mg/L, which can lead to several ecological imbalances and infectious disease spread

Parameter of the urban cluster	Performance
Share of population in 1 km from transport stops, %	47.8
Share of population in 1 km from green areas (parks), %	17.0

Despite the notable statistic that 45.6% of Nairobi's urban cluster consists of green areas, there is a significant discrepancy in the accessibility of these spaces for all city residents, particularly those living in slums. Only 17% of the population lives within one kilometre of green areas, indicating that the distribution of these spaces is uneven and likely concentrated away from high-density, low-income places like slums. This situation highlights a broader issue of inequality in urban planning and resource allocation. Enhancing equitable access to green spaces could improve the quality of life, provide essential recreational opportunities, and contribute to the physical and mental well-being of underserved communities. Urban development policies must focus on creating inclusive environments where the benefits of green areas are available to all segments of the population, regardless of socioeconomic status.

Due to its geographic location, Nairobi experiences few natural disasters, such as earthquakes and hurricanes. Situated relatively far from the main Rift Valley seismic zone and the Indian Ocean, Nairobi is largely shielded from the seismic activities and oceanic conditions that typically generate such natural disasters.

However, the city remains vulnerable to other climatic challenges, particularly heavy rainfall events that can lead to severe flooding and landslides. The recent floods in April 2024, exacerbated by the El Niño phenomenon, underscored this vulnerability, highlighting the urgent need for robust urban planning and improved drainage systems to mitigate such risks. These events disrupt daily life, cause significant economic damage, and pose serious health risks, emphasizing Nairobi's need to enhance its infrastructure and preparedness strategies to better cope with these increasingly frequent and intense weather events. Nairobi's relatively cool subtropical mountainous climate typically shields it from extreme temperatures, providing a moderate weather pattern generally favourable for both living and agriculture. Despite this, the city is not immune to the emerging trend of heatwaves, which have begun to occur with greater frequency and intensity, a likely consequence of global climate change.

**Kenya stands out as a leader
in the consumption and production
of renewable energy in Africa,
having the World's largest
geothermal energy share²**

Kenya has established itself as a leader in renewable energy in Africa, significantly increasing its share of renewables in production and consumption. The country harnesses geothermal, wind, biomass and solar power, contributing to over 90% of electricity generation coming from renewable sources and 72.5% of electricity consumption in recent years. This robust portfolio underscores Kenya's commitment to sustainable energy and aligns with global environmental targets.

In Nairobi, several resilient energy projects exemplify this commitment. The development of geothermal plants in the Rift Valley has been pivotal, while wind energy projects like the Lake Turkana Wind Power project and solar initiatives across the city are enhancing the energy mix. These projects stabilize Nairobi's energy supply and ensure it remains sustainable and less



² International Renewable Energy Agency, 2024 // URL : https://www.irena.org-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Kenya_Africa_RE_SP.pdf

vulnerable to external shocks. This strategy positions Nairobi and the entire country as models for renewable energy development in urban settings across developing nations.



Parameter of the urban cluster	Performance
Time loss in traffic, %	17.54
The ratio of the cost of monthly public transport usage (the cheapest option) to average monthly income, %	0.23
The ratio of the cost of a 1-kilometre taxi ride to average monthly income, %	0.03
Public transport (excluding subway) operates by schedule	Yes

In Nairobi, transport dynamics present both challenges and opportunities for urban resilience. The average commuter in Nairobi loses almost one-fifth of travel time to traffic congestion, indicating significant inefficiencies in the city's traffic management system. Despite these challenges, public transportation remains highly affordable, with the cost of monthly public transport usage accounting for just 0.23% of the average monthly income and a 1-kilometre taxi ride costing only 0.03% of the average monthly income. However, this affordability does not make public transport viable for a large population segment because of poor geographic accessibility and low reliability.

Even though Nairobi has an official transport operator, Kenya Bus, 70%⁴ of commuter trips in Nairobi are taken by matatu, small buses that operate as shared taxis. Their market is poorly regulated in terms of safety and reliability, significantly impacting the daily commute of many Nairobians. The rapid increase in the number of vehicles, with the fleet doubling every six years, exacerbates the challenges of congestion and environmental pollution, underscoring the urgent need for sustainable transport solutions.

To enhance urban mobility and resilience, Nairobi requires a comprehensive strategy that expands efficient public transport networks, robust traffic management systems, and road and

The motorization rate is only 40 vehicles per 1,000 people

However, vehicle ownership is growing faster than the population

The fleet of cars in Nairobi is projected to double every 6 years³

³ WorldBank Blog, 2024 // URL : <https://blogs.worldbank.org/en/transport/major-african-step-make-sustainable-transport-reality>

⁴ Down to Earth. The matatus of Nairobi: A necessary bane 2022 // URL : <https://www.downtoearth.org.in/blog/africa/the-matatus-of-nairobi-a-necessary-bane-84157>

rail infrastructure development. Such measures would alleviate congestion and reduce reliance on informal transport modes like matatus and private vehicles.

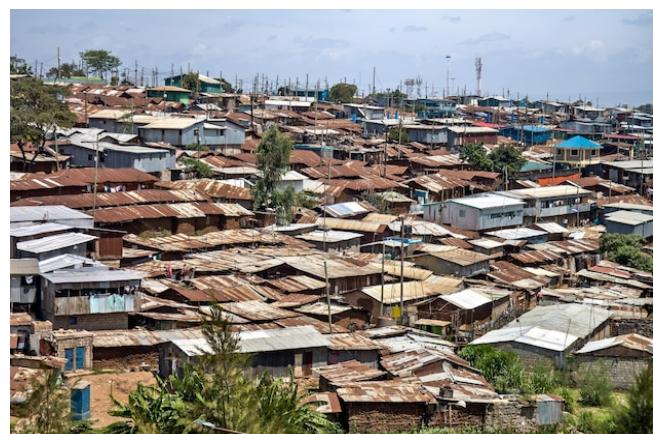


Parameter of the urban cluster	Performance
Life expectancy at birth, years	63.9
Maternal mortality ratio, deaths per 100,000 births	362
Number of hospital beds per 1,000 population	1.4
Number of doctors per 1,000 population	0.2
Ambulance arrival speed, minutes	85

Nairobi's health metrics in the Urban Resilience Index show limited advantages and significant infrastructure gaps. At 63.9 years, life expectancy is only slightly higher than the national average of 63.5. However, Nairobi shows a minimal gender gap in life expectancy throughout Kenya (2.6 years vs. the country's 5.9), reflecting equitable health outcomes across genders within the city.

In Nairobi,
The average ambulance
response time is 85 minutes

The city's healthcare system is under-resourced, with only 1.4 hospital beds and 0.2 doctors per 1,000 people. The capacity of hospitals in Nairobi is more prominent than in Dar es Salaam or Brazzaville (0.9 and 0.8 beds per 1,000 people, respectively). However, the number of doctors in Nairobi is limited, just as in other capitals in the region (0.2 and 0.1 doctors per 1,000 population in Brazzaville and Dar es Salaam). The maternal mortality ratio remains high at 362 per 100,000 births, and the slow ambulance response time of 85 minutes highlights critical areas needing urgent improvement to enhance healthcare access and emergency services. These indicators underscore the need for strategic investment in Nairobi's healthcare infrastructure to support its growing population, especially during extreme events effectively.



Parameter of the urban cluster	Performance
Prevalence of undernourishment %	27.8
Disposable monthly income, USD PPP	105.33
Decile income coefficient	74.5
Working poverty rate (percentage of employed living below US\$1.90 PPP), 15+ age (%)	26
Population living in slums (% of urban population)	60

As a large urban centre of an emerging economy, Nairobi struggles with significant inequalities. In Nairobi, the wealthiest 10% of the population accrues almost half of the income. While inequality in the city has decreased faster than in other parts of Kenya over the last two decades, it remains extremely high. Income and wealth inequality lead to growing housing and infrastructure disparities, including educational and professional outcomes related to gender and ethnic background. Poverty is also at high levels, leading to, for example, extreme levels of the population living in slums (60%). A crucial problem is that a vast share of the employed population in Nairobi is still below the poverty line due to meager wages compared to the higher cost of living in the capital. This means that economic development does not necessarily convert into higher salaries.

26% of employed live in extreme poverty

Although some individuals can use social elevators (such as receiving higher education or getting into show business or sports) to reach a whole new income level, there is no considerable shift in inequality on a city-wide scale. The imperfections of a market economy, specific aspects of a society's social structure, inefficient education, and labour markets entrench inequality and poverty within a city to a large extent.



Nairobi faces a significant public health challenge as less than a third of its population has access to proper sanitary facilities. This limited access to essential infrastructure is mainly due to the extensive slums and pervasive poverty that affect substantial portions of the city. While electricity access is impressively high at 97.5%, water and sanitation services availability is markedly lower. The dense, informal settlements that characterize much of Nairobi's urban landscape often lack the basic plumbing and sewage systems found in more developed areas, exacerbating the disparities in sanitation access.

The rise in per capita electricity consumption suggests improvements in living standards and may indicate heightened industrial activity. However, this increase also strains existing infrastructure and challenges ecological resilience, necessitating careful management and strategic infrastructure investment.

A significant portion of internet access is achieved through mobile phones, with an exceptionally high mobile internet penetration rate (90%). As of recent reports, the adoption of smartphones has driven Kenya's internet penetration ahead of many other African nations⁵.

In Nairobi, the contrast between high primary school enrollment rates and the markedly lower uptake of post-secondary education can be attributed to several socio-economic and systemic factors. Primary education in Nairobi benefits from solid governmental support and international NGOs, including compulsory education policies and public awareness campaigns that emphasize the importance of basic education, leading to a high enrollment rate of 97.5%. However, the transition to post-secondary education is hindered by barriers such as limited access to higher education institutions, high costs of further education, and a lack of financial aid, collectively deterring many students. Additionally, the economic necessity for young adults to enter the workforce early to support their families further reduces enrollment in higher education. This discrepancy points to a critical need for targeted interventions, including expanding scholarship programs, enhancing vocational training for skill development, and increasing the number of higher education institutions to accommodate and encourage more students to pursue advanced studies.

Despite facing a challenging socio-economic environment, Nairobi has made commendable progress in adopting modern management practices that enhance accountability. The city's authorities have successfully met most accountability standards, an achievement reflected in several key areas of governance. For instance, the transparency of financial operations is upheld through the regular publication of budgets and accounts of public sector-related companies. The reasons behind such effective accountability in Nairobi can be attributed to the knowledge spillover from international organizations enhancing existing leadership in the region and rapidly incorporating technology and community involvement in governance.

⁵ GSMA 2017 // URL : <https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2017/11/1-Day-1-Socio-Economic-Impact-of-Mobile-Broadband-in-Kenya-Shola-Sanni.pdf>

DETAILED ASSESSMENT OF INDICATORS

Indicator	Value	Comment	Source
ENVIRONMENTAL			
Air pollution			
CO ₂ emissions	23.8 kt	The city is not heavily industrialized, so this high level of carbon emissions primarily stems from the rapidly increasing motorisation rate and urban sprawl.	Emission Database for Global Atmospheric Research, 2016 ⁶
CO ₂ emissions	3.6%	Carbon emissions are growing, as are motorization rates, due to cheaper secondhand diesel-powered vehicles. Also, many drivers mix fuel with cheaper kerosene. Urban sprawl, in turn, is almost entirely slum housing growth compounded by roadside rubbish fires and indoor cooking stoves in such neighbourhoods.	Emission Database for Global Atmospheric Research, 2016 ⁷
CO ₂ concentration	422.5 ppm	Fossil fuel combustion (e.g., by car engines, power plants, industrial processes) and reduction of carbon dioxide uptake by plants and soil. Situation within the boundaries of the norm.	GHSL, OSM, CAMS, ESA World Cover, 2023
CO ₂ concentration (change in last 3 years)	0.7%	However, Nairobi's concentration of carbon dioxide is steadily growing, which can threaten public health.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual average of SO ₂ concentration in ambient air	4 µg/m ³	Combustion of coal, oil and other fuels with high sulphur content and industry (non-ferrous metallurgy and petrochemicals). Due to the absence of heavy industry, the situation in Nairobi is stable within the WHO norm.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of SO ₂ Concentration in Ambient Air (change in last 3 years)	-2.1%	In recent years, the concentration of sulfur dioxide has even decreased.	GHSL, OSM, CAMS, ESA World Cover, 2023

⁶ <https://www.worldometers.info/co2-emissions/kenya-co2-emissions/>

⁷ <https://www.worldometers.info/co2-emissions/kenya-co2-emissions/>

Indicator	Value	Comment	Source
Annual Average of NO ₂ Concentration in Ambient Air	10.2 µg/m ³	Nitrogen oxide concentration is an indicator of the impact of road transport on the atmosphere. So far, the situation in Nairobi is within WHO standards.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of NO ₂ Concentration in Ambient Air (change in last 3 years)	4.2%	However, the rapid motorization leads to a fast increase in NO ₂ .	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of O ₃ Concentration in Ambient Air	45.6 µg/m ³	Ozone concentration is an indicator of road transport's impact on the atmosphere. So far, Nairobi's situation is within WHO standards but close to the threshold.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of O ₃ Concentration in Ambient Air (change in last 3 years)	2.9%	However, the rapid motorization leads to a fast increase in O ₃	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of CO Concentration in Ambient Air	0.53 µg/m ³	Carbon monoxide concentrations in Nairobi are higher than normal due to residents' active fuel burning during cooking and increasing motorisation.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of CO Concentration in Ambient Air (change in last 3 years)	-4.3%	The trend positively impacts the air quality due to the ongoing measures for increasing access to electricity.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of Particulate Matter (PM10) Concentration in Ambient Air	65.8 µg/m ³	Fuel combustion and dust from soil degradation outside the city limits lead to increased concentrations of dust particles.	GHSL, OSM, CAMS, ESA World Cover, 2023
Annual Average of Particulate Matter (PM10) Concentration in Ambient Air (change in last 3 years)	-4.4%	The trend is also positive for the overall air quality as the concentration of particulate matter decreases.	GHSL, OSM, CAMS, ESA World Cover, 2023
Volatile organic compounds/reactive organic gases emissions	0.462 µg/m ³	Volatile organic compounds have varying sources, such as traffic, industrial activities, and natural emissions. This level does not exceed the acceptable threshold for VOC concentration of 0.5 µg/m ³ . Still, VOCs may lead to degradation and potential health impacts, and their value can be quite volatile	Cordell R. L. et al., 2021 ⁸

⁸ <https://www.mdpi.com/2073-4433/12/10/1329>

Indicator	Value	Comment	Source
		due to varying sources like traffic, industrial activities, and natural emissions.	
Paris Agreement (international agreement on climate change mitigation)	Yes	Kenya and its major city, Nairobi, have made significant strides in aligning with the Paris Agreement by surpassing its unconditional emissions reduction target through existing policies. Also, legislative changes proposed in 2021 threaten to increase deforestation, potentially undermining the substantial emissions reductions expected from the land use and forestry sector.	UNFCCC, 2016 ⁹
Water pollution			
Annual average of dissolved oxygen (DO) concentration in water	16.2 mg/L	The annual average of dissolved oxygen in Nairobi's water, 16.2 mg/L, indicates a relatively high oxygen level. However, such high levels can also create environments conducive to bacteria and infections if not properly managed.	Mbui D. et al., 2016 ¹⁰
Annual average of pH concentration in water	7.3 pH	Nairobi's water has an annual average pH of 7.3, suggesting it is slightly alkaline and requires additional treatment.	Mbui D. et al., 2016
Annual average dissolved solids in drinking water	307 ppm	The concentration of dissolved solids in Nairobi's drinking water is higher than it should be in the natural environment. This indicates the presence of minerals and salts, which might not be typical in most drinking water sources. Monitoring is required to avoid exceeding healthy or aesthetic thresholds.	Mbui D. et al., 2016
Water management strategy in a city	Yes	The projects, including the Ndakaini-Kigoro water pipeline and the Northern collector tunnel, the	Nairobi City Water and Sewerage Ltd., 2023 ¹¹

⁹ <https://unfccc.int/sites/default/files/resource/Kenya%20Submission-%20The%20New%20Collective%20Goal%20on%20Climate%20Finance.pdf>

¹⁰

https://www.researchgate.net/publication/314235027_The_State_of_Water_Quality_in_Nairobi_River_Kenya/link/58bc29ae46fdcc2d14e58dba/download?tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uliwicGFnZSI6InB1YmxpY2F0aW9uIn19

¹¹ <https://www.nairobiwater.co.ke/wp-content/uploads/2023/04/Strategic-Plan.pdf>

Indicator	Value	Comment	Source
		expansion of the Dandora Estate Sewage Treatment Plant, and several sewerage improvement projects across Nairobi, are major initiatives aimed at enhancing water supply and sanitation infrastructure to support over 1.2 million people and bolster healthcare and housing.	
Land use and waste			
Share of devastated and degraded land area requiring reclamation	1.02%	While this percentage is low, it underscores the importance of implementing restoration projects to prevent further environmental degradation and enhance urban sustainability. Such initiatives could include reforestation, pollution clean-up, and the development of green spaces.	GHSL, OSM, CAMS, ESA World Cover, 2023
Waste deposits, % of total area	0.02%	In Nairobi, waste deposits cover a relatively small fraction of the total area. Despite this, significant garbage is dispersed in slum areas and along city streets, underscoring the urgent need for more robust waste management.	Catapult, 2021 ¹²
Collected and managed in dumps wastes (hazardous and non-hazardous) (change in last 3 years)	6.5%	Effective waste management at designated dumpsites, including Nairobi's main landfill, Dandora, centralizes waste processing, allowing for better control of environmental contaminants and reducing the spread of waste across urban areas, which can significantly mitigate health and ecological risks.	Catapult, 2021
Total recycled construction waste	0.001 tonnes per capita	The extremely low rate of recycled construction waste in Nairobi is concerning because it indicates that almost all construction debris is likely ending up in	WorldBank, 2021 ¹³

¹² <https://cp.catapult.org.uk/wp-content/uploads/2021/02/Nairobi-ULA-Market-Intelligence.pdf>

¹³ <https://www.worldbank.org/en/news/feature/2021/03/11/battling-kenya-plastic-waste-young-kenyan-woman-transforming-waste-into-sustainable-and-affordable-building-materials>

Indicator	Value	Comment	Source
		landfills like Dandora, contributing to environmental pollution and reducing the lifespan of these waste facilities.	
Share of recycled construction and demolish waste in total generated construction and demolish waste	2%	Extensive housing construction in the rapidly urbanizing area and a low recycling rate lead to increased landfill use, putting pressure on already overburdened waste disposal systems and contributing to environmental degradation.	WorldBank, 2021
Total area of impervious surfaces and percentage to total city area	33.9%	Impervious surfaces, such as concrete and asphalt, prevent water from soaking into the ground, thereby increasing runoff and the risk of flooding, especially in Nairobi, which already struggles with inadequate drainage systems.	Ogega et al., 2019 ¹⁴
Waste management strategy	Yes	Nairobi's waste management strategy has focused on improving waste collection and disposal methods. The main challenge is illegal dumping, which exacerbates environmental pollution.	National Environment Management Authority, 2015 ¹⁵
Green spaces, % city area	45.6%	Nairobi's substantial proportion of city area dedicated to green spaces is commendable and enhances the city's livability. However, the population is unequally distributed, and there are significant inequalities in access to green spaces.	GHSL, OSM, CAMS, ESA World Cover, 2023
NDVI (Normalized Difference Vegetation Index)	0.45	An NDVI value indicates a low level of vegetation, suggesting that Nairobi's urban environment struggles to maintain a good balance of greenery, which can support biodiversity and ecological sustainability.	GHSL, OSM, CAMS, ESA World Cover, 2023

Natural disaster hazards

¹⁴ https://www.researchgate.net/figure/Annual-precipitation-cycles-for-Dagoretti-station-for-both-RCP-45-and-85-Source_fig5_330711551

¹⁵

<https://www.nema.go.ke/images/Docs/Media%20centre/Publication/National%20Solid%20Waste%20Management%20Strategy%20.pdf>

Indicator	Value	Comment	Source
Share of total area with altitude above sea level less than 0,5 meters	0%	Nairobi is located far from the ocean in a mountainous region near the Rift Valley. However, during the intensive precipitation, the city is prone to floods from rivers of the Athi basin.	GHSL, OSM, CAMS, ESA World Cover, 2023
The growth rate of freshwater mirror area	-0.12%	Nairobi's freshwater resources, like those in the Ndakaini Dam, are important to the city's water supply. The slightly negative trend demonstrates possible threats to these resources.	Canterbury University, 2017 ¹⁶
Number of registered heavy rain, flood and thunderbolt (change in last 3 years)	6.25%	Heavy rains in Nairobi often result in devastating floods. These floods disrupt the city's infrastructure, causing significant damage to transportation, utilities, and housing, which in turn prevents residents from accessing essential services like healthcare, clean water, and education	TuTiempo, 2020-2023 ¹⁷
Environmental/natural disasters' risk mitigation	Yes	Nairobi's strategy aligns with the national plan to adapt to the impacts of climate-related risks such as floods and droughts, ensuring better preparedness and infrastructure resilience in the city.	Republic of Kenya, 2017 ¹⁸
Strategy/policy/government officials' statement on environmental issues	Yes	Nairobi's officials frequently acknowledge the need for sustainable waste management and water conservation to tackle pollution and water scarcity. They also advocate for strengthened policies and community involvement to ensure a cleaner, more sustainable urban environment.	UNEP, 2009 ¹⁹
Total overall losses from natural disaster hazards	1,070 million US\$	Nairobi has recently suffered from several natural disasters, namely severe rainfall followed by floods.	KU Leuven database, 2021-2023 ²⁰

¹⁶ <https://ir.canterbury.ac.nz/server/api/core/bitstreams/6d7d47d7-11ec-4a1c-998e-60878b505bc3/content>

¹⁷ TuTiempo. Climate Nairobi City. (2023). <https://www.tutiempo.net/clima/ws-637420.html>

¹⁸

<https://repository.kiperra.or.ke/bitstream/handle/123456789/559/NATIONAL%20Disaster%20Risk%20Management%20POLICY%20APPROVED.pdf?sequence=1#:~:text=>

¹⁹ <https://www.unep.org/resources/report/city-nairobi-environment-outlook>

²⁰ <https://public.emdat.be/data>

Indicator	Value	Comment	Source
Number of days with average daily temperature above the threshold for 1990-2010	62	Heatwaves are not typical for subtropical mountainous climate areas. However, with climate change, such periods of extremely high temperatures have become more frequent, posing health threats in big cities with air pollution.	Simiyu A. H., 2018 ²¹
SOCIAL			
Water availability			
Water consumption per capita	0.00000004 mcm	Water consumption is limited due to insufficient infrastructure development and scarce water resources.	Water Sector Trust Fund, 2023 ²²
Water tariff to disposable income ratio	0.026	Water resources are relatively affordable, but many city dwellers do not have access to infrastructure.	Nairobi Water and Sewerage Company, 2024 ²³
Sanitary facilities tariff to disposable income ratio	0.024	Sanitation services in Nairobi are relatively inexpensive, yet many residents still lack access to essential sanitation infrastructure.	Nairobi Water and Sewerage Company, 2024
Water consumption per capita (change in last 3 years)	-0.083%	Due to the extensive population growth and lagging development of the infrastructure, the consumption per capita has even decreased.	Water Sector Trust Fund, 2023
Percentage of population with access to drinking water	59%	Only slightly more than half of Nairobi's population has access to drinking water, highlighting a significant challenge in ensuring water availability across the city.	UNICEF, 2022 ²⁴
Percentage of population with access to drinking water (change in last 3 years)	0.6%	The slight increase in access to drinking water over the last three years indicates a slow improvement related to the low base effect.	UNICEF, 2022
Percentage of population with access to sanitary facilities	29%	With less than a third of the population having access to sanitary facilities, Nairobi faces a substantial public health challenge and needs enhanced sanitation infrastructure.	UNICEF, 2022

²¹ <https://preparecenter.org/wp-content/uploads/2022/12/Kenya-Heat-Tresholds-Research-by-J.Kimutai-2022.pdf>

²² 22

<https://www.waterfund.go.ke/watersource/Downloads/004.%20Improving%20Urban%20Water%20Supply%20in%20Kenya.pdf>

²³ <https://www.nairobiwater.co.ke/water-tariffs/>

²⁴ <https://www.unicef.org/kenya/water-sanitation-and-hygiene>

Indicator	Value	Comment	Source
Percentage of population with access to sanitary facilities (change in last 3 years)	0.3%	Although rapid due to the low base effect, the increase in access to sanitary facilities over the past three years indicates an urgent need for more aggressive interventions to improve sanitation coverage.	UNICEF, 2022
Food availability			
Cereal import dependency ratio (5-years average)	44.8%	Kenya plays a dual role in global agriculture. It exports key commodities like tea, coffee, and horticultural products and imports staple foods such as maize and wheat to meet its domestic needs.	FAO Stat, 2019 ²⁵
Cereal import dependency ratio (change in last 3 years)	-3.8%	The level of cereal import dependency is decreasing due to the spread of intensive agriculture techniques, which may help cope with vulnerabilities in local agricultural production and supply chain resilience.	FAO Stat, 2019
Prevalence of undernourishment	27.8%	The high prevalence of undernourishment in Nairobi results from pronounced poverty and inequality levels. It underscores ongoing challenges in food accessibility and nutritional quality for the general population.	FAO, 2020-2022 ²⁶
Prevalence of undernourishment (change in last 3 years)	7.6%	The increase in undernourishment rates over the past few years indicates worsening food security due to COVID-related economic constraints and agricultural disruptions.	FAO, 2020-2022 ²⁶
Prevalence of undernourishment children	26.2%	Children are the most vulnerable group when large inequalities are present. A significant portion of children suffering from undernourishment reflects critical gaps in child nutrition and health safeguarding.	FAO, 2020-2022 ²⁷
Prevalence of undernourishment children (change in last 3 years)	5.4%	The rising rates of undernourishment among children point to escalating public health concerns, given the fact that 40% of	FAO, 2020-2022 ²⁷

²⁵ <https://www.fao.org/faostat/en/#data/FS>

²⁶ FAO. Prevalence of undernourishment. (2020-2022). <https://www.fao.org/faostat/en/#data/FS>

²⁷ FAO. Percentage of children under 5 years of age who are stunted. (2016-2020). <https://www.fao.org/faostat/en/#data/FS>

Indicator	Value	Comment	Source
		Kenyans are under the age of 15.	
Prevalence of moderate or severe food insecurity in the population	72.3%	The high level of food insecurity among the population suggests systemic food affordability and availability issues, which impact a large segment of the residents of rapidly growing Nairobi's urban area.	FAO, 2018-2022 ²⁸
Share of imports in food resources	15.5%	The reliance on food imports to meet local demand indicates an over-dependence on external markets, which can pose risks during global supply disruptions. However, this share does not seem to threaten food security.	FAO, 2016-2020 ²⁹
Energy availability			
Percentage of urban population with access to electricity	97.5%	This high level of access to electricity indicates that Nairobi has successfully extended one of the essential services to most of its urban population. The factor for success was the combination of grid and off-grid solutions in energy access programmes.	World Bank, 2019-2021 ³⁰
Percentage of urban population with access to electricity (change in last 3 years)	2.4%	The increase in access to electricity over the past three years suggests ongoing improvements in infrastructure development. Reducing inequalities at least in one basic service provision contributes positively to Nairobi's urban resilience.	World Bank, 2019-2021 ³⁰
Consumption of electricity per capita	800 kWh per capita	The per capita electricity consumption reflects moderate energy usage, which suggests a balance between accessibility and efficiency in using energy.	BusinessDaily Africa, 2022 ³¹

²⁸ FAO. Prevalence of moderate or severe food insecurity in the population. (2016-2020).

<https://www.fao.org/faostat/en/#data/FS>

²⁹ FAO. Share of imports in food resources. (2016-2020). <https://www.fao.org/faostat/en/#data/FS>

³⁰ World Bank. Access to electricity, urban (% of urban population). (2022).

<https://data.worldbank.org/indicator/EG.ELC.ACCE.UR.ZS>

³¹ <https://www.businessdailyafrica.com/bd/markets/nairobi-consumes-half-of-kenya-power-s-energy-supply--2045066>

Indicator	Value	Comment	Source
Consumption of electricity per capita (change in last 3 years)	22.7%	A significant increase in per capita electricity consumption indicates rising living standards and potentially increased industrial activity while negatively impacting existing infrastructure and worsening ecological resilience.	BusinessDaily Africa, 2022
Electricity tariff to disposable income ratio	0.14	This ratio indicates that electricity costs are a manageable portion of the disposable income for the average urban resident of Nairobi. However, large inequalities observed may lead to a significant share of people struggling to pay for this basic utility.	Kenya Power, 2024 ³²
Share of renewable sources in electricity consumption	72.5%	Nairobi's high reliance on renewable energy sources in electricity consumption results from international programmes and the natural abundance of such resources in the region. This mitigates environmental impacts and enhances energy security, which is crucial for long-term urban resilience.	WorldBank, 2020 ³³
Health			
Child mortality rate (under 5 years-old)	4.1 per 1,000 live births	It indicates a still quite high level of under-five mortality for Nairobi, reflecting the need for more effective healthcare interventions targeting infants and young children.	Kenya National Bureau of Statistics, 2022 ³⁴
City ambulance	Yes	City ambulance services in Nairobi are a critical component of its emergency response infrastructure, which is crucial for timely medical interventions. However, the effectiveness and coverage of this service are mediocre.	Nairobi City County, 2024 ³⁵
Life expectancy at birth, years	63.9	Nairobi's life expectancy at birth is only slightly higher than the national average.	Kenya Statistics, 2019 ³⁶

³² <https://www.kplc.co.ke/content/item/691/electricity-tariffs>

³³ <https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS?locations=KE>

³⁴ <https://new.knbs.or.ke/reports/kdhs-2022/>

³⁵ <https://nairobi.go.ke/disaster-management-sector/#:~:text=Our%20Disaster%20Ambulance%20Services%20section,level%20of%20care%20during%20transport.>

³⁶ <https://www.knbs.or.ke/download/life-expectancy-at-birth-by-sex-and-county-2019/>

Indicator	Value	Comment	Source
		This means that chronic disease management and healthcare accessibility are needed to reach the city's specific life expectancy goals.	
Life expectancy at birth goals	3. There is a specific LeaB goal	The national plan includes Good Health SDGs adapted for East Africa claiming that life expectancy at birth needs to achieve 76.4 years by 2050.	Population Reference Bureau, 2014 ³⁷
Number of hospital beds per 1,000 population	1.04	This relatively high number of hospital beds per capita is explained by the presence of large international organizations such as WHO and the Red Cross. Still, during emergency situations, the need to expand healthcare infrastructure is evident.	WorldBank, 2010 ³⁸
Number of doctors per 1,000 population	0.2	The lack of sufficient capacity in medical training and the high cost of entry to the profession lead to such low figures. The scarcity of medical professionals indicates a critical gap in healthcare provision that could impact overall health outcomes and the effectiveness of medical response in emergencies.	WorldBank, 2021 ³⁹
Maternal mortality ratio	362 deaths per 100,000 live births	The maternal mortality ratio, even in the capital city, still remains high. This is a signal for an urgent need for improved maternal health services, access to quality prenatal and postnatal care, and education to address preventable causes of maternal deaths.	National Library of Medicine, 2023 ⁴⁰
Ambulance arrival speed	85 min	The average ambulance arrival time of 85 minutes is exacerbated by traffic, and the lack of available vehicles	Kenya Emergency Strategy, 2023 ⁴¹

³⁷ <https://www.prb.org/resources/new-kenyan-population-policy-a-model-for-other-countries/>

³⁸ <https://data.worldbank.org/indicator/SH.MED.BEDS.ZS?locations=KE>

³⁹ <https://data.worldbank.org/indicator/SH.MED.PHYS.ZS?locations=KE>

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[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10081669/#:~:text=The%20current%20Kenya's%20MMR%20is%20362%2F100%2C000%20live%20births.&text=The%20UNDP4%20note%20that,Sustainable%20Development%20Goals%20\(SDG\).](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10081669/#:~:text=The%20current%20Kenya's%20MMR%20is%20362%2F100%2C000%20live%20births.&text=The%20UNDP4%20note%20that,Sustainable%20Development%20Goals%20(SDG).)

⁴¹ https://www.emergencymedicinekenya.org/wp-content/uploads/2020/11/KENYA-EMERGENCY-MEDICAL-EMERGENCY-STRATEGY_2020-2025.pdf

Indicator	Value	Comment	Source
		is alarmingly high, potentially compromising emergency response and patient outcomes.	
Education			
Literacy rate among the population (15-24 Years)	89%	Nairobi boasts a relatively high literacy rate among its young population, reflecting successful primary and secondary educational policies and investments in educational infrastructure. This trend highlights the effectiveness of international programmes aimed at ensuring widespread access to basic education.	WorldBank, 2022 ⁴²
Literacy rate among population (15-24 Years) (change in last 3 years)	0.3%	The modest increase in the literacy rate over the past three years suggests a stabilization in educational achievements due to reaching near-maximal literacy coverage and encountering barriers to further demographic growth.	WorldBank, 2022
Primary education engagement	97.2%	The high engagement in primary education indicates strong community value placed on basic education and effective government policies ensuring compulsory education.	UNESCO, 2022 ⁴³
Pupils per teacher rate	36	The relatively high pupil-to-teacher ratio may indicate teacher recruitment and funding challenges, potentially impacting the quality of education and individual attention each student receives.	The Republic of Kenya. Ministry of Education, 2022 ⁴⁴
Proportion of population with post-secondary and higher education	3.5%	The low proportion of the population attaining post-secondary education in Nairobi reflects structural and economic barriers such as limited access to higher	Statista, 2019 ⁴⁵

⁴² <https://data.worldbank.org/indicator/SE.ADT.1524.LT.ZS?locations=KE>

⁴³

https://www.theglobaleconomy.com/Kenya/Primary_school_enrollment/#:~:text=Primary%20school%20enrollment%2C%20percent%20of%20all%20eligible%20children&text=For%20that%20indicator%2C%20we%20provide,from%202022%20is%2097.19%20percent.

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[https://www.education.go.ke/sites/default/files/Docs/The%20Basic%20Education%20Statistical%20Booklet%202020%20\(1\).pdf](https://www.education.go.ke/sites/default/files/Docs/The%20Basic%20Education%20Statistical%20Booklet%202020%20(1).pdf)

⁴⁵ <https://www.statista.com/statistics/1237796/distribution-of-population-in-kenya-by-highest-level-of-education-completed/#:~:text=According%20to%20the%20most%20recent,as%20the%20highest%20level%20completed.>

Indicator	Value	Comment	Source
		education institutions and financial constraints.	
Wealth			
Percentage of population with food expenditure is above 52% of total expenditure	86.5%	The dominant portion of Nairobi's population spending over half of their income on food reflects high living costs relative to low earnings, even in the capital region. This highlights the vulnerability of many households to economic shocks and the need for strategies to enhance food affordability.	WorldBank, 2021 ⁴⁶
Mean monthly salary	149 US\$	The modest average salary in Nairobi indicates that professional education is lagging behind. A predominantly low-qualified labour force is limited to low disposable income, which necessitates economic policies focused on wage growth and job creation in higher-paying sectors.	BusinessDaily Africa, 2022 ⁴⁷
Mean monthly salary (change in last 3 years)	11.6%	The recent increase in average salaries indicates some economic improvement from the very low starting point.	BusinessDaily Africa, 2022
Disposable monthly income	105 US\$	The relatively low disposable income among Nairobi's residents highlights the limited financial flexibility for non-essential expenditures, impacting overall economic activity and quality of life.	Africa Geoportal, 2023 ⁴⁸
Disposable monthly income (change in last 3 years)	5.7%	The modest increase in disposable income suggests some improvement in economic conditions, though the pace indicates that more robust economic policies are needed to boost residents' spending power significantly.	Africa Geoportal, 2023
Debt to salary ratio	5	A high debt-to-salary ratio indicates that many in Nairobi rely heavily on borrowing, which can lead to financial instability and underscores the need for financial literacy programs	Kenya Homes, 2023 ⁴⁹

⁴⁶ <https://ourworldindata.org/grapher/share-healthy-diet-unaffordable?tab=chart&time=earliest..latest&country=~KEN>

⁴⁷ <https://www.businessdailyafrica.com/bd/economy/kenyans-average-income-of-sh20-123-hits-six-year-high--4043204>

⁴⁸ <https://www.africageoportal.com/maps/esri::purchasing-power-per-capita-in-kenya/about>

⁴⁹ <https://kenyahomes.co.ke/blog/how-much-mortgage-can-you-afford/>

Indicator	Value	Comment	Source
		and accessible financial services.	
Number of mobile phones per 1,000 population	1,220 per 1,000	Although Nairobi's population struggles with low income; the communication industry has already become more affordable in emerging economies. The high mobile phone penetration signifies a well-connected population, potentially facilitating access to digital services and economic opportunities.	WorldBank, 2022 ⁵⁰
Decile income coefficient	74.5	The high-income inequality reflected by the decile income coefficient points to a significant disparity in wealth distribution, calling for targeted policies to increase income equality and promote inclusive growth. Nairobi, as a large city, only amplifies the inequalities of emerging economies.	Society for International Development, 2023 ⁵¹
Decile income coefficient (change in last 3 years)	-2.1	The slight reduction in income inequality is a positive sign, but a call to action is still needed.	Society for International Development, 2023
Poverty headcount ratio at national poverty lines	36.1	Over a third of Nairobi's population lives below the national poverty line.	WorldBank, 2021 ⁵²
Working poverty rate (percentage of employed living below US\$1.90 PPP), 15+ age (%)	26%	Nairobi's peculiarity is a very high rate of working poverty that reflects underemployment and low-wage issues. Policies that enhance job quality and provide a living wage are needed.	ILO, 2023 ⁵³
Poverty headcount ratio at \$2.15 PPP 2017 a day	13.3%	The presence of a notable percentage of the population living under this international poverty line only highlights the poverty problem in the capital city.	WorldBank Poverty Atlas, 2023 ⁵⁴

⁵⁰ <https://data.worldbank.org/indicator/IT.CEL.SETS.P2?locations=KE>

⁵¹ <https://inequalities.sidint.net/kenya/national/poverty/>

⁵² <https://data.worldbank.org/indicator/SI.POV.DDAY?locations=KE>

⁵³ https://rshiny.ilo.org/dataexplorer56/?lang=en&id=SDG_0111_SEX_AGE_RT_A

⁵⁴ <https://pipmaps.worldbank.org/en/data/datatopics/poverty-portal/poverty-interactivemap>

Indicator	Value	Comment	Source
Living spaces per capita, sq m (change in last 3 years)	0.0002%	Minimal changes in living space per capita point to stagnant conditions in housing development. The city grows mostly due to false urbanization, which is slum growth.	Housing Census, 2019 ⁵⁵
Population living in slums (% of urban population)	60%	More than half of Nairobi's population residing in slums signals severe housing crises and social inequality, demanding urgent action in housing policy and slum upgrading initiatives.	World Population Review, 2023 ⁵⁶
Availability of finance (consumer loans)	12%	The limited availability of consumer loans reflects constraints in financial access that can hinder personal and entrepreneurial endeavours in a city with many SMEs.	Statista, 2020 ⁵⁷
Safety			
Road fatalities rate per 100,000 population	85.5 per 100,000	The high road fatality rate in Nairobi means significant road safety issues, including inadequate traffic enforcement, poor road conditions, and a lack of effective road safety education.	NTSA, 2022 ⁵⁸
Road fatalities rate per 100,000 population (change in last 3 years)	0.27%	The slight increase in road fatalities over the past three years suggests that existing measures may not adequately address the underlying issues of population and motorization rate growth in Nairobi.	NTSA, 2022
Violent crime rate per 100,000 population	6.84 per 100,000	The relatively low violent crime rate indicates effective policing but also may indicate an underreporting problem.	National Police of Kenya, 2020 ⁵⁹
Violent crime rate per 100,000 population (change in last 3 years)	18.6%	The sharp increase in the violent crime rate over recent years could reflect emerging social tensions or economic hardships, underscoring the need for targeted crime prevention strategies and community	National Police of Kenya, 2020

⁵⁵ <https://housingfinanceafrica.org/app/uploads/VOLUME-III-KPHC-2019.pdf>

⁵⁶ <https://dergipark.org.tr/en/download/article-file/2591760#:~:text=Nairobi%20is%20also%20home%20to,World%20Population%20Review%2C%202022>.

⁵⁷ <https://www.statista.com/statistics/1219362/access-to-financial-services-and-products-in-kenya/>

⁵⁸ <https://www.the-star.co.ke/news/2022-12-06-nairobi-and-kiambu-lead-in-road-accidents-says-ntsa/>

⁵⁹ <https://www.nationalpolice.go.ke/crime-statistics.html>

Indicator	Value	Comment	Source
		engagement initiatives to curb this rise.	
Crime rate per 100,000 population	236 per 100,000	While moderate, the overall crime rate points to persistent challenges in public safety, requiring ongoing efforts in law enforcement, community policing, and crime prevention programmes related to low-income groups of residents.	National Police of Kenya, 2020
Crime rate per 100,000 population (change in last 3 years)	-4.7%	The decrease in the overall crime rate suggests some effectiveness of recent safety measures and improvements in policing. However, continued vigilance and strategy adaptation are essential to maintaining and furthering this positive trend.	National Police of Kenya, 2020
Police arrival speed	30 min	The average police response time of 30 minutes is relatively slow due to the heavy traffic situation, potentially impacting the effectiveness of law enforcement in emergency situations.	National Police of Kenya, 2020
Livability			
Number of LEED certified green buildings	0.013 certified m ² per capita	The very low per capita LEED certification in Nairobi points to an early stage in the adoption of international green building standards.	GBIG, 2024 ⁶⁰
Number of CEEQUAL certified projects	0 projects	The absence of CEEQUAL-certified projects indicates a gap in recognising or implementing sustainability standards in civil engineering works.	BREEAM Infrastructure, 2024 ⁶¹
Whether or not the city has ISO 37120 certification	No	Nairobi's lack of ISO 37120 certification, which sets standards for sustainable and resilient cities, suggests that city still has opportunities for adopting global best practices in city services and quality of life improvements.	World Council on City Data, 2024 ⁶²

⁶⁰ <https://www.gbig.org/places/29256>

⁶¹ https://breeam.com/breeam_search?q=kenya

⁶² <https://www.dataforcities.org/>

Indicator	Value	Comment	Source
Mobile connection coverage	90%	High mobile connection coverage in Nairobi demonstrates significant telecommunications infrastructure, facilitating connectivity and access to digital services for most of the city's residents.	GSMA, 2017 ⁶³
Internet coverage	32.7%	The limited internet coverage indicates a substantial digital divide, impacting access to educational and economic opportunities. The expansion of communication networks mainly happened due to the spread of smartphones.	Statista, 2019 ⁶⁴
Share of population in 1 km from parks	17.01%	Only a small proportion of the population lives within walking distance of parks, so there is a notable lack of accessible green spaces, especially for the residents of slum neighbourhoods.	GHSL, OSM, CAMS, ESA World Cover, 2023
Transport			
Time loss in traffic	17.54%	The significant percentage of time lost in traffic underscores Nairobi's challenges with traffic congestion, which reflect insufficient road capacity and inefficient traffic management.	Google Routes API, 2023
Share of the population in 1 km from public transport stop	47.8%	Less than half of Nairobi's population lives within one kilometre of a public transport stop, which indicates limited accessibility to public transportation. Expanding the reach of public transport stops can increase usage, reduce reliance on personal vehicles, and decrease traffic congestion. Accessibility is even more limited given that PT stops can be served with regular routes only rarely.	GHSL, OSM, CAMS, ESA World Cover, 2023
Ratio of the cost of monthly public transport usage (the cheapest option) to average	0.23	The cost of public transport, taking up a significant portion of the average	Expatistan,

⁶³ <https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2017/11/1-Day-1-Socio-Economic-Impact-of-Mobile-Broadband-in-Kenya-Shola-Sanni.pdf>

⁶⁴ <https://www.statista.com/topics/11395/internet-usage-in-kenya/>

Indicator	Value	Comment	Source
monthly income		monthly income, can be a barrier to its use, especially for lower-income residents. Making public transport more affordable could encourage higher ridership and ease traffic congestion.	2024 ⁶⁵
Ratio of the cost of a 1-kilometer taxi ride to average monthly income	0.03	While the relative affordability of taxi services compared to monthly income is notable, it also reflects the economic disparities within the city. Although taxis might be accessible for some, they are not a sustainable solution for daily commuting for the broader population.	Taxi Fare, 2024 ⁶⁶
Public transport (excluding subway) operates by schedule	Yes	Public transport operation according to a schedule is a positive aspect of Nairobi's transportation infrastructure. However, most commuting trips use matatus, informally shared taxi buses.	Kenya Bus Company, 2024 ⁶⁷
Inclusion			
Female-friendly city	1	Nairobi's low rating as a female-friendly city indicates significant challenges in safety, access to services, and opportunities for women.	Nomadlist, 2022-2024 ⁶⁸
Number of refugees per 1,000 population	13.1 per 1,000	Nairobi hosts more than 90,000 refugees, mostly from neighbouring unstable countries such as Somalia. This may pose social integration, resource allocation, and multicultural policy development challenges.	UNHCR, 2022 ⁶⁹
Homeless people per 1,000 population	5.8 per 1,000	The homelessness rate points to socioeconomic issues such as housing affordability, unemployment, and social services inadequacies.	The Standard, 2019 ⁷⁰

⁶⁵ <https://www.expatistan.com/price/public-transport/nairobi>

⁶⁶ <https://www.taxi-calculator.com/taxi-fare-nairobi/501>

⁶⁷ <https://www.kenyabus.net/passenger.html>

⁶⁸ Nairobi: scores. (2022-2024). Nomadlist. <https://nomadlist.com/nairobi>

⁶⁹ Annual Results Report, Kenya. (2022). UNHCR. <https://reporting.unhcr.org/sites/default/files/2023-06/Asia%20-%20Pakistan.pdf>

⁷⁰ <https://www.standardmedia.co.ke/business/article/2001361579/census-reveals-that-more-than-20-000-kenyans-live-on-the-streets>

Indicator	Value	Comment	Source
Difference in number of years of schooling between woman and man, woman to man ratio	0.85	This ratio indicates that women receive less education than men on average, reflecting still existing gender disparities in access to educational opportunities, resulting in different starting opportunities.	WorldBank, 2010 ⁷¹
Slavery index	66	A high slavery index score is alarming, revealing the presence of severe exploitation due to high debt rates among the working poor in Nairobi.	Walkfree, 2024 ⁷²
Percentage of women aged 25-34 years old that have successfully completed secondary education	35%	The low secondary education completion rate among young women highlights ongoing barriers to female education, including socio-economic factors and cultural norms.	Worldbank, 2018-2021 ⁷³
Regulations for building construction and equipment, public transport for people with disabilities	Yes	While national regulations exist, the effectiveness of these policies in making public spaces and transport systems accessible to people with disabilities must be continually assessed and improved.	National Construction Council, 2022 ⁷⁴

GOVERNMENTAL Accountability			
City budget execution publication	Yes	City authorities provide data on budget execution in the public domain.	The Kenya Institute for Public Policy Research, 2022 ⁷⁵
City budget publication	Yes	The city makes the budget publicly available.	The Kenya Institute for Public Policy Research, 2022
Financial transparency on city government companies	Yes	The city provides access to the financial statements of controlled companies.	Office of the Controller of the Budget, 2024 ⁷⁶
ISO certification	Yes	The city is certified according to ISO standards.	ISO Certification Kenya, 2024 ⁷⁷
City council checks and balances	Yes	Pre-approved budget information is provided.	Nairobi City County, 2024 ⁷⁸

⁷¹ [https://databank.worldbank.org/Average-years-of-schooling-of-adults-\(male-and-female\)/id/12d63977](https://databank.worldbank.org/Average-years-of-schooling-of-adults-(male-and-female)/id/12d63977)

⁷² Global slavery index. (2024). Walkfree. <https://www.walkfree.org/global-slavery-index/map/#mode=DATA:dimension=v:prevalence-unit=absolute:filter=all>

⁷³ Lower secondary completion rate, female (% of relevant age group). (2018-2021). Worldbank. <https://data.worldbank.org/indicator/SE.SEC.CMPT.LO.FE.ZS>

⁷⁴ <https://nca.go.ke:82/media/The-National-Building-Code-2022.pdf>

⁷⁵ <https://repository.kippr.a.or.ke/handle/123456789/4112>

⁷⁶ <https://cob.go.ke/reports/>

⁷⁷ <https://iso9001certificationkenya.co.ke/>

⁷⁸ <https://nairobi.go.ke/>

Indicator	Value	Comment	Source
Plans to obtain ISO certification	No	The city does not declare plans for ISO certification.	Nairobi City County, 2024
City budget			
Poor financial condition	Yes	The municipality does not maintain its solvency.	WorldBank, 2023 ⁷⁹
Long-term financial planning	Yes	City officials are engaged in long-term planning.	Office of the Auditor-General, 2023 ⁸⁰
Central/higher level government financial intervention is considered	Yes	The central government interfered in municipal politics.	Office of the Auditor-General, 2023
Central/higher level government financial intervention taking place	Yes	The city needed financial assistance from the state budget.	Office of the Auditor-General, 2023
Prudent fiscal policy requirements	Yes	The city is creating working groups of managers to ensure smooth financial transactions and financial accounting of economic entities.	Office of the Auditor-General, 2023
Medium-term planning	Yes	The city has an officially published medium-term development plan.	Office of the Auditor-General, 2023
SME			
Number of SMEs per 100,000 population	29,600 per 100,000	Nairobi's high density of SMEs reflects a vibrant entrepreneurial spirit and serves as the backbone of the local economy, providing numerous jobs and fostering economic diversity. However, the high number could indicate a saturated market in certain sectors, necessitating innovative approaches and support structures to sustain growth.	NTV Kenya, 2024 ⁸¹
Number of start-ups	339	The relatively modest number of startups suggests a growing but still emerging startup ecosystem in a primarily agricultural and service economy.	Startupblink, 2022-2024 ⁸²
Global Startup Ecosystem Index	5.185	Nairobi's position on the Global Startup Ecosystem Index indicates it is recognized in Africa, albeit with room for improvement compared to global leaders.	Startupblink, 2021-2024 ⁸³
Number of SMEs per	0.01%	The minimal increase in the	NTV Kenya, 2024

⁷⁹ <https://www.worldbank.org/en/news/press-release/2023/06/07/kenya-afe-economy-is-recovering-from-the-polycrisis-but-challenges-remain>

⁸⁰ <https://www.oagkenya.go.ke/2022-2023-county-government-audit-reports/>

⁸¹ <https://ntvkenya.co.ke/news/strengthening-kenyas-medium-small-enterprises-through-policy-and-innovation/#:~:text=According%20to%20the%20Kenya%20National,are%20essential%20to%20their%20success.>

⁸² Startups. (2022-2024). Startupblink. <https://www.startupblink.com/startups>

⁸³ The Startup Ecosystem of Nairobi. (2021-2024). Startupblink. <https://www.startupblink.com/startup-ecosystem/nairobi-ke>

Indicator	Value	Comment	Source
capita/100 000 population (change in last 3 years)		number of SMEs in Nairobi suggests a stable yet stagnant small business sector. This highlights the need for enhanced support, such as easier access to financing, mentoring programs, and deregulation, to stimulate growth and innovation.	
Number of start-ups (change in last 3 years)	4.3%	Although moderate, the growth in the number of startups is a positive indicator of Nairobi's evolving innovation landscape.	Startupblink, 2022-2024 ⁸²
Public services			
Free phone to call the police, ambulance, firefighters	Yes	The city council provides information on obtaining emergency assistance via a single number.	Nairobi City county, 2024 ⁸⁴
Services for working with citizens' appeals and complaint	Yes	A municipal website for citizens' complaints and appeals is available, creating a closer communication channel between citizens and the municipal government.	Nairobi City County, 2024 ⁸⁵
E-gov services	Yes	The city provides a web portal, NairobiPay, for government services online (property, health, parking).	Nairobi City County, 2024
ESG			
City ESG reporting	No	The city does not report on ESG metrics.	Nairobi Security Exchange, 2024 ⁸⁶
City ESG reporting verification	No	Due to the lack of sustainability reporting, the city does not receive additional external verification.	Nairobi Security Exchange, 2024
ESG planning	Yes	The city has guidelines for sustainable development planning.	ICLG, 2024 ⁸⁷
Plan with specific targets to develop and implement smart city principles	Yes	The city has plans to invest in development according to the principles of smart cities.	Outside Insight, 2023 ⁸⁸

⁸⁴ <https://nairobi.go.ke/emergency-services/>

⁸⁵ <https://nairobi.go.ke/>

⁸⁶ <https://www.nse.co.ke/wp-content/uploads/NSE-ESG-Disclosures-Guidance-Manual.pdf>

⁸⁷ <https://iclg.com/practice-areas/environmental-social-and-governance-law/kenya>

⁸⁸ <https://outsideinsight.com/insights/smart-cities-africa-cape-town-and-nairobi-take-the-lead/>

Indicator	Value	Comment	Source
Rollout and status of ESG / UN SDG training across the municipal/asset workforce	Yes	The city provides training and education on sustainable development goals, positively impacting the municipality's ESG policy.	UN, 2024 ⁸⁹
City municipality involved in network or partnership promoting sustainable development (for example, C40 Cities network)	Yes	Nairobi is a member of the Sustainable Cities Partnership network.	C40 CITIES, 2024 ⁹⁰

⁸⁹ <https://sdgs.un.org/partnerships/training-trainers-environment-and-governance>

⁹⁰ <https://www.c40.org/cities/nairobi/>