A SUSTAINABLE CITIES STRATEGY FOR GHANA



Greener, resilient, more inclusive, and prosperous urban growth

MINISTRY OF LOCAL GOVERNMENT, CHIEFTAINCY AND RELIGIOUS AFFAIRS
REPUBLIC OF GHANA

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Foreword

It is an exciting time for urbanists and managers of urban areas in Ghana. The revised National Urban Policy (NUP) and Implementation Plan – *Towards Inclusive, Resilient, Safe and Sustainable Urban Settlements* has been finalised. It is envisaged that when the NUP is approved and launched, it will guide the growth of Ghana's cities over the next decade. The content of the NUP reflects in-depth analysis and stakeholder consultations under the aegis of the Ministry of Local Government, Chieftaincy, and Religious Affairs, with technical backstopping from the World Bank and UN-Habitat to ensure the alignment of the Policy with global best practices.

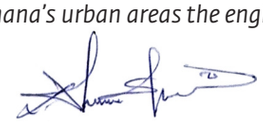
The revised NUP was formulated to serve as a blueprint to shape the development and management of urban areas into inclusive communities where people from all walks of life, regardless of income, job, ethnicity, age, gender, or educational background can find equal opportunities. It aims to ensure sustainable living standards, access to affordable housing, improved urban mobility and accessibility, climate resilience and public services, and deepen citizenry engagement in local governance. The success of the NUP hinges on strong partnerships and cooperation among different state and non-state actors, particularly the private sector, to turn these plans into impactful actions.

The Ghana Sustainable Cities Strategy, a collaboration between the Government of Ghana and the World Bank, complements the revised NUP, supporting the Policy's objectives and focusing attention on funding and capacity building to shift the trajectory of urban growth in Ghana. The Strategy is underpinned by analytics that draw from Ghanaian data sources, especially the 2021 Population and Housing Census, and a rich body of local research on urban issues. These diagnostic studies and their recommendations went through multiple consultations and technical reviews by Government Officials, technical specialists from the World Bank, academics and practitioners, especially leveraging on the expertise of the Technical Working Group on Urban and Development Partners (DPs).

The Strategy proposes an inter-jurisdictional approach towards urban development; investment in sectors with the greatest potential for sustainability; mobilising local and private capital for urban management and services; and providing incentives for collaboration and coordination at the local level and with DPs.

One of the key opportunities highlighted in the Strategy is to rally DPs around a unified sustainable cities agenda as a means of achieving greater impact within the urban space. While urban infrastructure investment needs in Ghana are high and growing, Official Development Assistance is declining. This puts a premium on the mobilisation of domestic revenues, including internally generated funds, and the use of innovative financing mechanisms to attract private capital, including through Public-Private Partnerships, for capital expenditure. It also reinforces the importance of prioritising investments through robust project appraisal and sound governance to ensure speedy implementation and financial management. The revised NUP, along with the Strategy, presents a unique opportunity for collaboration among public sector entities, private sector actors, and DPs to invest in Ghana's urban future and support a more effective and impactful use of limited financial resources.

It is often said that cities are the engines of economic growth. The Ghana Sustainable Cities Strategy aims to make Ghana's urban areas the engines of greener, resilient, more inclusive, and prosperous urban growth.



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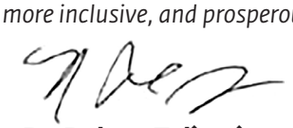

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Acronyms

AFD	Agence Française de Développement
CBD	Central Business District
CO_2	Carbon Dioxide
DPAT	District Performance Assessment Tool
EPA	Ghana Environmental Protection Agency
EU	European Union
GAMA	Greater Accra Metropolitan Area
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIP	Ghana Infrastructure Plan
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GLSS	Ghana Living Standards Survey
GMET	Ghana Meteorological Agency
GPSC	Global Platform for Sustainable Cities
GSS	Ghana Statistical Service
ICT	Information and Communication Technology
IGF	Internally Generated Funds
JICA	Japan International Cooperation Agency
KfW	German Development Bank
LCUC	Land-Cover and Land-Use Change
LED	Local Economic Development
LUSPA	Land Use and Spatial Planning Authority
MLGCRA	Ministry for Local Government, Chieftaincy, and Religious Affairs
MMDA	Metropolitan, Municipal, and District Assembly
MOF	Ministry of Finance
MOT	Ministry of Transport
MRH	Ministry of Roads and Highways

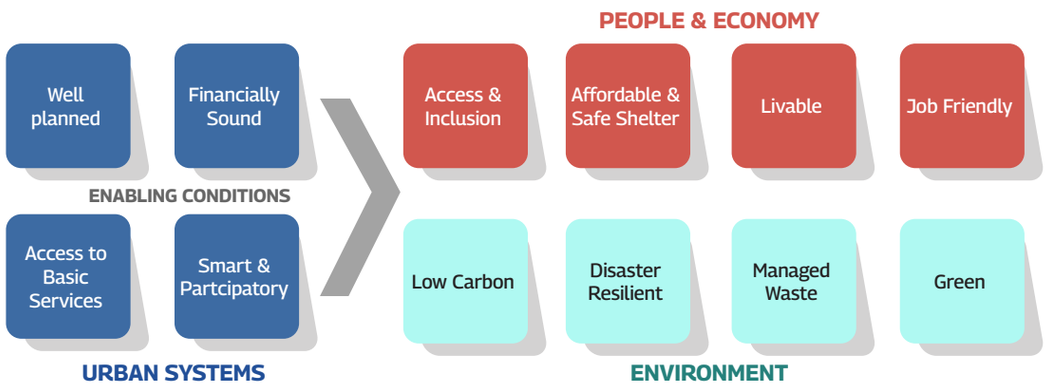
MSW	Municipal Solid Waste
MSWR	Ministry of Sanitation and Water Resources
MT	Million Metric Tonnes
MWHWR	Ministry of Works, Housing, and Water Resources
NADMO	Ghana National Disaster Management Organisation
NHIS	National Health Insurance Scheme
NSDF	National Spatial Development Framework
NUP	National Urban Policy
PHC	Population and Housing Census
PPP	Public Private Partnership
PWD	Persons with Disability
SDG	Sustainable Development Goals
SECO	Swiss Development Agency
SME	Small- and Medium-Sized Enterprises
UHI	Urban Heat Island
UK	United Kingdom
UN	United Nations
UNICEF	United Nations Children's Fund
USF	Urban Sustainability Framework



Executive Summary

Why does the sustainability of Ghana's cities matter? Ghana's rapid urbanization over the past three decades has coincided with rapid GDP growth that has helped to create jobs, increase human capital, decrease poverty, and improve living conditions. However, its cities are not equipped to service their growing populations, and unplanned urbanization and a lack of integrated spatial planning has reduced the efficiency of cities and resulted in a proliferation of informal settlements. As the concentration of people, assets, and infrastructure in cities increases, so does their exposure to climate risks. And despite Ghana's currently low levels of greenhouse gas emissions, its urban centers are trending towards high-emission growth models. If unaddressed, climate change has the potential to hamper the development gains that typically come with urbanization, such as innovation, productivity, better jobs, and enhanced well-being. In the context of rapid urbanization in Ghana, especially in lower capacity secondary cities, and the huge infrastructure investment needs, the government must act now to lay the foundation for greener, more inclusive, and sustainable cities before it is too late. A sustainable cities strategy is therefore imperative in providing directions on sector focus, investments, and capacity building to address the diverse urban sustainability challenges in Ghanaian cities.

How sustainable are Ghana's cities? This Strategy measures sustainability along three dimensions—the enabling Urban System, People & Economy, and Environment—each of which has four building blocks. This approach is premised on the idea that city systems (infrastructure, governance, institutions, etc.) must function well to deliver positive results for people, the economy, and the environment. Over the long term, these positive results should contribute towards more resilient, just, and competitive cities.



The Strategy is underpinned by analytics that draw from Ghanaian data sources, such as the 2021 Population and Housing Census (PHC), the Ghana Living Standards Survey (GLSS), the District Performance Assessment Tool (DPAT), and national accounts, as well as from a significant body of research on urban issues by local academics and practitioners. Global data and studies were used to fill in knowledge gaps not covered by local data and research. The following five key urbanization trends in Ghana were identified:

Trend 1: Ghana's urban population is growing, and its cities are sprawling.

Ghana's urban population has more than quadrupled since 1990, from under 4 million to 17.5 million in 2021 with a 57 percent urbanization rate. The built-up area is expanding by an average of 3.2 percent annually, with variations of 5 percent in 102 districts and over 10 percent in 13 districts. This rapid urbanization has led to the unplanned spatial expansion of cities, particularly in peri-urban areas. With an average urban density of 2,900 people per square kilometer (km2), accommodating the projected urban population growth until 2050 would require the construction of three new Greater Kumasi Metropolitan Areas in terms of built area. Additionally, the pressures of urbanization have resulted in the widespread formation of informal settlements, with the number of people living in slums increasing from 5.5 million in 2017 to 8.8 million in 2020.

Trend 2: Pollution and GHG emissions in Ghana's cities are on an upward trajectory driven by the transport and solid waste sectors.

Consistent with the rapid pace of urbanization, Ghanaian cities contribute to a growing proportion of national greenhouse gas (GHG) emissions (51 percent of carbon dioxide (CO_2); 66 percent of waste emissions) and the prevailing low-density urban form is locking in a high carbon growth model that could persist for centuries (World Bank 2022). Although Ghana's current emissions are low, without intervention, GHG emissions from urban areas are projected to nearly quadruple by 2050. The waste and transport sectors play a significant role in these emissions and will continue to do so. Current urbanization trends also present challenges in air quality management. Major Ghanaian cities experience air pollution primarily from the transport sector and unsustainable solid waste management practices, such as open burning by 23 percent of households in urban areas (GSS 2021a). The annual cost of air pollution was estimated to be equivalent to 4.2 percent of the 2017 GDP, approximately US$2.5 billion (World Bank 2020). Without delinking urbanization from motorization and improving waste management practices, the challenge is expected to be further exacerbated.

Trend 3: An increasing number of urban residents and assets are exposed to the impacts of natural disasters and climate change.

The impacts of climate change and natural disasters are already evident in Ghanaian cities and expected to grow. Flooding and the urban heat island effect pose the most pressing challenges in urban areas. Population growth and rapid urbanization correlate with the loss of vegetation, increased land degradation, the expansion of impervious surfaces, and the accumulation of unmanaged solid waste, all of which contribute to flooding and urban heat islands effect. Urban floods significantly impact both people and infrastructure. Vulnerability to flooding is particularly high for settlements located in environmentally fragile flood plains and hazard zones, especially for informal settlements where 90 percent of communities prone to flooding are located (Amoako 2020). In addition, the increase in surface temperatures and the loss of vegetation in urbanizing areas have led to the creation of urban heat islands. From 1991 to 2017, the built-up area of Greater Accra expanded by 18 percent, while the coverage of vegetation decreased by 35

percent. It was estimated that the urban heat island effect in Greater Accra reached 4.86 degrees Celsius (Wemegah et al. 2020).

Trend 4: Inclusion and livability in Ghana's cities are constrained by equitable access to basic services and affordable housing.

The quality of life in Ghana's cities has improved in correlation with greater access to basic services, infrastructure, and poverty reduction. However, the limited integration of the informal sector and gender-informed aspects into service delivery, along with challenges related to accessibility to land and housing, are exacerbating economic and social inequalities within cities. The urban poor and informal workers often have limited influence on urban governance, jeopardizing their "right to the city" (Ballard 2015; Brown et al. 2010). They also face difficulties in accessing basic services, infrastructure, and finding suitable spaces for economic activities, leading some to resort to street hawking or using illegally sited kiosks. At the city level, there exist stark disparities between pockets of wealth and poverty. The wider response to the housing shortage in Ghanaian cities has fueled the marketization of housing delivery and the proliferation of Western-style gated communities aimed at wealthy urban residents (Gillespie 2017; Obeng-Odoom 2013). Numerous unoccupied luxury housing properties have been reported in places like Accra, while approximately 60 percent of the city's residents live in informally constructed houses (Gillespie 2021; Grant 2009). Furthermore, there are significant gender disparities in home and land ownership. Only 12 percent of women own land, whereas 36 percent of men do. When it comes to home ownership, a mere 4 percent of women own their home, while 11 percent own jointly, and 21 percent of men own their home. These figures reflect cultural norms and the economic exclusions faced by women in urban areas.

Trend 5: Public investment in urban infrastructure and services is insufficient to meet the growing demands of Ghana's population.

There is a huge infrastructure gap in Ghana, and extremely limited financial resources available to fill it. The Ghana Infrastructure Plan (GIP) puts forward a strategy to build the infrastructure needed to support Ghana's continued economic growth and to improve the quality of life of all Ghanaians by 2047 (GIP 2019). An estimated USD37.2 billion is required annually to fund Ghana's infrastructure needs, including investments in energy, telecommunications, transport, solid waste management, and water. This exceeds the government's current capital expenditure by a scale of almost 40:1.[1] In fact, over the 10-year period 2010-2020, capital expenditure in Ghana averaged just 6.8 percent of total expenditures (or 1.24 percent of GDP). In 2019, infrastructure investment through public and private channels was estimated as 5 percent of GDP, below the lower-middle-income countries average of 5.4 percent.[2] In the 2023 national budget, capital expenditures for infrastructure sectors[3] represented only 12 percent of planned capital expenditures, while capital expenditures in social sectors represent over 68 percent (MOF).

1 Based on published budget data for 2021, which stated capital expenses as 10.4 billion cedis.
2 Global Infrastructure Hub.
3 Budget allocations for MSWR, MWHWR, MRH, MOT.

The 2015 Urbanization Review: Rising Through Cities in Ghana (World Bank 2015b) and other studies prepared by local researchers and practitioners provide many recommendations on how Ghana can strengthen the role of cities as engines of economic growth and opportunity. However, in a context of extremely scarce resources, and with the goal of promoting more sustainable urbanization in Ghana, which cities and sectors should be prioritized? Where can the government act to substantially shift the trajectory of urban growth? Below lists four strategic actions to improve the sustainability of Ghana's cities:

Strategic Action 1: Focus on the fastest-growing metropolitan areas that show unsustainable growth trajectories: Bolgatanga, Denu, Ho, Sunyani, Tamale, Techiman, and Wa

These seven medium-sized cities are likely to become major urban centres over the next 10 to 20 years. There is a window of opportunity to influence their development patterns to avoid a high carbon lock-in, guide development to low-risk areas, enable high-quality urban mobility, and promote a high quality of life for residents. This is not to say that all other cities are unimportant or should cease to receive resources, but rather that these seven should benefit from a distinct and customized assistance, possibly supported in part by development partners. While investment in the metropolises of Accra and Kumasi is primarily focused on retrofitting infrastructure for sustainability, investments in these seven prioritized cities would focus on future growth and measures that would significantly alter their current growth dynamic.

Strategic Action 2: Focus resources on solid waste management, urban mobility, affordable housing, and land management, which are the sectors with the greatest potential to improve urban sustainability

Ghana's infrastructure deficit is far greater than resources available to fill it, and it is necessary to determine which sectors to prioritize to promote compact, low carbon, safe, and livable cities. Based on analyses of GHG emissions trends, climate change projections, historic natural disaster patterns, local and international research findings, and the collection of sustainable cities diagnostics presented here, the most impactful areas for investment in Ghana's cities are solid waste management, urban mobility, affordable housing, and land management.

Counteracting the trend of urban sprawl in Ghana, the promotion of compact, connected urban neighbourhoods will make cities more livable, economically efficient, and equitable**.** It will also help hold down urban GHG emissions, which made up half of Ghana's CO_2 emissions in 2015, up from 40 percent in 1990. Key strategies to tackle urban GHG emissions in Ghana include improved urban planning that favours compact and transit-oriented urban growth; investments in infrastructure for public transit, walking, and cycling; introduction of programs that promote the development of green affordable housing by the private sector; and improved solid waste management to reduce waste generation rates, eradication of open dumping and burning, and recovery of organics and plastics for composting and recycling. These strategies offer multiple socioeconomic and environmental benefits. For example, compact urban form reduces the cost of municipal infrastructure and service delivery and facilitates access to jobs, education, and other opportunities. It also reduces urban expansion, protecting natural ecosystems, biodiversity, and food security. Comprehensive solid waste management reduces air, water, and land pollution and GHG emissions, while also reducing flood risk and improving the quality of the urban environment.

Strategic Action 3: Support the mobilization of Internally Generate Funds (IGF) and private capital for the delivery of urban infrastructure and services

The bulk of capital expenditure for infrastructure comes from the national budget, with local government contributing a small fraction of funding. Moreover, analysis of expenditure data indicates that most Metropolitan, Municipal, and District Assemblies' (MMDAs) investment projects are relatively small and fragmented, and focused on social sectors with little investment in infrastructure such as roads and sanitation. To address the infrastructure gap and increase access to basic services in urban areas, Ghana must enable cities to significantly increase IGF and help crowd in private sector capital.

The two main channels through which Ghanaian cities can expand their own source revenues is through increased property taxation and land value capture from public assets and land**.** Improving municipal finances requires enhanced valuation and documentation of existing assets to generate new sources of local revenue. For example, property taxation can and should become an important source of revenue given the rapidly increasing land and property values in Ghana's cities. Several land value capture instruments are authorized for use in Ghana but have not had significant uptake by MMDAs. Developer obligations, such as development charges and building permit fees, are in frequent use, but strategic land management and infrastructure levies are only occasionally or rarely used to recover costs from the impact of developments on public infrastructure, to consolidate land, control urban growth, or facilitate spatial planning. The main obstacles that limit broader use of land value capture include lack of administrative capacity, lack of financing for the acquisition of land, resistance from landowners, and an inadequate land registry. The improvement of land management systems, as highlighted under Strategic Action 2, would help to facilitate this source of financing of urban services.

There is a need for mobilization of private investment in sustainable urban infrastructure and service delivery through PPPs, especially for urban transport and solid waste management. The Ministry of Finance, through the Ghana Infrastructure Investment Fund (GIIF), has advanced the regulatory framework to facilitate PPPs for urban infrastructure. However, the current pipeline is not maximizing possible private sector engagements to enhance the sustainability of Ghana's cities and close the infrastructure gap. While the pipeline of projects does include urban transport (Kumasi Light Rail Transit, Kumasi Bus Rapid Transit, Accra Cable Car, and Accra Light Rail Transit), it misses opportunities to leverage private capital to expand and strengthen the circular economy. Mobilization of private capital is constrained by lack of transparency in government expenditures and bidding processes, short-term contracts that do not maximize investments into capital expenditure, lack of security on payments and insufficient recourse mechanisms in advent of default, and improper allocation of risk between contractual parties.

Strategic Action 4: Facilitate and incentivize coordination among key local government actors and development partners to improve the impact of investment

Ghana's key urbanization challenges—climate change, urban sprawl, transport, solid waste management, and affordable housing—are best addressed at a metropolitan scale that transcends administrative boundaries. Yet, the existing administrative structures within the decentralization and metropolitan governance framework to manage such metropolitan issues are not adequately focused on investments in infrastructure and expansion of basic services. It is

therefore necessary to incentivize metropolitan-scale collaboration for improved urban service delivery solutions or make changes to the governance structure itself.

Capital expenditure in Ghana depends heavily on donor grants and financing. Although there are efforts to increase the investment in infrastructure from domestic funds, it is likely that development partners will continue to play an important role in the near term. In addition to the World Bank, multiple donors are actively supporting urban related studies and investment in Ghana (i.e., the European Union (EU), United Kingdom, UN-Habitat, Norway, French Development Agency (AFD), Hungary, Swiss Development Agency (SECO), United Nations Children's Fund (UNICEF), German Development Bank (KfW), German Development Agency (GIZ), Denmark, Japan International Cooperation Agency (JICA)). There is an opportunity to strategically rally development partners around a unified sustainable cities agenda. This could be anchored in the Ghana Sustainable Cities Strategy, the updated National Urban Policy, or another national planning instrument that would help focus donors on areas of government priority and reduce the overlap or redundancy in the use of scarce resources.



Photo: Accra, Ghana (Dominic Chavez/World Bank)

Box 1 Updating the National Urban Policy

TThe Ministry for Local Government, Chieftaincy, and Religious Affairs (MLGCRA) is leading the revision and update of the 2012 National Urban Policy (NUP).

Vision: Inclusive, Safe, Resilient and Sustainable Urban Settlements

The NUP envisages the emergence of inclusive urban spaces with equal opportunities to basic infrastructure and services to safeguard the future of all urban dwellers, with a greater focus on disadvantaged urban settlements.

Goal: Promote Ghanaian urban centres as habitats for a prosperous, healthy, safe population and globally competitive engines of sustainable development by 2035.

Objectives: To achieve the above goal, the NUP will pursue the following specific objectives to:

- Promote spatially balanced and sustainable growth of the urban population
- Ensure effective land use planning and management
- Promote climate change resilience and environmental quality of urban life
- Enhance urban economic development and city competitiveness
- Promote diversified finance of urban infrastructure and services
- Promote investment in affordable and social housing
- Promote urban safety and security
- Promote access to urban infrastructure and services

Guiding Principles: The formulation and implementation of the NUP is guided by the following values and principles:

- **Inclusivity:** All residents are guaranteed equal rights, opportunities, participation, and sustainable living conditions in Ghanaian urban centres. The policy caters for a broad range of actors, recognising their respective interests and capacities in implementation.
- **Sustainability:** The policy proposes interventions that meet the present's social, economic, environmental, financial, and spatial needs without compromising future generations' ability to meet them.
- **Good Governance:** Cities and towns are governed by democratic principles, constitutional rights to participate in the governance process are guaranteed and where transparency and accountability in the planning and management of urban development are promoted.
- **Climate Resilience:** Cities and towns' ability to absorb, recover and prepare for environmental and climate stresses and shocks.
- **Ownership:** The allocation of functions and responsibilities for implementing the policy and accompanying action plans is based on the principles of decentralisation and subsidiarity. Hence, expenditure and revenue assignments will be balanced to fund responsibilities.
- **Coordination, Collaboration and Coherence:** A central authority will coordinate multi-actors' interests to ensure policy coherence. The policy implementation will exploit the most advantageous organisational capacity to guarantee success.

Source: Draft National Urban Policy (2024)

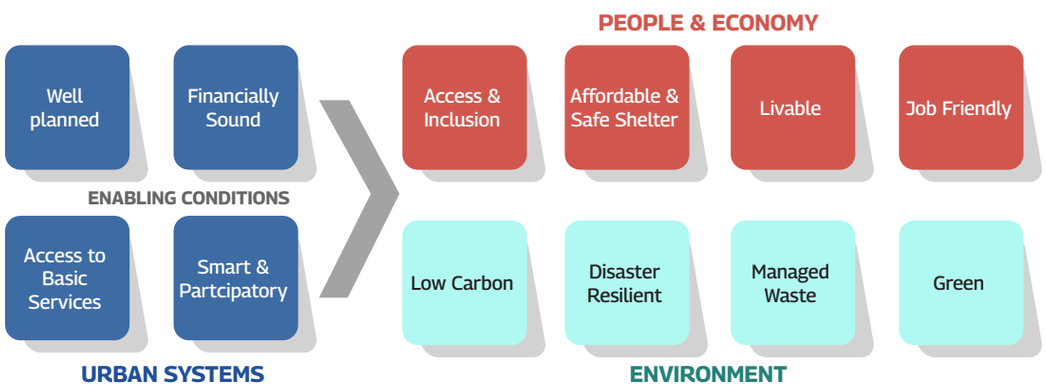


Why Sustainable Cities Matter in Ghana?

The urban challenges in Ghana are many and diverse. They include poor water and sanitation, biodiversity loss, flooding, insecurity of land tenure, poor housing, poor access to primary health care, food and energy insecurities, urban sprawl, aging infrastructure such as electricity transmission lines, limited urban sewage systems, inadequate solid waste management, poor spatial planning, low municipal revenue, weak enforcement of development controls, and others. These problems represent major urban sustainability challenges that impact technical, social, economic, environmental, cultural, and political processes and have ramifications on the attainment of United Nations' (UN) Sustainable Development Goal 11. The confluence of urban sustainability challenges in Ghana requires an overarching and holistic framework to comprehensively address the diverse problems. Sustainable cities as an approach, framework, or strategy provides a suitable lens for holistically addressing the diverse range of challenges.

The term 'sustainable city' is not standardized, but most definitions identify a range of economic, social, political, demographic, institutional, and cultural factors that contribute to it. A frequently cited World Bank definition characterizes sustainable cities as "*resilient cities* that *are able to adapt to, mitigate, and promote economic, social and environmental change*" (World Bank 2013). According to ICLEI Local Governments for Sustainability, "*sustainable cities work towards an environmentally, socially, and economically healthy and resilient habitat for existing populations, without compromising the ability of future generations to experience the same*" (ICLEI 2016). Due to the complexity of the concept, however, many research and development institutions offer a list of outcomes, characteristics, or dimensions of urban sustainability rather than a simplified definition per se (see box 2). The Sustainable Cities Strategy for Ghana proposes this type of approach—a multidimensional definition focused on the Urban System that provides enabling conditions for sustainable urban growth, People & Economy, and Environment.

Figure 1 Sustainable Cities Implementation Framework



Ghana's rapid urbanization over the past three decades has coincided with rapid GDP growth that has helped to create jobs, increase human capital, decrease poverty, and improve living conditions. Ghana has one of highest levels of urbanization in Sub-Saharan Africa (57 percent), but its cities are not equipped to service their growing populations. Unplanned urbanization and a lack of integrated spatial planning has reduced the efficiency of cities and resulted in a proliferation of informal settlements (40 percent). As the concentration of people, assets, and infrastructure in cities increases, so does their exposure to climate risks. If unaddressed, climate change has the potential to hamper the development gains that typically come with urbanization, such as innovation, productivity, better jobs, and enhanced wellbeing.

Like many Sub-Saharan countries, Ghana's contribution to GHG emissions is incommensurate with the climate impacts its people, economy, and environment will likely endure. Rising heat, increased prevalence of natural disasters, and changed weather patterns are anticipated to significantly impact the economy, potentially pushing over a million people into poverty. These impacts will be felt across the country and acutely in urban areas. Although Ghana's emissions are low, its cities are on a pathway towards locking in high-intensity emissions growth models. Given the significant costs imposed on individuals and businesses by climate change, as well as local emissions and pollution, there are significant benefits to be gained from climate adaptation and mitigation actions (World Bank 2022b). Globally, cities are key to unlocking a climate-smart future as they now account for more than 50 percent of the global population, about 70 percent of global energy-related CO_2 emissions, and 80 percent of global GDP.

Portions of the sustainable cities agenda have been integrated into national policy documents in Ghana, but implementation is nascent and heterogeneous at the local level. While Ghana's National Urban Policy and associated Action Plan (2013) aims "to promote a sustainable, spatially integrated and orderly development of urban settlements with adequate housing, infrastructure and services, efficient institutions, and a sound living and working environment for all people to support the rapid socio-economic development of Ghana," its implementation has been slow. Challenges related to institutional coordination, weak local government capacity, sway of market forces, and a lack of specific targets have been cited as obstacles to its successful implementation. Adoption and enforcement of land-use plans at the local level is not widespread, hindering urban growth management. And, as an indication of the weak traction of the sustainable cities' agenda at the local level, of the seven Ghanaian cities that are members of the Global Covenant of Mayors for Climate & Energy, only Accra has prepared a GHG emissions inventory and adaptation assessment. Furthermore, Accra is the first and only city in Ghana to publish a Climate Action Plan (2020) and Resilience Strategy (2019) with clear commitments and timelines.

As Ghana moves ahead on a greener and more resilient development path, measures to ensure equity and inclusion in the location and nature of investments are fundamental to achieving a just transition, one that does not leave vulnerable populations behind. In the context of rapid urbanization in Ghana, especially in lower capacity secondary cities, and the huge infrastructure investment needs, the government must act now to lay the foundation for greener, more inclusive, and sustainable cities before it is too late. A sustainable cities strategy is therefore imperative in providing directions on sector focus, investments, and capacity building in addressing the diverse urban sustainability challenges in Ghanaian cities.

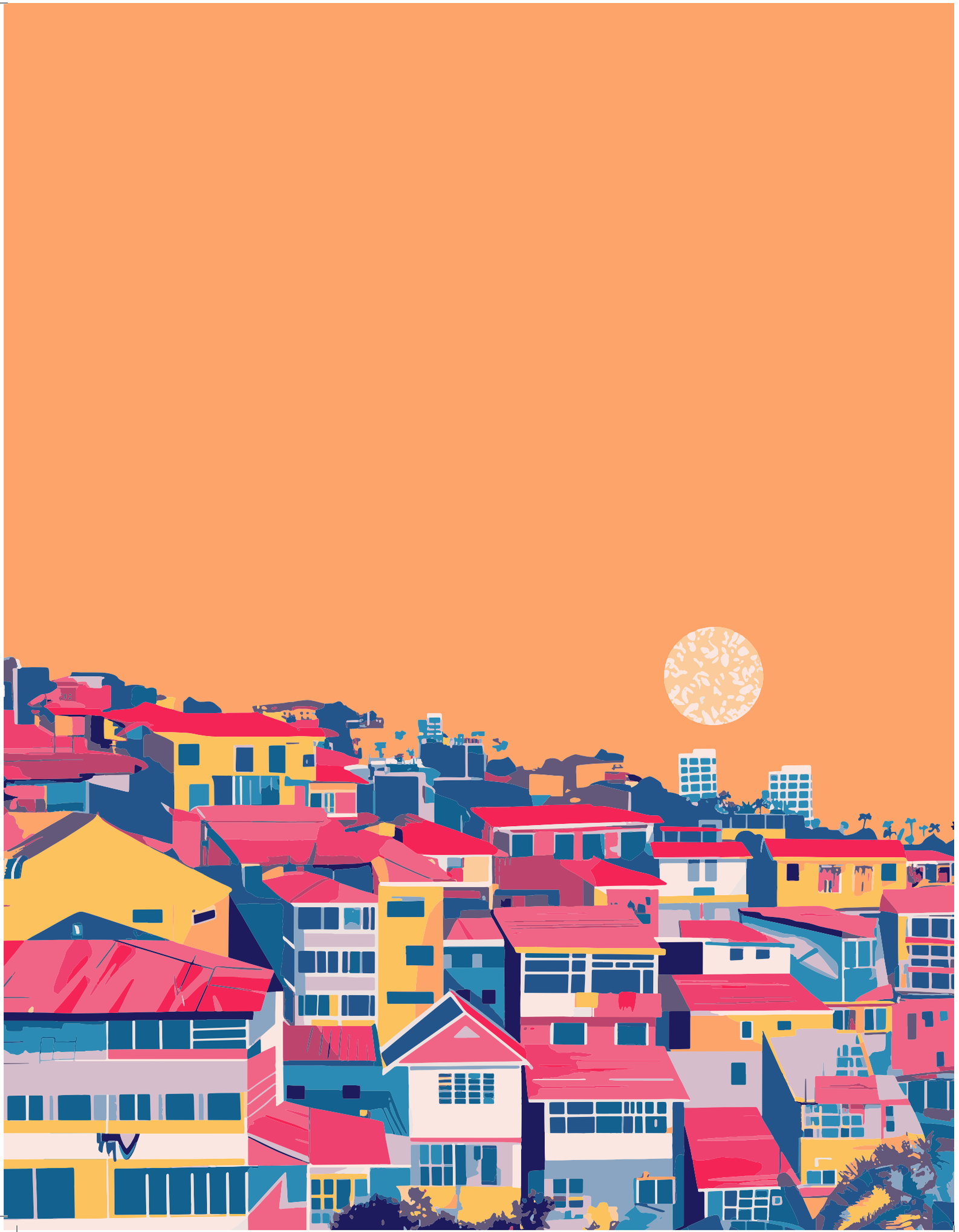
Box 2 Approaches to Defining and Measuring Sustainable Cities

Sustainable Development Goal (SDG) Goal 11, Sustainable Cities and Communities, identifies 10 key factors (targets) that must be addressed to make cities more sustainable, inclusive, resilient and safe. These include: (1) safe and affordable housing; (2) affordable and sustainable transport systems; (3) inclusive and sustainable urbanization; (4) protection of the world's cultural and natural heritage; (5) reduction of the adverse effects of natural disasters; (6) reduction of the environmental impacts of cities; (7) provision of access to safe and inclusive green and public spaces; (8) strong national and regional development planning; (9) implementation of policies for inclusion, resource efficiency and disaster risk reduction; and (10) support for sustainable and resilient buildings utilizing local materials. The targets are comprehensive and are being used by some cities globally as a framework to inform strategies, stakeholder engagement, budgetary planning, and infrastructure investments.[4] However, in many countries, especially those that are data-scarce, it has proven difficult to localize the targets to the municipal or regional level.

Developed by the Global Environment Facility Trust Fund (GEF)-funded Global Platform for Sustainable Cities (GPSC), the Urban Sustainability Framework (USF) argues that achieving sustainability requires the balanced accomplishment of four key outcomes, including: (1) robust economic growth, prosperity, and competitiveness across all parts of the city; (2) protection and conservation of ecosystems and natural resources into perpetuity; (3) mitigation of greenhouse gas emissions while fostering overall city resilience; and (4) inclusiveness and livability, mainly through the reduction of city poverty levels and inequality. The outcomes indicate what cities can achieve by addressing urban sustainability. To operationalize the USF, the GSPC has recently developed a benchmarking tool focused specifically on cities' efforts to develop and implement sustainable policy frameworks and integrated city plans.

Source: Global Platform for Sustainable Cities, World Bank 2018

4 OECD Programme on a Territorial Approach to the SDGs

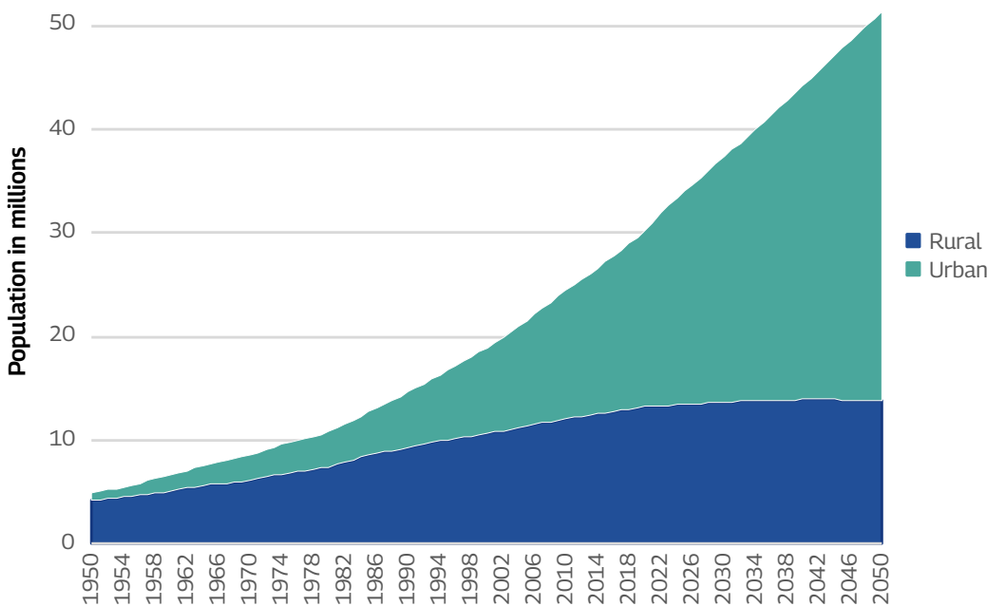


Evolution of Ghana's Cities

Urban Population Growth

Ghana's urbanization has outpaced the West African average and has been considerably faster than the global average since 1990. Over this period, Ghana's urban population more than quadrupled, rising from under 4 million to 17.5 million people (figure 2). All city types experienced an increase in population, but Ghana's smaller cities experienced faster urban population growth than its larger ones, and the current trend towards the rise of small- and middle-size towns is expected to continue (Fafchamps and Shilpi 2021). The urbanization rate is 57 percent and increasing across all regions, with the high growth in Northern (11.2 percent), Central (10.8 percent), Upper West (10.1 percent), former Brong-Ahafo[5] (9.8 percent), and Eastern (8.1 percent) regions between 2010 and 2021 (figure 3).

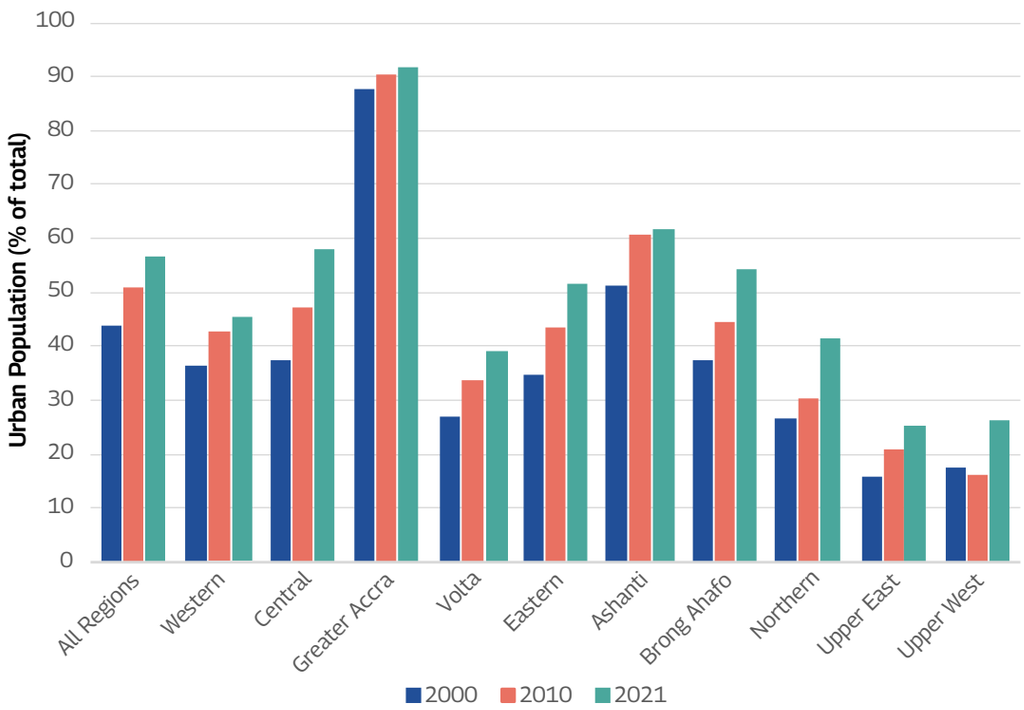
Figure 2 Rapid Urban Population Growth in Ghana



Source: UN DESA WUP, 2018. Authors' adjustments for 2021 Census actuals

5 Brong-Ahafo Region was divided into three new regions in 2019. As of the 2000 and 2010 censuses, it was Brong-Ahafo Region.

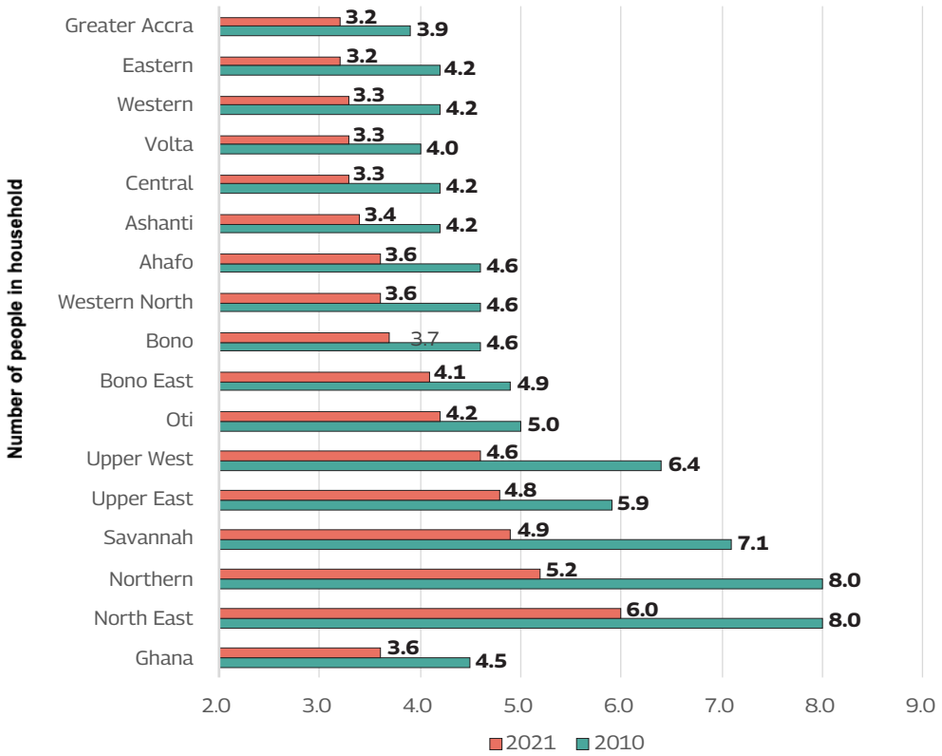
Figure 3 Urbanization Rate by Region



Source: GSS, 2010 and 2021 PHC

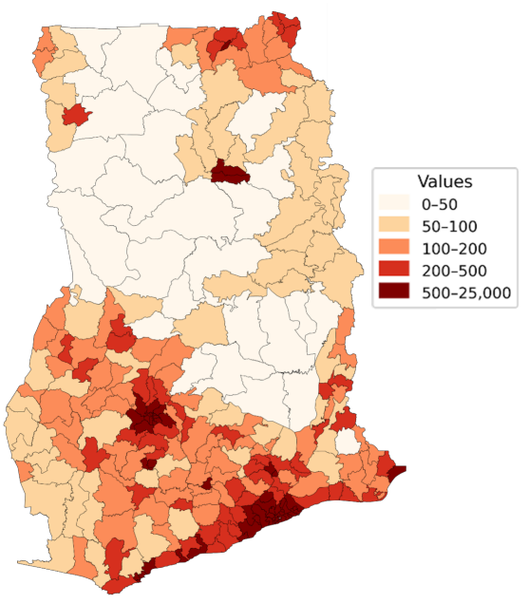
Households are becoming smaller with an average household size of 3.6 in 2021, the lowest recorded in the last six decades, driving up the built area per capita, demand for housing, and pressure on urban services. The average household size of Ghana reduced from 4.5 persons in 2010 to 3.6 persons in 2021 (GSS 2022). The average household size decreased in all the regions with four regions (Northern, Savannah, North East and Upper West) reducing by two or more persons since 2010 (GSS 2022) (figure 4). The smaller household size increases the floor area per capita and likely reduces the benefits of sharing urban services within households (household economies of scale) at the micro level, thereby increasing household sector demand at the macro level (Schröder et al. 2015) (figure 5). The reduced household economies of scale in sharing urban services increases the per capita demand for living space and energy in the cities.

Figure 4 Average Household Size by Region



Source: GSS, 2021 PHC

Figure 5 Population Density (Per Km²)



Source: GSS, 2021 PHC

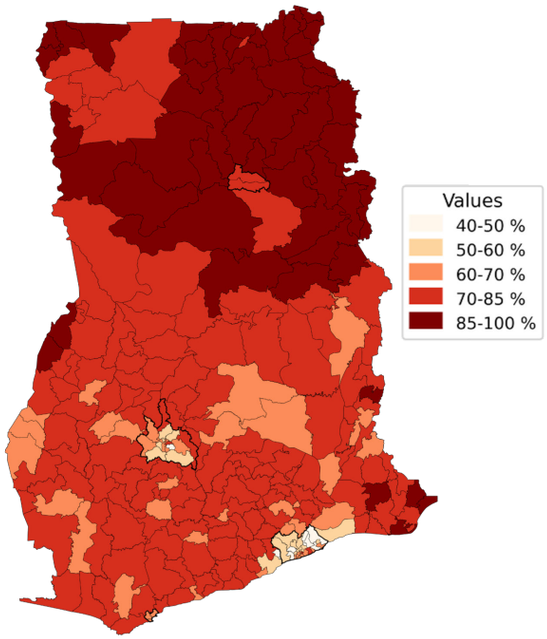
Accra and Kumasi continue to dominate the urban landscape, but to a lesser extent than in the past. In 2010 the metropolitan areas of Accra and Kumasi accounted for over 51 percent of the urban population; this figure fell to less than 46 percent by 2021. During the intercensal period, Accra's population grew by an average of 3.4 percent per year, while Kumasi's stagnated at less than 1 percent. Several secondary cities, however, experienced substantial population growth, including Tamale (5.6 percent), Tarkwa (5.5 percent), Techiman (4.8 percent), and Wa (4.6 percent). This is consistent with studies undertaken during the intercensal period which found that urban population growth has been faster in Ghana's small cities, as compared with large ones (Fafchamps and Shilpi 2021; World Bank 2015).

Multiple factors explain the growth of small- and medium-sized cities in Ghana. Historical and contemporary evidence point to how government policies have promoted or are expected to potentially stimulate the growth of small- and medium-sized cities. For example, although essentially implemented for economic reasons rather than as interventions for urban growth, the 'growth pole strategies' adopted in the 1970s led to the growth and transformation of relatively smaller urban areas such as Ho, Cape Coast, and Tamale because people moved from across the country to exploit the new economic ventures established (Yaro et al. 2011). Decades later, Ghana's 2013 National Urban Policy recommended the designation of relatively smaller urban areas as growth centres of economic activities and infrastructural development (Anarfi et al. 2020; MLGDRD 2013). The expected reinvigoration of urban areas via designation as growth centres would contribute to population growth of such areas. Research has also highlighted how proximity to or presence of certain types of infrastructure has underpinned growth in smaller urban areas. For example, a study that explored the evolution of built-up areas in Ghana showed that roads disproportionately attracted an increasing share of built-up land cover and, by extension, promoted population increase in smaller settlements (Fafchamps and Shilpi 2021).

Migration

Historically, urban growth in Ghana has been mainly attributed to a combination of natural population increase, migration, and the reclassification of previously smaller towns as urban when a threshold of 5,000 people is reached (GSS 2014). Data from the 2021 census indicates that migration has played a lesser role in urban growth over the last decade than in previous decades.

Figure 6 Share of District Population Born in the Same Locality



Source: GSS, 2021 PHC

The proportion of internal migrants declined from about 34 percent in 2010 to about 27 percent in 2021. Over the period, a greater proportion of people moved between regions (interregional movements) than within regions (intraregional movements). Indeed, more Ghanaians were internal migrants in 2000 (30.2 percent) and 2010 (34.7 percent) than in 2021 (27.0 percent). In all the three censuses, greater proportions of people moved between regions (63.8 percent, 56.6 percent, and 55.1 percent, respectively) than within regions (36.2 percent, 43.4 percent, and 44.9 percent, respectively). The steady increase in intraregional movements since 2000 may indicate a trend in which rural residents are migrating to the nearest city rather than to Accra and Kumasi, which had traditionally been the primary magnets for migration.

Compared to the 2010 census, migration patterns in Ghana are changing. Greater Accra is still the leading region attracting migrants, but its lead has been reduced from 40.7 percent in the 2010 census to the current figure of 35.1 percent (figure 6). It was followed by Ahafo (21.2 percent), Western North (19.0 percent), and Western (17.0 percent) regions. Notably, the Western Region, which was the second most important migrant destination region in Ghana in 2010, moved to fourth place. On the other hand, apart from the Volta Region which posted the highest out-migration rate (27.0 percent), Upper West and Upper East regions continue to present some of the highest out-migration rates in the country (21.0 percent and 20.4 percent, respectively). Table 1 shows the ratio of net migration (the difference between arrivals and departures in any area) to total or gross migration (the sum of arrivals and departures in any area), expressed as a percentage (the Migration Effectiveness Ration (MER)).

Table 1 In- and Out-Migration by Region, 2010–2021

Region	In-migration	Out-migration	Net-migration	Total Population	Net migration Rate (Per 1000)	Migration Effectiveness Ratio
Western	561,513	216,882	111,289	1,930,712	58	14
Central	437,518	495,404	(57,886)	2,887,942	(20)	(6)
Gt. Accra	1,492,378	386,377	1,106,001	4,255,507	260	59
Volta	120,595	555,484	(434,889)	2,058,801	(211)	(64)
Eastern	378,422	622,350	(243,928)	3,153,869	(77)	(24)
Ashanti	768,918	561,064	207,854	5,204,646	40	16
Western North	155,841	100,591	55,250	820,347	67	22
Ahafo	115,239	95,829	19,410	542,850	36	9
Bono	150,148	172,759	(22,611)	1,224,616	(19)	(7)
Bono East	189,427	120,839	68,588	1,128,294	61	22
Oti	76,049	110,969	(34,920)	772,279	(45)	(19)
Northern	91,134	269,712	(178,578)	2,475,846	(72)	(50)
Savannah	47,323	79,601	(32,278)	674,658	(48)	(25)
North East	15,294	96,819	(81,525)	736,372	(111)	(73)
Upper East	32,378	324,340	(291,962)	1,587,191	(184)	(82)
Upper West	36,411	226,226	(189,815)	1,078,999	(176)	(72)
Total	**4,668,588**	**4,435,246**	**233,342**			

Source: GSS 2023b

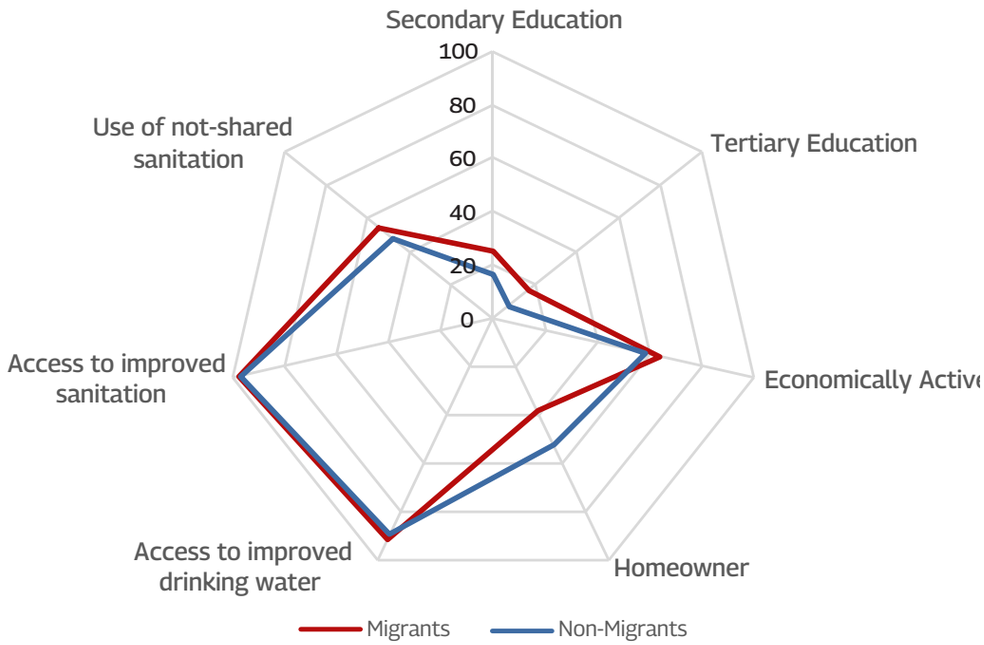
The ability of Greater Accra Region to attract people through migration is explained by the fact that it contains the nation's capital where all the ministries and major organizations, both governmental and nongovernmental, have their headquarters. In addition, Accra and its adjoining city, Tema, host most industries in Ghana and draw people from all over the country seeking jobs and other economic opportunities. The Western Region and its breakaway region Western North, together with Ashanti and Ahafo regions are all located in

the better developed and naturally well-endowed southern part of the country where industry, mining, and agriculture attract large numbers of people. The 10 remaining regions lost population through migration between 2010 and 2021 (GSS 2023b).

Reasons for migrating varied between intraregional and interregional migrants, with employment driving more interregional migration. Among the former, the most important reason for migrating was marriage/family reunification (41.0 percent). The next most important reason for migrating among the intraregional migrants is settlement (30.3 percent), which is closely related to marriage/family issues. Among the interregional migrants, on the other hand, almost equal importance was accorded to settlement (28.8 percent), marriage/family reunification (28.4 percent), and employment (27.8 percent) as reasons for migrating (GSS 2023b).

Migrants tend to be more educated and economically active. In terms of education, more than half (53.6 percent) of the migrants have attended school in the past compared with only 40 percent of the general population. Moreover, the proportions of migrants who have attained secondary (25.1 percent) and tertiary (16.2 percent) education are higher than those of non-migrants (17.2 and 7.4 percent respectively). Among migrants, the proportion of the economically active persons (63.6 percent) is higher than the general population (58.1 percent). Finally, migrants are largely self-employed, and agriculture features prominently in their occupational activities (GSS 2023b)

Figure 7 Quality of Life Indicators for Migrants vs. Non-migrants in Urban Areas (Percent)



Source: GSS, 2021 PHC

Overall, the living conditions of migrants is comparable to non-migrants (figure 7). Historically, in Ghana the locations where migrants live, and the conditions of their shelter, set them apart from their host communities. Evidence of this was the development of zongos[6] in some major towns in the country, a secluded place initially at the outskirts of the town with substandard structures that housed mainly migrants (GSS 2023b). However, the results from the 2021 Census indicate that the living conditions of migrants is similar, if not better, that non-migrants in the host community. The data show that there is virtually no difference between non-migrants and migrants in the type of dwelling units in which they live. However, greater proportions of migrants (albeit small) than non-migrants live in nonpermanent structures such as metal containers (0.2 percent of migrants), kiosks (1.1 percent of migrants), and wooden structures (2.2 percent of migrants). Regarding tenure, a higher proportion of non-migrants (52.3 percent) than their migrant counterparts (38.5 percent) are owner-occupiers in urban areas. There is very little variation in the general access to improved sources of drinking water between migrants (91.7 percent) and non-migrants (89.2 percent). However, the proportion of non-migrants (14.8 percent) who have access to public tap/standpipe is almost twice that of migrants (8.5 percent). Some 97.7 percent of all migrants use improved sanitation services, which is marginally higher than that of non-migrants (96.8 percent). The use of improved and not shared sanitation service among migrants in the urban areas is higher (54.6 percent) than among non-migrants (48 percent) (GSS 2023b).

Spatial Expansion

Urbanization and development are tightly linked, and the potential economic benefits of urbanization are manifold. The strong positive correlation between the rate of urbanization of a country and its per capita income is well-documented (Duranton 2014). By enabling agglomeration economies, cities can be instrumental in increasing productivity and spurring economic diversification and innovation. The underlying reason is density. The productivity advantage of greater density is likely even larger in developing countries (Byrne et al. 2016). Agglomeration facilitates the exchange of knowledge and ideas to spark innovation across sectors and ultimately increase productivity. In addition, cities offer a higher concentration of jobs that can better match workers' skills. Moreover, density can improve the efficiency of public service delivery, reducing the cost of water, sanitation, and road infrastructure, as well as making it easier to deploy efficient public transport networks (World Bank 2023).

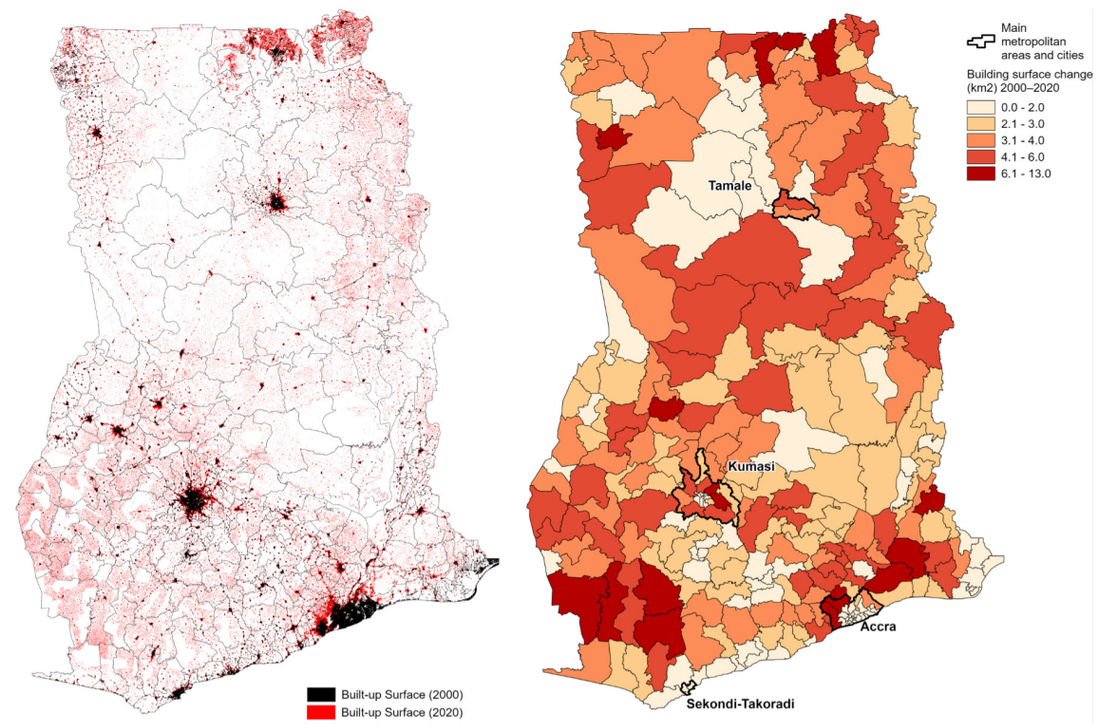
Ghana's rapid urbanization has been accompanied by unplanned spatial expansion of metropolitan areas, leading to heightened transportation costs, higher commuting times, and decreased agglomeration effects. A significant expansion and transformation of the wider urban landscape has characterized the surge in the Ghana's urban population. The urban expansion has proceeded mainly at the expense of natural vegetation cover (Addae and Oppelt 2019; Stow et al. 2016). The substantial urbanization process in Ghana has been shaped by the crowding out of hinterlands by towns and cities, rather than a disproportionate increase

6 According to Sulley (2010), the zongos during pre-independence time were the arriving points of most Hausa and Muslim traders from other West African Muslim countries. Today, they are multicultural communities where people from all walks of life reside.

in partially built-up areas. Also, the urban growth in Ghana has stoked and leapfrogged urban sprawl. For instance, the unabated sprawl of the Greater Accra Metropolitan Area (GAMA) fueled the expansion of the region's eastern and western sides (Addae and Oppelt 2019; Owusu 2013). The urban sprawl in Kumasi assumed diverse forms, including "nucleated or clustered, scattered or dispersed development, leapfrog development, and ribbon or mushroom development" (Cobbinah and Amoako 2012).

During the last decade, there was a rapid expansion of built-up area in some parts of Ghana, especially in peri-urban areas. The total area occupied by buildings grew on average by 3.2 percent annually between 2010 and 2020 across Ghana (figure 8). The National Spatial Development Framework (NSDF) also indicated an annual growth rate of built-up areas as 7.2 percent for 1990-2000 and 5.4 percent for 2000-2010. There are large spatial variations, with the total footprint of buildings growing annually by more than 5 percent in 102 districts and by more than 10 percent in 13 districts (out of 261). The built-up areas in small towns (districts) grew on average 5.5 percent per year, while medium-sized towns (municipal districts) grew on average 3.1 percent, and metropolitan districts grew only 0.5 percent on average per year (figure 9).[7] As a result, Ghana's current urban population density of approximately 2,900 people/km^2 is low compared to Lagos (6,900), Nairobi (6,300), and (Addis Ababa (5,100). It is estimated that accommodating the urban population growth in Ghana up to 2050 at current densities will involve the construction of the equivalent of three new Greater Kumasi Metropolitan Areas.

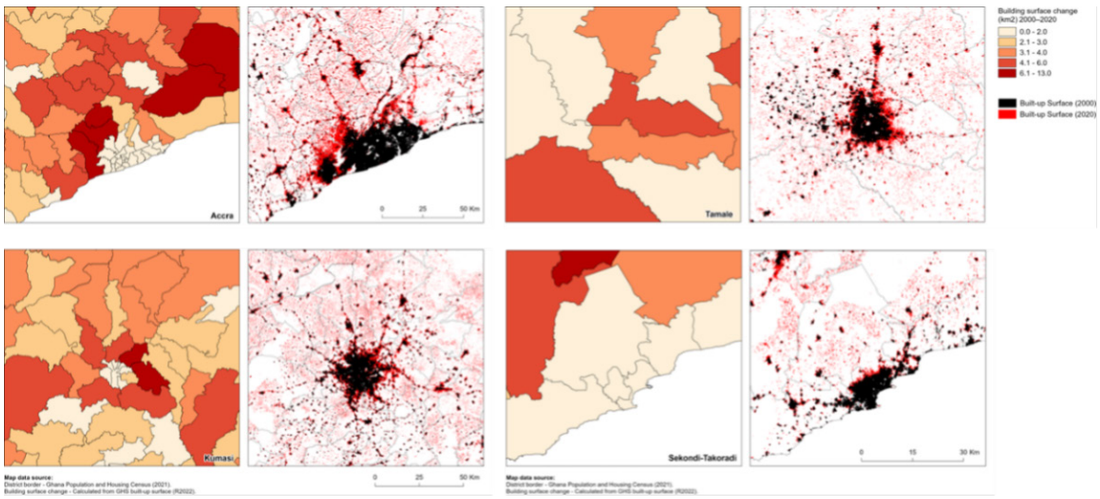
Figure 8 Change in Built-Up Surface (2000 vs 2020)



Source: GHSL Built-Up Surface (R2022)

7 Calculated using GHLS data.

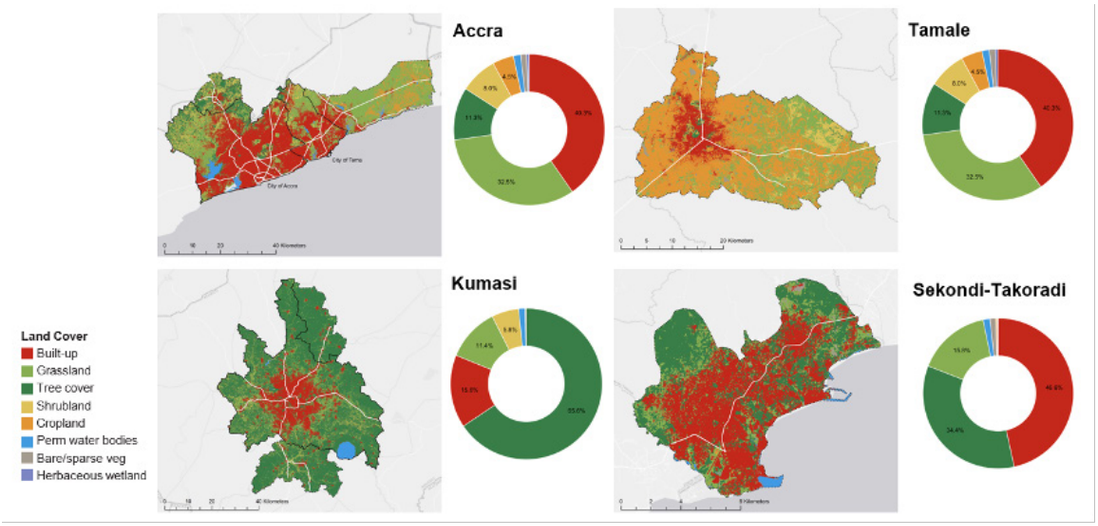
Figure 9 Rapid Expansion of Built-Up Area at the Periphery of Cities



Source: GHSL Built-Up Surface (R2022)

Cities are growing at the expense of their hinterland with a conversion of grassland, tree cover, and shrubland at the urban fringe. The National Spatial Development Framework (NSDF) indicated that between 1990 and 2010 the built-up area increased by 170 percent accompanied by a significant decrease in grassland (figure 10). Between 2000 and 2010, grassland cover reduced by 18 percent. The rate of land valorisation in peri-urban areas and the loss of agricultural lands to urban development, loss of ecologically sensitive areas, and the speculative reasoning underlying some of the large-scale land acquisitions contribute immensely to the urban sprawl observed in the peri-urban areas. Many rural dwellers and smallholder farmers have lost their lands and livelihoods without alternatives, and the resulting urban settlements have not been able to absorb and integrate them meaningfully (World Bank 2021).

Figure 10 Conversion of Grassland, Tree Cover, and Shrubland at the Urban Fringe



Source: ESA WorldCover Project 2020. Contains modified Copernicus Sentinel data (2020) processed by ESA WorldCover Consortium

Urbanization pressures have resulted in widespread informal settlement. Urban slums[8] are expanding in major cities and living conditions are deteriorating. The number of people living in slums in Ghana increased from 5.5 million in 2017 to 8.8 million in 2020. There are different types of slums in Ghana and the NSDF identified 95 slums in the country. These slums are predominantly found in areas such as Accra, Tema-Ashaiman, Kumasi, Tamale, and Takoradi, where a significant portion of the urban population lives in substandard housing conditions. Due to the shortage of urban housing, many households resort to using makeshift structures such as metal containers and kiosks as sleeping quarters, or even sleeping in the open air. Across the GAMA, slums are scattered in various locations, exhibiting heterogeneity in their housing and environmental conditions. However, they do share some common features, such as higher population density, lower elevation with more vegetation, and limited access to indoor piped water and sanitation facilities.

Investment in Urban Services

There is a huge infrastructure gap in Ghana, and extremely limited financial resources available to fill it with implications for the SDGs. The Ghana Infrastructure Plan (GIP) puts forward a plan to build the infrastructure needed to support Ghana's continued economic growth and to improve the quality of life of all Ghanaians by 2047 (2019). An estimated US$37.2 billion is required annually to fund Ghana's infrastructure needs, including investments in energy, telecommunications, transport, and water. This exceeds the government's current capital

8 Based on the UN five characteristics of slum dwellings: durable housing of a permanent nature, sufficient living space, easy access to safe water at a reasonable price, access to adequate sanitation, and security of tenure that prevents forced eviction.

expenditure by a scale of almost 40:1.[9] Over the ten-year period 2010-2020, capital expenditure in Ghana averaged just 6.8 percent of total expenditures (or 1.24 percent of GDP). In 2019, infrastructure investment through public and private channels was estimated at 5 percent of GDP, below the lower-middle-income countries average of 5.4 percent.[10] In the 2023 national budget, capital expenditures for infrastructure sectors[11] represented only 12 percent of planned capital expenditures, while capital expenditures in social sectors represented over 68 percent (Ministry of Finance). These trends have implications for the SDGs, especially those related to services such as education, health, security, and waste management.

The bulk of capital expenditure for infrastructure comes from the national budget, with local government contributing only a minimal fraction of funding. Moreover, analysis of expenditure data indicates that most MMDA investment projects are relatively small and fragmented, and focused on social sectors with only a minor share invested in infrastructure such as roads and sanitation. Municipalities in Ghana allocate almost all IGF on recurrent expenditures, emphasizing the relative dependency on central grants and transfers for infrastructure development purposes (World Bank 2015).

Low-density, fragmented spatial growth increases the costs of providing public services. Low-density and fragmented spatial growth patterns imply greater distances between residences, jobs, and commercial areas. Peri-urban expansion requires a higher subsidy per user to cover the cost-of-service provision (or a lower quality of service). Longer travel distances translate into higher user costs, higher congestion as well as higher air pollution and greenhouse gas emissions. If Ghanaian cities continue inefficient development paths, they will grow in a counterproductive direction.

Informality is also driving up the cost of delivering infrastructure in Ghana's cities. Based on evidence from Latin America, the cost of retrofitting infrastructure in informal settlements is two to eight times as much as regular land development (Fay et al. 2017). Subterranean utility lines are less expensive to install at scale on vacant sites, rather than retrofitted beneath or around existing structures on previously developed land. Furthermore, retrofitting of infrastructure in residential neighbourhoods may face political obstacles or public resistance, especially when resettlement is required (World Bank 2023).

The critical path for economic density and urban sustainability begins with well-planned infrastructure. The cost of developing housing, infrastructure, and industry can vary widely depending on how they are sequenced. Based on international experience, investment in infrastructure that is guided by sound spatial planning should come first and set high expectations for future economic development stages. The next priority should be housing that is enabled by connective infrastructure, a functioning land market, and demand-responsive land-use regulation. Last should come industrial developments that are characterized by efficient connections inside and outside the urban area, agglomeration economies, and a reliable labour supply (Lall et al. 2021).

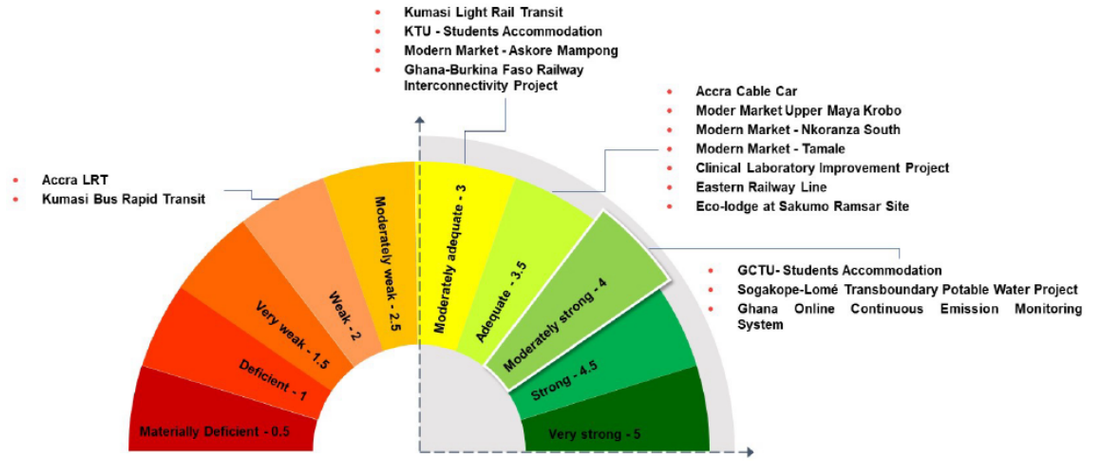
9 Based on published budget data for 2021, which stated capital expenses as 10.4 billion cedis.
10 Global Infrastructure Hub.
11 Budget allocations for MSWR, MWHWR, MRH, and MOT.

Even with measures to reduce the cost of delivering urban services, it will not be possible to meet the investment gap without significant mobilization of private resources. The potential for private investment in sustainable urban infrastructure and service delivery—through PPPs or other structures—has not been systematically explored. Ghana has some experience in private participation in urban infrastructure and basic services, particularly in energy (generation and distribution), water and wastewater treatment, and solid waste management. However, these projects have largely been pursued in an ad-hoc manner, with several emerging from unsolicited proposals from private counterparts, and processes often lacking in transparency. To address these weaknesses, the government is currently in the process of reforming the PPP framework, building on the adoption of a new PPP Law in 2020. The aim is to build the systems and capacity to ensure that PPPs are identified, prepared, assessed, and procured in a way that responds to priority needs, is sustainable, and aligned with international good practice. In parallel, efforts are underway to expand the availability of suitable (long-term and ideally local) finance for private infrastructure investment. The government-owned Ghana Infrastructure Investment Fund (GIIF) is seeking to expand its financial capacity to this end.

There has been positive movement towards the promotion of Public-Private Partnerships (PPPs) and the establishment of a screening system that includes considerations for climate change. As of March 2022, the Ghanaian government has implemented 13 PPP projects (US$2,750.3 million), and an additional 21 projects are in the pipeline (US$21.35 billion) (World Bank 2023b). Most of these pipeline projects, accounting for 94.4 percent of the capital investment (US$20.2 billion), are focused on infrastructure sector, specifically railways, urban transport, and water supply. The remaining projects span the fields of education, market development, and tourism. To ensure effective prioritization, a screening tool[12] has been developed with six major criteria: strategic alignment, project preparation/maturity level, suitability for PPP, affordability, ease of implementation, and climate considerations. Through this rigorous screening process, 16 projects have been shortlisted for further consideration (figure 11). Additionally, capacity-building activities are planned to enhance the technical capacity of PPP institutions and public agencies while also promoting climate-smart construction practices. It is emphasized that the preparation, planning, and contract drafting phases of the PPP cycle should pay particular attention to low-carbon and disaster-resilient infrastructure investment, utilizing climate data analytics.

12 The World Bank's PPP Project Screening and Analytics Tool (PSAT) was developed by its Infrastructure Finance, Public-Private Partnerships and Guarantees (IPG) global practice. It is a Microsoft Excel Visual Basic–based tool that can be used by countries for the screening and prioritization of PPP projects.

Figure 11 Screening Results for 16 Pipeline PPP Projects under Consideration



Source: PPP Projects Pipeline Assessment and Strategic Plan (World Bank, 2023)

Despite progress, there remains a significant shortfall in the number of projects related to basic services that can effectively close the infrastructure gap. While the policy direction to leverage private sector involvement is promising, the pipeline of projects focuses on lumpy capital investment such as railway and urban transport. While these are undoubtedly critical and important, there is also a pressing gap in basic services. Piped water, sanitation, and solid and liquid waste management are areas where the accessibility to services remains critically low, as evidenced by the latest census data (GSS 2021), especially considering the projected growth of the urban population and ongoing urbanization. It is imperative to further identify and implement PPP projects that specifically target these basic services to bridge the gap and uplift the quality of life for all citizens. This can improve progress towards the SDGs if gap is bridged.

Definition of Cities and Urban Clusters

A new definition of cities in Ghana is needed to improve policy making and better target resources. Ghana currently defines urban centres as localities with a population of 5,000 or more people. Although this simple definition makes it possible to roughly distinguish urban and rural localities, it does not characterize the Ghanaian urban system in a meaningful way. In fact, because districts may be party rural and partly urban, and because an urban area may extend over several districts (which may be considered either urban or rural), a more practical definition of urban centres should account for the spatial extent of population clusters within and across districts. In a context where only Accra and Kumasi have been incorporated into metropolitan areas, statistically defining urban centres in this way can support the establishment of local institutions, urban development planning, and the optimized scale of investments. It can also help with the allocation of funds from the central government to MMDAs to accompany the development of clearly defined urban centres and rural areas. Having a consistent definition of urban centres applied throughout the country will also be useful to generate statistics at a relevant scale to monitor ongoing changes as the country continues to urbanize. A dashboard of indicators constructed at the level of urban centres (using data periodically collected during the census of the population or through *ad hoc* data collection) would provide information for evidence-based regional planning and material for academic research on urbanization in Ghana.

Applying a simple definition of urban centres to Ghana. Ideally, urban centres could be defined based on their morphology (how far they extend, their population and density characteristics), their function as local labour markets (given that workers commute within the urban centre), or the type of jobs they offer (in particular, services and manufacturing). However, a parsimonious approach with a minimum number of criteria is preferred because the definition needs to be implementable with existing data, easily replicable, and easy to explain. It is possible to use data of built-up areas measured from space to apply the newly designed "dartboard methodology" (de Bellefon et al. 2021) to Ghana (Combes et al. forthcoming). This approach identifies urban places as areas where buildings are more clustered than a random spatial allocation. The methodology identifies 180 cities in Ghana, defined as urban clusters that exhibit a relatively denser core rather than a uniform distribution of buildings within the cluster (table 2). Although the methodology does not require any arbitrary population or density threshold, the 180 identified cities range from about 5,000 to 5.8 million residents (in the case of Accra). These clusters host 60.2 percent of the Ghanaian population, an estimate slightly larger than current official statistics (56.8 percent).

Table 2 Typologies of Cities Using Refined Definition of 'Urban'

Cluster type	Number of clusters	Total population (in millions)	Average population (in '000)	Average footprint (km²)	Average population density (people/km²)
>300,000 (approx.)	6	10.7	1,782	560	2,740
50,000–300.000	50	4.9	98.9	42	2,617
<50,000	124	2.9	23.7	11	2,256
All cities	**180**	**18.6**	**103,200**	**38**	**2,372**

The 15 largest cities in Ghana concentrate most of the urban population. Applying the "dartboard approach" to Ghana, it was possible to identify 180 cities, defined as large clusters of buildings that exhibit an urban core, i.e., a relatively denser area within the urban area. Although the clustering approach only uses information on building locations, further defining cities as urban clusters that have a core captures the idea that cities are urban places with a city centre where the built-up is typically denser and where jobs—especially businesses and services—are concentrated. The 15 largest cities in Ghana defined in this way were identified by overlaying the city footprints generated by the dartboard algorithm with population data from the 2021 census (table 3). About 50 percent of the total urban population lives in these 15 cities, especially in the two giant clusters that are Accra (5.8 million residents) and Kumasi (2.9 million). Only two other cities have over 500,000 residents (Tamale and Sekondi-Takoradi), and the other cities have between 140,000 and 330,000 residents. Combined, the largest 15 cities[13] in Ghana include 98 of the country's 261 administrative districts. Apart from Tamale, Wa and Bolgatanga, all are in the southern half of the country (figure 12).

13 See annex 2 for localities/districts that comprise Ghana's cities.

Table 3 Attributes of the 15 Largest Cities in Ghana

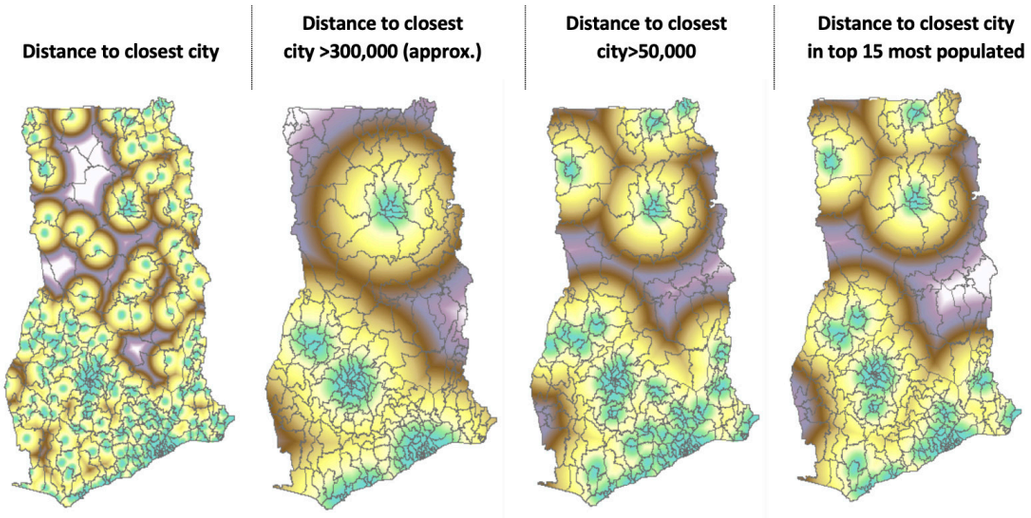
City	# of MMDAs	Population (in '000)	Share of total urban pop. (%)	Footprint (km^2)	Pop. density (people/ km^2)	Annual pop growth, 2010-21 (%)	Annual growth in built-up area, 2010-20 (%)
Accra	33	5,869	23.8	1548	3791	3.4	1.1
Kumasi	21	2,896	11.7	1053	2751	0.8	1.7
Tamale	5	702	2.9	259	2717	5.6	1.9
Sekondi-Takoradi	5	600	2.4	198	3034	−0.6	0.7
Cape Coast	4	328	1.3	137	2387	1.1	1.4
Sunyani	3	296	1.2	168	1763	3.5	2.6
Koforidua	7	258	1.0	100	2581	1.8	5.3
Denu	3	231	0.9	120	1922	2.9	0.4
Techiman	2	215	0.9	99	2164	4.8	4.0
Obuasi	3	193	0.8	71	2698	1.3	1.9
Tarkwa	2	188	0.8	61	3066	5.5	5.1
Wa	2	181	0.7	99	1832	4.6	2.1
Ho	3	163	0.7	86	1889	−0.7	5.6
Agona Swedru	3	155	0.6	55	2848	−0.6	4.0
Bolgatanga	2	140	0.6	71	1973	2.8	1.8

Figure 12 Map of the 15 Largest Cities in Ghana



The spatial distribution of cities is denser in the south than in the north. The largest cities in the south are proximate to one another, while the cities in the north are more dispersed. Some smaller cities (within the top 15 cities) are in the vicinity of the largest cities in the south. For example, Koforidua and Agona Swedru are close to Accra; Obuasi is close to Kumasi; and Cape Coast and Tarkwa are close to Sekondi-Takoradi. Sunyani and Techiman are also close to one another, while the rest of the cities are more spatially isolated. These patterns generate zones of influence around cities or groups of cities in the south, versus the north where large cities are far from one another. These spatial patterns reflect both current interactions between cities, as well as potential for greater integration and connectivity improvement (figure 13).

Figure 13 Zones of Influence: Proximity to Closest City



As espoused in Ghana's National Spatial Development Framework (2015-2035), there is an opportunity to promote development through networks of cities (figure 14). As highlighted in the NSDF, "Urban networks have many potential benefits such as: realisation of urban synergies and inclusive development; more efficient and affordable services; more diverse job and housing opportunities; stronger attractiveness for investment; improved capacity to solve urban problems; concentrated and balanced urban development; reduced out-migration; and improved functional links. Secondary cities, which at present are administrative and basic commercial centres, have potential to become drivers of economic growth." The Ghana Sustainable Cities Strategy is fully aligned with this approach, modifying the delineation of the strategic networks/corridor based on updated urban growth dynamics (figure 15).

Figure 14 NSDF Spatial Development Concept

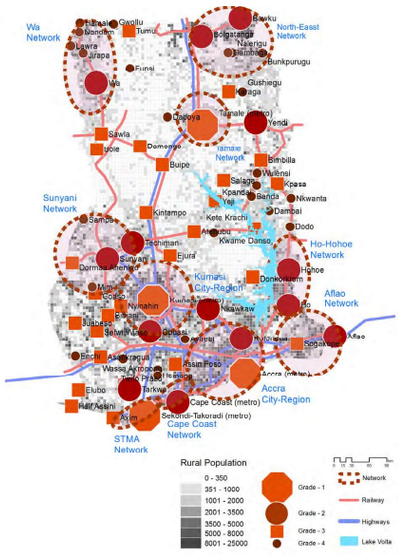
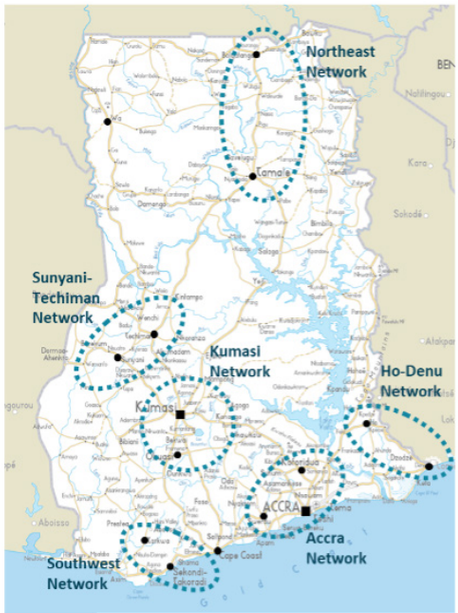


Figure 15 Updated Identification of Strategic City Networks



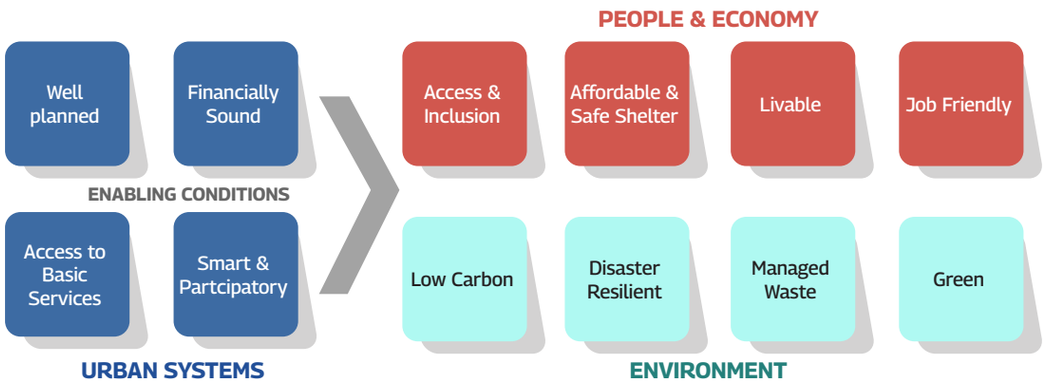
The 15 largest cities have urbanized across district boundaries and in the case of Sunyani, across regional boundaries. This presents a coordination challenge from a governance perspective as these various sized metropolitan areas must collaborate on issues that transcend the district scale, such as urban transport, solid waste management, flood risk management, and housing. While the large cities of Accra and Kumasi have been wrestling with metropolitan governance issues for decades, this may be a new frontier for smaller, yet rapidly growing, cities like Tamale (five districts) or Koforidua (seven districts).

How Sustainable Are Ghana's Cities?

Application of the Ghana Sustainable Cities Framework

Sustainable development indicators are increasingly used by public administrations to articulate cities' goals and inform sustainable development strategies by enabling assessment and monitoring activities. Based on the review of numerous indicator tools developed by various organizations and research groups, as well as the curation of over 1,000 specific indicators, the World Bank developed a framework to measure city sustainability along three dimensions: People & Economy, Environment, and the System that makes it happen. Each of these dimensions has four building blocks by which the dimensions are measured (figure 16).[14] The framework highlights that city systems (infrastructure, governance, institutions, etc.) must function well to deliver positive results for people, the economy, and the environment (Global Platform for Sustainable Cities, World Bank. 2018). Over the long term, these positive results should contribute towards more resilient, just and competitive cities.

Figure 16 Sustainable Cities Implementation Framework



To measure the relative sustainability of cities in Ghana, this framework was adapted to the Ghanaian context and indicators to measure performance in each of these twelve categories were identified. The indicators were defined using available data from the 2021 Census, the Ghana Living Standards Survey 7 (GLSS 7), and the government's District Performance Measurement Tool (DPAT).[15] Annex 1 lists of the framework indicators, their definitions, data source, and geographic scale. The following sections describe each of the three dimensions of sustainability and their respective measures. For each of the twelve categories, a table with the summary scores for each of the 15 largest cities is presented. Areas in which cities perform below the average for all districts in Ghana are highlighted in red (indicating lower sustainability).

14 See Bunding-Venter, et al. (2022) for a description of the Sustainable Cities Implementation Framework and the underpinning methodology.

15 The DPAT is an assessment of all Districts in Ghana carried out by the MLGCRA on an annual basis.

Some sectors contribute to sustainability in a cross-cutting manner, especially solid waste management and urban mobility. For example, the management of solid waste is a fundamental municipal basic service, a key element of low carbon development pathways, a contributing (or mediating) factor in urban flooding, a major contributor to air, water and land pollution when mismanaged, and central to enabling a circular economy. As such, it is addressed multiple times under the framework—in both the category descriptions and indicators. Similarly, urban mobility can be considered a basic service, the primary determinant of well-planned and low carbon growth, and a pillar of livability in cities.

Dimension 1: Urban System

Well-Planned

Promotes well-planned growth and urban development services

Well-planned growth and urban development services are fundamental to sustainable urbanization in Ghana. Regularly updated and enforced urban planning instruments, building codes, and zoning regulations help guide and coordinate the decisions of households and businesses. Well-implemented planning helps to minimize unnecessary sprawl and bring people closer to jobs and opportunities (Mukim and Roberts 2022). The capacity of institutions, especially at the local urban level, is critical for harnessing the potential of Ghana's urbanization for accelerated and sustainable development. From an urban planning perspective, the unsustainable and unplanned nature of urban growth in Ghanaian cities can be attributed to limited urban planning capacity (Akanbang et al. 2018). Urban planners in emerging cities such as Wa are limited in the skills, technology, legislation, and coordination needed to manage the institutional, organizational, and individual levels of urban planning (Akanbang et al. 2018).

The rapid and unplanned nature of urban growth reflects the lack of resilience planning in Ghanaian cities (Poku-Boansi and Cobbinah 2018). Ghanaian cities are highly vulnerable to climate change, and efforts to build their resilience are undermined by factors such as inadequate funding for disaster response and limited understanding of the principles of urban resilience (Mensah et al. 2021). Furthermore, the uptake of resilience as a concept in urban planning practice in Ghana is limited (Cobbinah and Poku-Boansi 2018), while support for four key principles of resilience (responsive and adaptive capacity; inclusiveness; transformative capacity; and social equity) in national planning documents is unbalanced (Poku-Boansi and Cobbinah 2018). Despite the vulnerability of Ghanaian cities and urban systems to threats and disruptions such as climate change, preparedness towards building resilience to address future disruptions is limited (Darkwah et al. 2018). This makes it imperative to explore more innovative and pragmatic ways of incorporating and optimizing resilience planning in both policy and practice.

Land tenure insecurity and the slow pace in land administration service delivery in Ghana is a major sustainability challenge. The SDG indicator 1.4.2 seeks to understand the proportion of adults with secure land tenure rights with legally recognized documentation. The absence of security of land tenure is a major prohibiting factor in housing supply in Ghanaian cities (Owusu-Ansah et al. 2019). Most cities in Ghana are characterized by fraudulent land

transactions with multiple sales and contested ownership. As a result, possession of legally recognized documentation is not entirely a guarantee of security, as some documentations are fraudulent (Mireku et al. 2016). Lack of secure tenure prevents low-income dwellers from investing in resilience infrastructure due to fears of untimely evictions. Ghana is also characterized by slow processes in land administration service delivery. Different factors, such as limited capacity, institutional bureaucracies, and de facto practices, have accounted for the poor land administration service. For example, in the Tamale regional lands office, out of 1,426 deed applications received in 2022, only 1,300 were completed (Lands Commission 2022). The long delays in land title registration have resulted in many urban dwellers developing their lands without appropriate titles and permits.

Land-use management and planning in municipal and metropolitan areas is weak. Development planning and spatial planning institutional frameworks operate separately in Ghana, and this dual planning system hampers effective policy integration and results in unplanned urban expansion and insufficient basic services. The most pressing need is to establish a link between spatial plans and development plans in all dimensions, to strengthen and institutionalize coordination, and to avoid duplication of effort. This is already emphasized in the National Urban Policy but has not been implemented. In addition, the low capacity of physical planning departments at local levels, lack of institutional/sectoral coordination, political interference in planning practices, and a complex land tenure system have hindered integrated planning and development. An often-overlooked aspect is the link between land-use planning and land tenure. Notably, about 80 percent of all land in Ghana, including urban land, falls under customary ownership. This poses significant challenges for implementing land use plans, as the government has limited control over these customary lands.

Ghana's decentralized administration system has strengthened over time, but a proliferation of new regions and MMDAs has added administrative burdens and imposed additional costs. The National Decentralisation Policy Framework (2015-2019) and subsequent National Decentralisation Policy and Strategy (2020-2024) provide a roadmap to manage and implement decentralization in a clearly articulated, comprehensive, and coherent way. Moreover, the Local Governance Act (2016) brought about significant improvements in the legal and administrative aspects of decentralization. However, the creation of new regions and assemblies (90 MMDAs and six regions since 2012) has led to a lack of clarity on boundaries and zones between jurisdictions, further complicating effective spatial planning. In a context of limited budgets, resources for existing MMDAs and regions have been diverted to new administrative areas for their overhead, operations, and management.

There is weak enforcement of the current legal framework that facilitates interjurisdictional coordination or collaboration in planning. Both the Local Governance Act 2016 and the Land Use and Spatial Planning Act 2016, Act 925 made provisions for interjurisdictional coordination in planning and implementation through joint district planning entities and statutory technical subcommittees. The Regional Coordinating Council has the mandate for interjurisdictional coordination. However, since inception of these Acts, there has been weak enforcement of these provisions due to practical complexities (Poku-Boansi 2021). The Acts reflect the challenges of the parallel planning system in Ghana where development planning and spatial planning are disconnected in law and in practice (Acheampong and Ibrahim 2016).

Weak institutional capacity and coordination underlie Ghana's urban land market friction, poor transport connectivity, and insufficient financing. Land-use planning is negatively affected by political and institutional constraints related to coordination and local government capacity, including an unresponsive legislative framework, undue political interference, acute human resource shortages, and inadequate financial resources. Connecting cities and regions requires interjurisdiction coordination as well as better communication between the government and customary land institutions, yet the laws, regulations, institutions, decision-making, and financing mechanisms affecting the transport sector in Ghana remain uncoordinated.

The Ghana Sustainable Cities Indicators related to planning highlight relative underperformance in achieving DPAT targets for street naming and property addressing in three districts as well as higher than average growth of built-up area. Table 4 shows the planning scores for each of the 15 largest cities. Ho performs particularly low in this subcategory, followed by Tarkwa.



Photo: Tema, Ghana (Jonathan Ernst/World Bank)

Table 4 Planning Indicators

City	Street naming database and property addressing (DPAT 3.3)	Annual growth in built-up area, 2010–2020 (%)	Building permit processing & issuance (DPAT 3.2)
Accra	2.9	1.6	2.9
Agona Swedru	2.7	4.1	3.0
Bolgatanga	2.5	1.9	3.0
Cape Coast	2.8	1.4	2.8
Denu	3.0	0.5	2.7
Ho	2.0	6.7	2.5
Koforidua	2.9	5.7	2.7
Kumasi	2.8	1.9	2.9
Obuasi	3.0	2.1	3.0
Sekondi-Takoradi	3.0	1.3	3.0
Sunyani	2.7	2.9	3.0
Tamale	2.8	3.3	3.0
Tarkwa	2.5	5.2	3.0
Techiman	3.0	4.1	3.0
Wa	3.0	2.1	3.0
GHANA			
Ghana District Average	**2.8**	**4.4**	**2.9**
Ghana District Max	3.0	17.9	3.0
Ghana District Min	0.0	0.0	0.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Financially Sound

Ensures long-term sustainability of services through sound financial practices

Capacity for local revenue generation and financial management is evolving in urban Ghana. The legal framework for MMDAs provide the following main types of financing of services and activities: (i) national transfers, in particular the district Assembly Common Fund; (ii) internally generate funds (IGF) collected at the local government level; and (iii) royalties collected by and transferred from the national government. In addition to this, large-scale trunk infrastructure is often partially or fully financed by the national government. And while public financial management practices have been largely improving, MMDAs suffer from irregularities as highlighted in the most recent subnational Public Expenditure and Financial Accountability (PEFA) assessment:[16]

- **Due to the dependency on central government resources for their capital expenditures, MMDA PFM is affected by volatility in the overall intergovernmental system**. Unreliable intergovernmental transfer ceilings coupled with unpredictable budget flows contributes to serious failures observed in procurement at the MMDA level including: (i) the accrual of high levels of expenditure arrears; (ii) the development of informal credit arrangements with suppliers which in turn facilitates abuse, undermines competition, and can distort the implementation of planned expenditure; and (iii) the practice of procurement slicing (breaking bulk).
- **Fiscal discipline, technical efficiency, and allocative efficiency are insufficient at MMDA level**, particularly in the following areas: budget credibility, predictability and control in MMDA expenditure management, revenue collection and taxpayer access to information on tax liabilities and administrative procedures, and weak payroll controls. External scrutiny and audit are also weak.
- **Service delivery is negatively affected by the approval of the budget after the beginning of the fiscal year.** This is compounded by unpredictability in the amounts and timing of central government transfers to MMDAs as well as delays in these transfers that undermine planning and the efficient implementation of local development projects within the budget year, particularly in terms of procurement for supplies and building works.

Internally generated funds at the local level are limited and, as a result, current investment in the urban sector falls far short of needs. The efficiency of the urban system and urban service delivery is largely influenced by the provision of adequate financing. MMDAs perform poorly on own-source revenue collection, especially property tax collection, and rely on intergovernmental transfers that are insufficient to finance major investments in urban infrastructure. IGF at the local level derive mainly from property taxes, fees, licenses, and rents of various kinds, and currently account for about 25 percent of total municipal revenues.

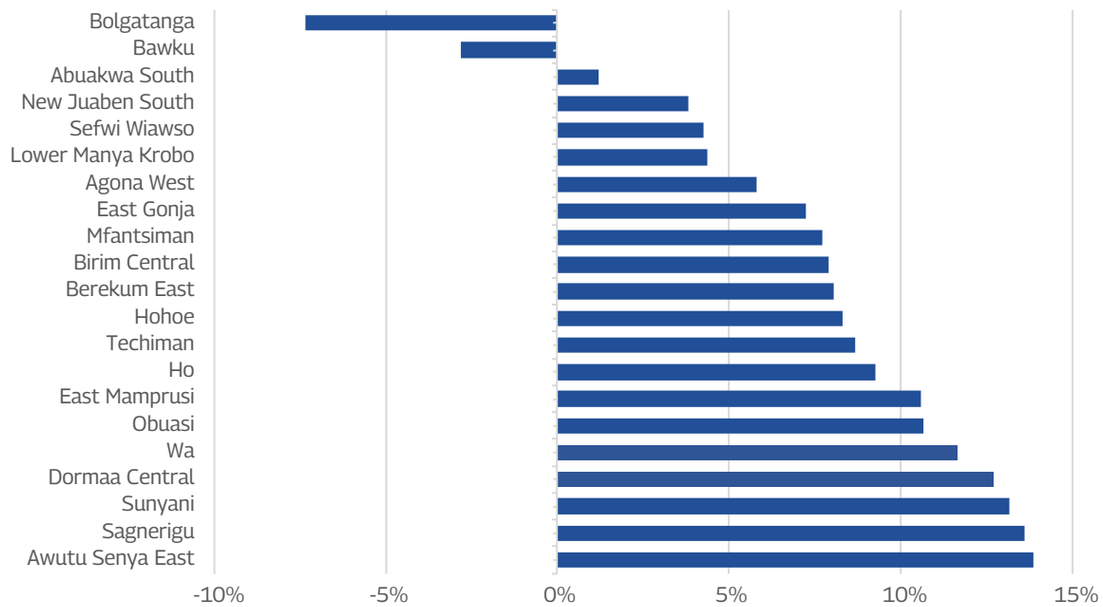
The overall collection rate of property taxes is low due to (i) outdated inventory and valuation of properties; (ii) complete lack of, or poor quality of, land and property cadastre and

16 The last published subnational PEFA in Ghana was conducted in 2012. According to pefa.org, the next subnational PEFA is currently being planned. The findings of the PEFA are summarized in World Bank (2015).

database; (iii) difficulties in tax collection; and (iv) current legislation that makes the depreciated replacement cost of properties the basis of assessing the property rate in Ghana, thus rendering it impossible for the MMDAs to derive the benefits of land value increments, which are often the result of MMDAs' actions. For example, in 2014-2015 Accra and Tamale Metros were only able to collect 56.2 and 50.8 percent of the targeted property rates (Mohmmed 2019). Property valuations are in most cases largely outdated (in some cases unchanged for 15–20 years), rendering the estimated values applied for taxation purposes much lower than the actual property values. Regular valuations are not undertaken due to the combination of the relative high costs of undertaking regular valuation compared to the budget envelope of most MMDAs and the institutional bottlenecks and capacity constraints in engaging with the national entity responsible for valuation, the Land Valuation Board (World Bank 2015). The introduction of a centralized property rate collection system[17] in January 2023 has garnered some concerns and feedback,[18] as it could negatively affect MMDA's incentives to collect property rates.

Based on a sample of MMDAs tracked over the 2015-2022 period, IGF collection varies greatly among MMDAs and year on year for individual MMDAs. Figure 17 shows the average annual growth in IGF for a sample of 21 MMDAs participating the Ghana Secondary Cities Support Program. During the 2015-2022 period the majority of MMDAs increased their IGF, with a range of 13.9 percent per year increase in Awutu Senya East to an average annual reduction of 7.4 percent in Bolgatanga.

Figure 17 Average Annual Growth in IGF, 2015–2022 (%)



Source: Ghana Secondary Cities Support Program, MLGCRA

17 https://myassembly.gov.gh
18 https://myjoyonline.com/a-proposed-platform-for-property-rate-collection-is-counterproductive-local-governance-network/

Urban management challenges are amplified where cities are characterized by weak institutions, inadequate financial resources, and weak enforcement of regulations (Anarfi et al. 2020). For most urban authorities in Ghana, there is little fiscal autonomy as about 80 percent of the budgets of MMDAs is financed by transfers from central government and donors, with the remainder financed through internally generated funds (Otoo and Dankwah 2021). This has implications for the sustainability of Ghanaian cities, for example in terms of the effective delivery of public goods and services by city authorities. In this context, research on fiscal decentralization and efficiency of public services delivery in Ghana by Otoo and Dankwah (2021) suggested that an increased share of internally generated funds in total municipal budgets positively influences the efficiency of public services delivery, compared to a higher share of central government grants. This means that when Ghanaian cities have more fiscal autonomy, they could have enhanced capacity to internally generate the funds necessary to efficiently finance the sustainable development needs of an increasingly urban population.

The Ghana Sustainable Cities Indicators show that most of the 15 largest cities struggle to attain financial soundness. The level of IGF is especially low in the northern cities, and capital spending per capita is well below the investments levels needed to provide basic services to residents. Many of the cities, however, perform relatively well on the DPAT indicator (3.2) on revenue from ratable properties and businesses which measures (i) the existence of a computerized billing system, linked to property rate roll and business inventory, (ii) the generation and delivery of property rates and business operating permit bills, and (iii) follow-up actions by the MMDA on defaulters/non-payers (table 5).



Photo: Kumasi, Ghana (iStock-1417595301)"

Table 5 Financial Soundness Indicators

City	Own-source revenue as a % of total revenues (2021)	Capital spending as a % of total expenditures (2021)	Capital spending per capita (2021)	Revenue from ratable properties and businesses (DPAT 3.2)
Accra	37.1	48.2	14.11	4.6
Agona Swedru	11.8	12.4	16.41	4.7
Bolgatanga	6.8	21.4	44.36	5.0
Cape Coast	17.6	35.4	5.18	5.0
Denu	12.7	30.4	8.00	5.0
Ho	7.9	23.8	29.29	5.0
Koforidua	17.2	48.2	24.73	4.9
Kumasi	25.3	12.4	11.28	4.6
Obuasi	-	-	-	5.0
Sekondi-Takoradi	28.4	38.1	26.60	4.2
Sunyani	22.6	34.3	67.60	4.3
Tamale	6.5	23.0	9.52	3.4
Tarkwa	-	-	-	5.0
Techiman	12.3	25.3	16.90	4.5
Wa	6.6	59.9	12.86	4.0
GHANA				
Ghana District Average	**22.5**	**23.8**	**15.83**	**4.6**
Ghana District Max	64.7	59.9		5.0
Ghana District Min	0.5	0.0		0.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Equitable Access to Basic Services

Ensures access to basic services for all residents

Ghana has made significant achievements since 2010, but access to basic services is not yet universal. For example, during the intercensal period, 4.5 million new dwelling units were built, there was a 7 percent increase in dwelling units constructed with durable concrete walls, a 21 percent increase in electricity as main source of lighting, a 14 percent increase in households with bathroom for their exclusive use, and five times more people with access to the internet. However, water and sanitation require further investment and behaviour change. According to the 2021 census, almost all (97.8 percent) urban residents have access to improved drinking water, but more than half of them relied on sachet water, and only a third had access to piped water. The situation for sanitation accessibility is worse, with only 3.2 percent of households disposing of wastewater through the sewerage system. Nearly all (97.2 percent) of the urban population dispose of wastewater onto the ground, streets, and drains/gutters. Solid waste is collected for half of the urban households, while 24.6 percent of households dump waste in public or open spaces. A quarter of urban households lack a household toilet facility, and about 9 percent of urban households practice open defecation (GSS 2021a).

Ghana's urban areas have made significant progress in access to clean cooking energy. Energy poverty remains a major sustainability challenge in Ghanaian cities. Limited energy access is both a driver and a consequence of urban poverty. Access to clean and affordable energy is one of the global priorities in the SDGs as energy is a basic service. Clean cooking energy can catalyse transition to low carbon cities and contribute to quality of life (Dongzagla and Adams 2022). The proportion of urban population with access to liquid petroleum gas (LPG) for cooking increased from 28.9 percent in 2010 to 51.3 percent in 2021 (GSS 2022b). Across the country, wood and charcoal use for cooking decreased from 73.9 percent in 2010 to 54.3 percent in 2021. Whereas trends in LGP access are encouraging in the southern part of the country, most urban residents in northern areas still depend on biomass cooking energy such as charcoal and fuelwood. Urban energy poverty levels are high in smaller cities (Ahmed et al. 2023).

As engines of economic growth, cities are known to offer greater opportunities for and access to improved living standards compared to rural areas (Turok and McGranahan 2013; Gong et al. 2012). However, equitable access to basic services is among the key intractable challenges of urbanization, especially in less-developed countries (Biswas 2006). In Ghana, the capacity of government to provide essential infrastructure and social services in urban areas is, in part, constrained by the rapid pace of urbanization (Farvacque-Vitkovic et al. 2008). For example, in conurbations such as the Greater Accra Metropolitan Area (GAMA), about 75 percent of families in low-income urban communities are reported to reside in compound houses with limited access to basic sanitation and water services because the provision of basic services is not commensurate with the pace of urban growth (World Bank 2020). Ultimately, urbanization has outpaced planning provisions in Ghana (Yeboah and Obeng-Odoom 2010).

Improvements in solid waste disposal and sewage remain limited and most peri-urban areas where there are concentrations of urban poor do not have access to waste disposal services. Ghana generates nearly 8 million tons of solid waste per year (Miezah et al. 2015) and about 25 percent of waste generated in urban centres is left uncollected, ending up on beaches,

in drains, on vacant plots, or in unofficial dumpsites, or burned within households. Solid waste disposal and sewerage remain a major challenge in Ghanaian cities, increasing health risks and environmental damages, indirectly increasing health care costs due to diseases related to poor waste disposal and associated sanitary challenges. Poor solid waste disposal also contributes to flooding in Ghana's urban areas. Indiscriminately dumped waste blocks drains and further reduces the already limited capacity of the drainage systems, causing storm water to overflow with severe damage to properties and infrastructure, business and transport interruptions or even loss of lives during the 2015 floods (Mensah and Ahadzie 2020).

Although Ghana successfully halved the proportion of its population without access to safe drinking water by 2010, access to water in Ghanaian cities remains variegated (Peloso et al. 2018). Inequity in access to water in Ghana's cities is partly traced to colonial legacies of uneven infrastructural investments (Peloso et al. 2018). The effects of underinvestment have been exacerbated by water rationing schedules spanning a few decades, a situation which persists as citizens in parts of cities like Accra must contend with historical daily cuts in water supply (Pelosi et al. 2018). In Accra, a study in 2014 showed that 60 percent of residents had a few hours access to water daily, while 10 percent had no access (WHO and UNICEF 2015; Kessey and Ampaabeng 2014). For the urban poor in Accra, challenges with access to water include intermittent supply, poorly maintained pipes, and disconnection for unpaid fees (Dapaah 2014).

The Ghana Sustainable Cities Indicators highlight the widespread challenges related to access to basic services in Ghana's urban areas (table 6). All the largest 15 cities have below national average access to at least one basic service. Wa has lowest relative performance with below average score in 5 categories, while Denu rates the highest with below average performance only in percent of households connected to the sewerage system.



Photo: Accra, Ghana (iStock-2159960054)

Table 6 Access to Basic Services Indicators

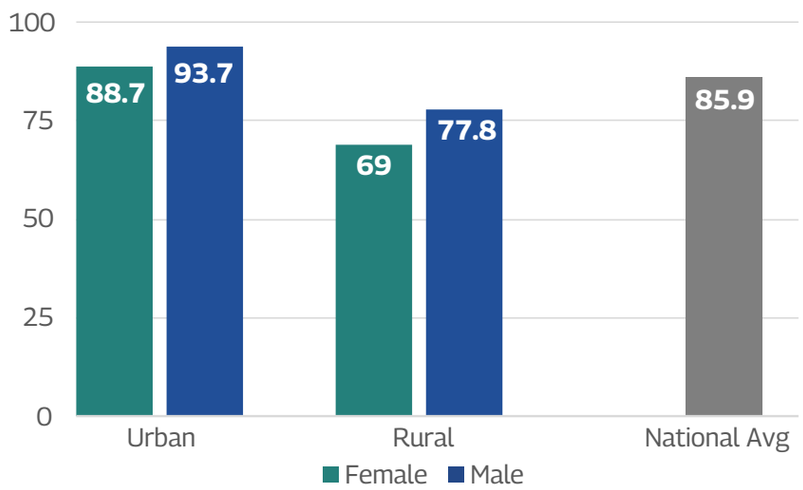
City	% HHs connected to sewerage system	% HHs with piped water (inside or outside dwelling or public tap/ stand pipe)	% HHs with improved water sources	% HHs with toilet facility	% HHs connected to electricity (mains or community-based grid)	% HHs with solid waste collected	Maintenance of infra of public interest (DPAT 2.4)
Accra	5.3	21.6	3.1	68.4	68.4	57.4	3.0
Agona Swedru	1.2	49.0	4.3	60.3	60.3	7.2	3.0
Bolgatanga	2.1	33.6	0.5	33.2	33.2	12.4	3.0
Cape Coast	1.2	50.4	1.9	54.2	54.2	6.5	3.0
Denu	0.4	29.0	10.3	54.5	54.5	4.4	3.0
Ho	0.3	28.5	24.2	47.8	47.8	1.3	3.0
Koforidua	1.5	27.4	7.0	77.4	77.4	14.9	3.0
Kumasi	2.5	37.1	1.7	66.8	66.8	37.8	3.0
Obuasi	1.6	27.9	1.9	55.8	55.8	6.5	3.0
Sekondi-Takoradi	1.7	27.6	3.7	55.5	55.5	17.8	3.0
Sunyani	2.0	34.3	4.0	70.2	70.2	12.4	3.0
Tamale	1.1	58.5	16.8	24.7	24.7	6.5	3.0
Tarkwa	2.3	20.0	8.3	56.4	56.4	16.1	3.0
Techiman	1.2	56.0	3.2	65.5	65.5	8.9	3.0
Wa	1.2	39.9	1.8	41.4	41.4	7.5	2.5
GHANA							
District Average	**1.7**	**31.1**	**10.9**	**53.6**	**53.6**	**13.8**	**3.0**
District Max	33.9	82.3	95.9	96.0	96.0	96.9	3.0
District Min	0.1	0.0	0.0	7.7	7.7	0.0	1.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Smart and Participatory

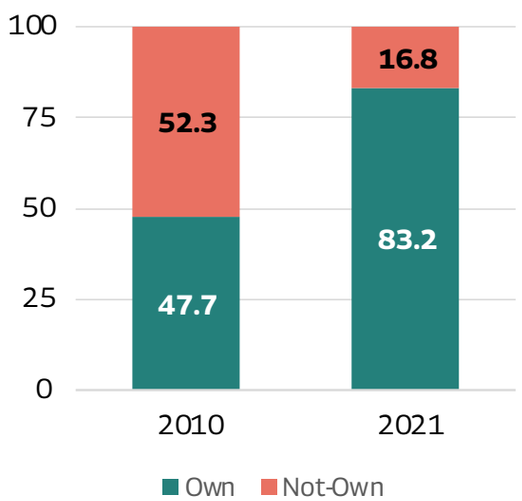
Ensures access to the internet, use of technology to improve the delivery of services, and promotes the participation of residents in planning and public decision-making

Figure 18 Percentage of 12+ Population Owning Functional ICT device, 2021 by Gender and Locality



Source: GSS 2022a

Figure 19 Percentage of 12+ Population Not Owning a Mobile Phone, 2010 and 2021



Source: GSS 2022a

Access to the internet and information communication technology (ICT) devices has been steadily improving in urban areas of Ghana, although there is still a need for broader coverage. Recent data show that mobile ownership increased from 47.7 percent in 2010 to 83.2 percent in 2021 for individuals aged 12 years and older (figures 18 and 19). In urban areas, smartphone ownership is 83.2 percent, compared to 58.9 percent in rural areas. Additionally, mobile devices are increasingly being used for financial transactions, with 57 percent of the national population and 82.3 percent of the urban population aged 12 years and older using them. However, there is still a significant gender gap in mobile device ownership and internet access, with males having higher accessibility to ICT devices such as smart mobile devices, laptops, and internet services. This disparity highlights the need for broader coverage and greater access to ICT devices and internet services, particularly among underserved populations, including women and girls. Increasing access to these technologies is crucial for bridging the digital divide, improving the efficiency and effectiveness of municipal service delivery, and promoting public participation (GSS 2022a).

There is a digital divide by gender, region, and ability. The digital divide (percent of the population 6 years and older that did not use an ICT device in the three months preceding census night) by gender is largest for the age group 61 years and older (16.6 percentage points higher for male). There is a 6.7 percentage point difference between males and females for the age group 36 to 60 years. In all regions, the percentage of females that did not use a mobile phone for a mobile money transaction was higher than that of males. The digital divide by sex is largest in the Northern (16.3 percentage points), North East (14.9 percentage points) and Upper West (14.7 percentage points) regions. In six regions— Savannah (37.3 percentage points), North East (34.9 percentage points), Northern (29.1 percentage points), Upper West (26.9 percentage points), Oti (24.0 percentage points) and Upper East (23.2 percentage points)—the difference in the percentage of persons that did not use ICT devices and that of Greater Accra exceeded 20 percentage points. The digital divide for these regions is more than four times that of Ashanti (5.4 percentage points), the region with the smallest difference relative to Greater Accra. Almost a quarter (23.6 percent) of persons with difficulty in performing activities (disability) did not use an ICT device in the three months preceding the census. This figure is 4.4 percentage points higher than for those without difficulty. The difference between those with and without difficulty is larger for females (6.2 percentage points) than males (1.5 percentage points) (GSS 2023a).

In Ghana, efforts to develop 'smart cities' are underway, with a good foundation being laid.[19] Initiatives such as digital infrastructure, digitalisation and geospatial data policies, and central e-service platforms (e.g., Ghana.gov.gh) provide a good foundation to build upon. Also, environmental and emergency response initiatives from the Ghana Meteorological Agency (GMET), National Disaster Management Organisation (NADMO), Environmental Protection Agency (EPA), Ghana Hydrological Authority, ride-hailing services, Google mapping, and digital marketing platforms such as JUMIA are currently available. Furthermore, the ongoing updating of the National Urban Policy offers valuable guidance to cities on the implementation of smart cities principles in their management and service

19 The term 'smart cities' refers to an approach that optimizes the use of data, technologies, and resources to enhance urban management, service delivery, citizen engagement, and accountability.

delivery mandates. Despite these positive developments, there are still challenges that need to be addressed. These include the lack of access to digital infrastructure and services and the absence of collaboration and coordination among sectoral agencies and across administrative tiers. Additionally, data sharing is limited to certain situations, and national spatial data infrastructure is underdeveloped, with most standards and guidelines still in draft phase and not yet fully disseminated.

When cities are sufficiently digitized, the priority should be the development of a robust land information system and an urban data platform based on spatial data infrastructure. The current thematic smart solutions for various sectors, such as transport, land management, water, and sanitation have limited service coverage and lack utilization and integration with digital and spatial data. These systems also operate in isolated silos, precluding collaboration. To address these challenges, it is essential to establish core datasets and ensure administrative interoperability. Additionally, a cultural shift is required in how cities manage data and integrate systems for better interoperability. A citywide land information system and an integrated urban data platform would provide a centralized and comprehensive view of urban management. Policymakers and city officials could leverage this information for evidence-based decision-making. The data from the land information system can serve various purposes, including climate-smart urban planning, property valuation, taxation, and land allocation for public services and private development. Additionally, an urban data platform can collect, analyse, and disseminate spatial and nonspatial data from various sources to provide a holistic view of the city, encompassing government data, traffic flow, air quality, waste management, public safety, and more. From a citizen's perspective, such a platform would enable easy access to government services and information, eliminating the need for multiple sites and platforms. This would lead to greater transparency and accountability and promote citizen engagement with government decisions and services.

The application and mainstreaming of ICT in the various facets of urban living, especially in the context of smart cities, is recognized as an increasingly important way of progressing towards sustainable urban development (Goel and Vishnoi 2022). The development of e-government services in Ghana is relatively nascent, but services have been implemented in areas such as national identification, acquisition of passports, and driver's licenses, etc., thereby reinforcing the potential of ICT to improve service delivery in the country (Abusamhadana et al. 2020; Amegavi et al. 2018; Andoh-Baidoo et al. 2012). However, some challenges that impede the optimal operationalization of e-government services include low literacy in ICT, low internet connectivity, inadequate ICT equipment, limited human resources, limited financial resources, citizen trust issues, digital divide, security threats, power interruptions, etc. (Amegavi et al. 2018; Abusamhadana et al. 2020; Awotwi and Owusu 2007).

For e-government initiatives to contribute to sustainable development, they must promote inclusion (Goel and Vishnoi 2022). Research on the accessibility of e-government services for persons with disabilities (PWDs) in Ghana has provided insights into inclusion in the provision of e-government services (Agangiba 2020). For example, the deployment of e-government services enhanced participatory and inclusive governance by making government services which, hitherto, required long journeys and queues, more readily accessible online.

However, fewer than 20 percent of PWDs in Ghana know about or have the ability to utilize most accessibility features on a mobile phone. This is attributed to a lack of understanding of how to use these features and the cost of the device (GSMA 2023). In addition, disparities in how PWDs perceived accessibility compared to government officers, as well as political, sociocultural and technological drivers, tend to put PWDs at risk of exclusion from e-government services. Government officers and developers believe PWD can access e-government services with minimal third-party assistance, while PWD emphasize the importance of independent access to government information and electronic transactions (Agangiba 2020).

There is global acknowledgement of the need for citizen participation in urban development (e.g., Okyere et al. 2019). Evidence from a study community participation in the management of urban green spaces in Kumasi suggests that the participation of urban residents in green space management was low, and city authorities rarely engaged or consulted residents about green space projects (Okyere et al. 2019). Similarly, a study on the dilemmas of citizen participation in water governance in Kumasi showed how Ghana Water Company Limited focused on more technical aspects of water delivery at the expense of social aspects despite an appreciable willingness among citizens to participate in decision-making on water-related processes (Erdiaw-Kwasie et al. 2020). Despite the provision for public participation under the NDPC guidelines, low citizen participation in urban planning is resulting from weak implementation and enforcement of the guidelines during plan preparation (Nguah 2015; Alhassan 2016). Most MMDAs cite budgetary constraints as limiting their efforts towards wider citizen participation in planning (Nguah 2015; Abubakari et al. 2016). Other studies have shown that urban dwellers who get development benefits are more likely to participate than those without benefit (Cobbinah 2017). Low-income urban dwellers often do not have positive attitude towards participation in urban planning (Cobbinah 2017). The political setting within which urban planning is practised does not allow for citizen participation because of elite capture (Abubakari et al. 2016).

Local government authorities (including metropolitan and municipal assemblies) are mandated to ensure 'strong' community participation in the planning of their development projects, as recommended in the guidelines of Ghana's National Development Planning Commission. However, local assemblies' engagement with communities and service providers in development planning processes and activities is limited (Aboagye 2021) (table 7). This is further complicated by situations where projects for urban communities were designed at the national level with little or no input from local assemblies or community members. Sometimes, limited participation in urban management by citizens is not due to lack of opportunities per se; most urban citizens have limited awareness about their rights as citizens to participate in the allocation of resources (Aboagye 2021).

Recognizing the limited nature of citizen participation in urban management, stakeholders have rolled out programs for improvement. For example, through the IncluCity project, city authorities in Sekondi-Takoradi and Accra have attempted to introduce reforms in their planning and budgeting processes (Aboagye 2021). In general, the IncluCity project aimed to enhance the ability of the urban poor to advocate for quality urban services, as well as hold elected officers accountable. This was achieved by providing a trust-building platform to engage the urban poor whose understanding of their rights and responsibilities were limited, and local city authorities who were less-informed about why and how to engage the urban poor.

The Ghana Sustainable Cities Indicators of smart and participatory governance show a deficit in public consultation in several cities. While digital access is relatively high across most cities, as indicated by the number of adults who own a smart phone, there does not appear to be a link between access and community engagement. Across all the 15 largest cities, most residents reported that they were occasionally or never consulted with before the amendments of laws.

Table 7 Indicators of Smart and Participatory Governance

City	% of adults who own a smart phone	Organization of town hall meetings & MMDCEs engagement with communities (DPAT 4.5)	Frequency of gov't consultation with public before amendment of laws by region (% occasionally or never)	Meetings of the Public Relations and Complaints Committee of the Assembly (DPAT 2.4)	Functionality of client service unit (DPAT 4.1)
Accra	90.3	1.0	77.2	1.0	1.0
Agona Swedru	77.6	1.0	70.0	1.0	1.0
Bolgatanga	68.3	1.0	77.4	1.0	1.0
Cape Coast	77.0	1.0	70.0	1.0	1.0
Denu	70.1	1.0	82.8	1.0	1.0
Ho	76.6	1.0	82.8	1.0	1.0
Koforidua	84.9	1.0	57.4	1.0	1.0
Kumasi	87.4	1.0	66.8	1.0	1.0
Obuasi	83.2	1.0	66.8	1.0	1.0
Sekondi-Takoradi	81.9	1.0	69.0	1.0	1.0
Sunyani	82.7	1.0	82.6	1.0	1.0
Tamale	51.3	1.0	77.7	1.0	1.0
Tarkwa	82.7	1.0	69.0	1.0	1.0
Techiman	78.6	1.0	82.6	1.0	1.0
Wa	61.5	1.0	62.8	1.0	1.0
GHANA					
District Average	**70.9**	**1.0**	**72.6**	**1.0**	**1.0**
District Max	96.7	1.0	82.8	1.0	1.0
District Min	22.9	1.0	57.4	1.0	1.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

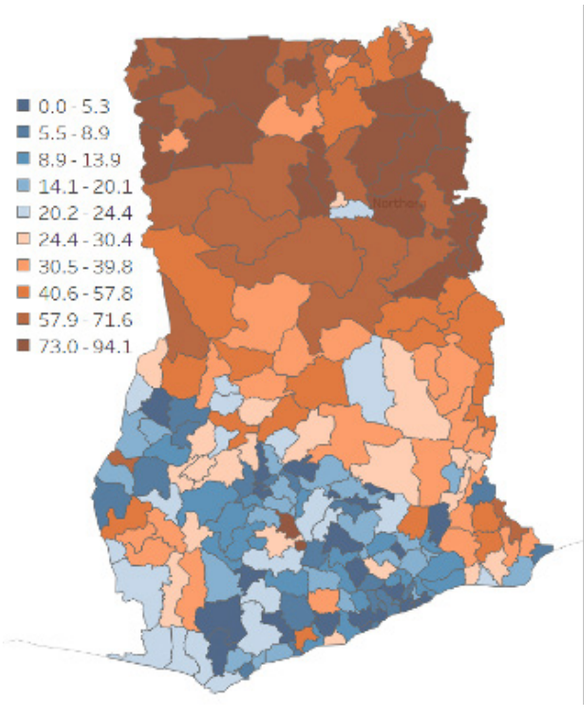
Dimension 2: People & Economy

Inclusive

Ensure equal opportunity and promote the social, economic, and political inclusion of all

An inclusive approach is vital for ensuring that the goals of developing sustainable cities are pursued without leaving any urban citizen behind (Liu et al. 2016). Inclusion is defined as the ability and opportunity of all who reside in a city to fully participate in markets, services, and spaces (including political, physical, cultural, and social), thereby enabling them to lead their lives with dignity (World Bank 2013b). To shed light on the extent of inclusion in Ghanaian cities, the informal sector and settlements are considered because, for example, citizens in urban informal settlements tend to experience more exclusions economically, socially, and spatially (UN-Habitat 2015). From an economic perspective, there is a broad international consensus about how limited integration of the informal sector in the formal labour market deepens poverty and income inequality in cities (World Bank 2015). In this context, researchers have identified the existence of an 'informal proletariat' in Accra (mostly dominated by migrant citizens) which has been kept out of formal wage employment because the employment demands stimulated by urbanization have overwhelmed the city's formal labour market (Gillespie 2017). In response to exclusion from formal wage labour, Accra's informal proletariat has mostly appropriated urban space as an avenue for productive activities, as evidenced by street hawking and the proliferation of informal economic structures such as illegally-sited kiosks (Gillespie 2017).

Figure 20 Small Area Estimates of Poverty Deciles



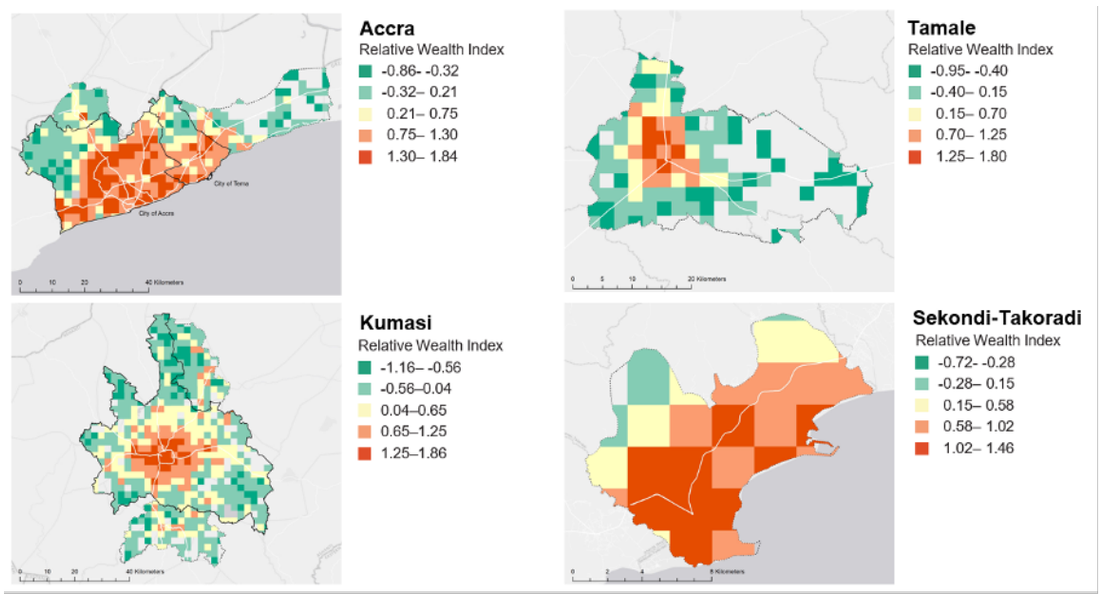
Source: GLSS7. Note: Area-level small area estimates of poverty obtained from a Fay Herriot model

Social inclusion can be translated to encompass the processes that improve how individuals and groups participate in society (World Bank 2013b). An example from Ghana that highlights the importance of multistakeholder engagement of interest groups is a slum upgrading project in Ashaiman called the Amui Dzor Housing Project (Danso-Wiredu and Midheme 2017). This involved collaboration among key stakeholders such as the UN-Habitat's Slum Upgrading Facility, the Ghana Federation of the Urban Poor (GHAFUP), traditional authorities, Ashaiman Municipal Assembly, etc. It culminated in the mobilization of community members into savings groups for the construction of a cooperative housing block (Gillespie 2017; Danso-Wiredu and Midheme 2017). Aside from promoting social inclusion, it has also been argued that the involvement of community members helped to utilize local knowledge and generate skills required for the maintenance of the project (SDI 2013).

Urbanization has been an important factor in Ghana's successful efforts to reduce poverty. Rapid economic growth has resulted in a reduction in poverty in both rural and urban areas, with the total poverty incidence dropping to 23.4 percent in 2016 and below 8 percent in urban areas (GSS 2018). Urban areas have witnessed poverty reduction because of job creation and economic growth. Rural areas, though not experiencing as great a reduction in poverty, have benefitted from out-migration of surplus labour, remittances from urban areas, and higher food prices. Larger urban areas have an advantage over small towns and rural areas in providing increased access to secondary and tertiary educational institutions, as higher-quality teaching and supporting services are easier to provide in large cities relative to less densely populated areas. Over the period of 2010 to 2021, Ghana's urban centres continued to improve their human capital, with the share of the population completing secondary and tertiary education more than doubling (GSS 2021b). Along with poverty reduction and increases in human capital levels, quality of life has improved due to greater access to urban services. Access to electricity has improved in both urban and rural areas, with the proportion of households using electricity for lighting increasing from 65.1 percent in 2010 to 86.3 percent in 2021. In urban areas, the coverage is nearly universal, reaching 95.2 percent (GSS 2022a). Similarly, Ghana's urban areas have significantly better access to improved drinking water, toilet facilities compared to rural areas. However, both urban and rural areas face challenges in wastewater and solid waste disposal. High poverty rates persist in northern districts, with a few exceptions in urbanized areas.

At the city level, there are pockets of wealth and poverty. The Relative Wealth Index (Chi et al. 2022) is an index estimated by a machine learning model for 135 low- and middleincome countries to provide projections of wealth and poverty at fine-grained 2.4 km resolution tiles. Although the resolution of the index is not detailed enough for neighbourhood scale analysis, there is a clear tendency toward lower income zones in peri-urban areas (figure 21).

Figure 21 Relative Wealth Index in Select Cities



Source: Relative Wealth Index (Chi et al., 2022)

The Ghana Sustainable Cities Indicators suggest that the northern cities of Wa and Tamale may have a relatively lower level of inclusivity than the other large cities in Ghana. Most of the 15 largest cities perform higher than average across the indicators of female labour force participation, percent of young people who are neither employed or in school, and the population dependency ratio as well as measure of social inclusion measured by the DPAT (table 8). However, Wa and Tamale have lower than average female labour force participation and migrant population.

Table 8 Access and Inclusion Indicators

City	Female labor force participation rate (%)	Deepening gender main-streaming (DPAT 4.5)	Young people (15-24) neither in employ-ment nor in education and training (NEET)	Population depend-ency ratio (%)	% residents born outside locality	Social protection services available in the district (DPAT 4.1)	Availability of shelters (transitional housing) in the district (DPAT 4.2)	Service to people living with disabilities (DPAT 4.4)
Accra	59.6	4.0	27.4	34.0	40.8	3.0	1.0	2.9
Agona Swedru	57.9	4.0	30.5	39.9	19.6	3.0	1.0	3.0
Bolgatanga	48.7	2.5	29.7	40.0	16.0	3.0	1.0	3.0
Cape Coast	56.6	4.0	24.4	39.4	26.3	3.0	0.8	3.0
Denu	53.7	4.0	27.7	41.0	15.9	3.0	1.0	3.0
Ho	52.7	4.0	25.5	41.1	19.9	3.0	1.0	3.0
Koforidua	55.3	4.0	22.6	37.4	28.8	3.0	1.0	2.9
Kumasi	56.2	3.9	27.2	37.9	35.2	3.0	1.0	2.9
Obuasi	60.0	4.0	33.6	37.5	28.4	3.0	1.0	3.0
Sekondi-Takoradi	56.9	4.0	28.3	37.6	26.9	3.0	1.0	3.0
Sunyani	55.2	4.0	25.1	36.8	29.5	3.0	1.0	3.0
Tamale	42.5	4.0	36.5	46.2	14.5	3.0	1.0	2.8
Tarkwa	54.9	4.0	33.7	37.0	28.2	3.0	1.0	3.0
Techiman	57.1	4.0	32.4	39.2	26.0	3.0	1.0	2.5
Wa	42.0	4.0	28.3	41.5	19.8	3.0	1.0	3.0
GHANA								
District Average	**53.6**	**3.9**	**30.7**	**40.6**	**24.4**	**3.0**	**1.0**	**2.9**
District Max	68.7	4.0	55.8	52.4	56.1	3.0	1.0	3.0
District Min	26.1	1.0	10.9	23.9	2.6	2.0	0.0	1.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Affordable and Safe Shelter

Ensure safe and affordable housing for all residents

Housing plays an important role in the development of sustainable cities by shaping urban infrastructure networks which, in turn, influence overall wellbeing as well as access to services and economic opportunities (Pasgaard and Dawson 2019). Conversely, inadequate housing is known to contribute to poverty, poor health, and disaster vulnerability

(Zerbo et al. 2020). With an estimated national housing deficit exceeding 2 million units, rapid urbanization and population growth have aggravated the housing situation in Ghana and resulted in acute housing shortage, with attendant poor sanitary conditions (Daily Graphic 2021; Ansah 2014). Although disaggregated data on the housing stock for respective Ghanaian cities are limited, Accra is estimated to have a deficit of about 300,000 housing units (Gillespie 2021). The wider response to the housing shortage in Ghanaian cities has encouraged the marketization of housing delivery and led to the proliferation of Western-style gated communities targeted at wealthy urban residents, thereby excluding most urban residents from formal housing markets (Gillespie 2017; Obeng-Odoom 2013). As a result, the existence of numerous unoccupied luxury housing properties in places like Accra has been reported, while about 60 percent of the city's residents live in informally built houses (Gillespie 2021; Grant 2009). Consequently, although successive governments in Ghana have sought to address the urban housing situation through avenues including large-scale affordable housing projects, such projects tend to be unaffordable for low-income groups because they are designed for subsidized home ownership instead of social rents (Gillespie 2021). Critically, the disparities in access to urban housing in Ghana have resulted in socio-spatial segregation in cities such as Kumasi and Accra, and this has overarching implications for urban sustainability due to the potential to undermine social harmony and integration (Owusu and Agyei-Mensah 2011; Agyei-Mensah and Owusu 2010).

Ghana's housing deficit is wide and growing as a result of rapid urbanization and constraints within the housing sector value chain. Urban housing in Ghana is informal, overcrowded, and predominantly rental. About 90 percent of housing in urban Ghana is built without local authority control; almost 60 percent of households occupy single rooms, and only 25 percent of households own their housing (UN-Habitat 2011). Rapid urbanization and urban growth have triggered a situation whereby the supply of housing lags effective demand, especially in large metropolitan areas. The current deficit of about 2 million units is anticipated to more than double by 2030. Evidence confirms that formal housing is unaffordable to those in the bottom 80 percent of the income distribution, and access to affordable land has declined dramatically in larger urban areas in the last 20 years.

The National Housing Policy (2015) notes that the constraints in the nation's ability and capacity to resolve the housing crisis include land cost and accessibility, the high cost of building materials, outdated building codes and standards, lack of effective regulatory and monitoring mechanisms, and lack of access to credit. It is estimated that land and infrastructure each account for 15-20 percent of the sale price of a home, while construction accounts for 40-50 percent, and overhead, finance, and profit account for the remaining 10-20 percent. Apart from state-owned land (which accounts for about 20 percent of total),[20] land disputes are common due to the unreliability of land titles and cumbersome transfer procedures. Construction materials are largely imported, and their prices have been rising over the years with the depreciation of the cedi. As a result of all these constraints, the construction sector delivers only around 4,600 formal units per annum, mostly for the upper segment of the market, with many Ghanaians living in informal, unplanned, and overcrowded slums with limited or no access to basic services.

20 The remaining 80 percent of land is held under customary arrangements.

Effective housing demand in Ghana is held back by low income levels, informality, and lack of a well-functioning housing finance system. At 47,371 Ghanian cedis per year (around US$6,800) in 2021, average income is low relative to the market prices of formal houses. The average income number also masks a very skewed income distribution. If the top 5 per cent of households by income are excluded, the average income for the bottom 95 per cent is less than half at 20,624 cedis (US$2,950). Additionally, 90 percent of employed population is in the informal sector (GSS 2016), more likely earning irregular incomes that are often difficult to document. Wage income accounts for just 13.7 percent of all household income in Ghana, the remainder being mainly informal income, agricultural income, and rental income. This makes it difficult for this segment of the population to access formal housing finance given that financial institutions' underwriting models rely on stable and easily verifiable sources of income. The housing finance system is constrained by banks' limited access to long-term liquidity in local currency,[21] as well as a cumbersome property registration and foreclosure regime**.** Under current market conditions, formal housing is only affordable to the top decile of the income distribution.

Macroeconomic volatility is another constraint to the development of the housing market in Ghana, resulting in a shallow mortgage market. The housing sector requires a stable macro environment with low inflation and interest rates to provide the conditions for the financial sector to make long-term funding available and for housing finance products to remain affordable. Banks' residential mortgage lending stood at 2.4 billion cedis in 2021 (US$ 181.3 million), or 5.4 percent of banks total credit. This is only 0.78 percent of GDP, significantly below peers such as Kenya (2.18 percent), Senegal (1.45 percent), and South Africa (23.3 percent).

Women own fewer valuable assets than men, including homes and land. The 2015 Ghana Demographic and Health Survey found that only 4 percent of women aged 15-49 owned a home alone, and 11 percent owned jointly. Conversely, 21 percent of men in the same age group owned a house alone, and 5 percent jointly. Overall, home ownership among women was 9 percent compared to 27 percent among men. Women's ownership of a house increases with age but decreases with education. Ownership of land was 12 percent for women and 36 for men (GSS et al. 2015). These gaps reflect cultural norms and economic exclusions faced by women.[22] For instance, women earn fewer wages compared to men, fewer women own financial accounts, and a higher percentage of women (91 percent) work in the informal sector than men (81 percent) (Haug 2014).

The Ghana Sustainable Cities Indicators highlight several housing sector challenges. The share of households who own their home is lower than average for the majority of the 15 largest

21 Funding of Ghanaian banks is dominated by deposits and borrowings with maturities of less than one year—85 percent and 64 percent, respectively in 2019. While some of these deposits are sticky, banks refrain from using them to finance long-term mortgages to avoid large maturity mismatches, which would increase risks.

22 Following the passage of the Land Act 2020 (Act 1036), enhanced protections for women have been instituted. Spouses' names must be included when registering land acquired for valuable consideration during marriage unless a contrary intention is expressed, and there is a presumption that any land acquired during marriage by one spouse is co-owned by both spouses (even if only one spouse's name is registered). The Act also requires spousal consent for transactions involving land acquired for valuable consideration during a marriage. Per section 47 of the Act, in the absence of a written agreement to the contrary, a spouse shall not, in respect of land, right or interest in land acquired for valuable consideration during marriage: (i) sell, exchange, transfer, mortgage, or lease the land, right or interest in the land; (ii) enter into a contract for the sale, exchange, transfer, mortgage, or lease of the land, right or interest in the land; (iii) give away the land, right or interest in the land inter vivo; or (iv) enter into any other transaction in relation to the land, right, or interest in the land without the written consent of the other spouse, which consent shall not be unreasonably withheld.

cities, indicating a tendency for city dwellers to opt for rental housing. This does not necessarily indicate a lack of sustainability, but paired with high levels of vacant structures and housing costs, it suggests that the housing markets in Accra, Koforidua, Kumasi, and Obuasi are facing structural challenges. Indicators related to housing quality (i.e., overcrowding and construction materials), suggest that Bogatanga and Tamale have a qualitative housing deficit with which to contend (table 9).

Table 9 Affordable and Safe Shelter Indicators

City	% of home ownership as total number of dwellings	% residential structures vacant	% households with more than one person per room	% households in poor housing conditions (noncement walls)	% households in poor housing conditions (mud floors)	Housing costs as a % of household expenditures
Accra	36.5	13.9	54.1	17.1	6.1	17.0
Agona Swedru	41.7	11.7	57.4	32.4	29.6	13.6
Bolgatanga	71.4	11.6	66.2	45.8	44.3	13.5
Cape Coast	43.5	12.2	55.3	26.5	23.0	13.6
Denu	52.1	17.5	52.2	17.5	13.5	14.9
Ho	60.9	16.0	54.4	43.4	37.9	14.9
Koforidua	39.2	14.2	51.3	25.1	22.6	12.3
Kumasi	36.2	11.7	57.9	16.9	13.4	16.9
Obuasi	41.2	11.3	55.4	31.7	26.7	16.9
Sekondi-Takoradi	42.1	11.3	57.7	26.1	21.6	16.5
Sunyani	42.6	13.5	57.6	25.8	21.7	12.3
Tamale	77.2	11.2	67.0	58.2	52.7	14.8
Tarkwa	43.0	12.4	58.1	41.3	36.4	16.5
Techiman	45.1	10.9	63.7	25.5	21.9	12.3
Wa	70.0	14.3	62.5	42.5	40.8	20.2
GHANA						
District Average	**54.9**	**12.6**	**58.9**	**45.3**	**40.0**	**15.1**
District Max	97.9	26.6	82.1	98.6	94.4	20.2
District Min	20.1	2.6	41.7	3.5	0.1	12.3

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Livable

Promote healthy, safe, and clean cities conducive to well-being

Urbanization has the potential to improve Ghanaians' quality of life and provide a pathway out of poverty. However, urbanization can also be correlated with crime, congestion, and pollution. Sustainable cities in Ghana must therefore take action to ensure the wellbeing of residents by being healthy, safe, and clean.

Rapid urbanization presents Ghana with a challenge in air quality management. Data from 2006-2015 show monitor readings with concentrations well above the guidelines set by both Ghana and the WHO. Roadside sites tend to show higher concentrations than commercial and industrial sites, which in turn show higher concentrations than residential sites. This supports findings that transportation and commercial/industrial sources are significant contributors to Accra's ambient air pollution. However, elevated annual average concentrations in some residential neighbourhoods suggest that household combustion of solid biofuels remains a significant contributor.

Air pollution has an estimated annual cost equivalent to 4.2 percent of 2017 GDP, or about US$2.5 billion, and continued urbanization is expected to push this even higher (World Bank 2020). About 78 percent of manmade airborne toxins and pollutants originate from cities, and the interlinkages between urbanization and air quality are well known (Alli et al. 2021; Bereitschaft and Debbage 2013). Air pollutants in major Ghanaian cities mainly come from vehicular traffic emissions, industrial emissions, road dust, as well as domestic biomass fuels (Alli et al. 2021; Mudu 2021). In absence of targeted countermeasures to decouple growth and fossil-based resource use, ongoing and future urbanization in Ghana will intensify economic activities and stimulate a corresponding demand for transport, energy, new vehicles, etc., further driving urban air quality degradation (Musah et al. 2020).

Solid waste disposal and sewerage are major challenges in cities and urban centres in Ghana. While progress has been made in waste collection in general, it has not translated into improved environmental conditions. This is especially the case in low-income areas in cities such as Kumasi and Accra, where communal disposal containers are constantly overflowing because of delays or the absence of institutionalized collection mechanisms. Currently, the most common method of final disposal in Ghana is to use open landfills, mostly located at the perimeters of major urban areas on open lots, wetlands, or close-to-surface water sources (Kyere et al. 2019). Besides health and environmental hazards associated with open landfills and current waste management practices, the increasing amounts of waste generated and scarcity of land call for holistic changes towards a more sustainable waste management system. As mentioned earlier, poor waste management also contributes to urban flooding by blocking drainage infrastructure and increasing debris in waterways. It is this very intersection of solid waste management and urban flooding that is being addressed in the Greater Accra Resilient and Integrated Development Project (P164330). Furthermore, waste is typically one of the drivers of GHG emissions in cities. In fact, in Accra, it is estimated that solid and liquid waste account for 44 percent of GHG emissions, followed by transportation which accounts for 30 percent (AMA 2020).

Growing income inequality and conspicuous consumption, combined with limited police and security infrastructure, have resulted in an increase in fear of crime in Ghana's cities (Owusu et al. 2016) (table 10). According to the GLSS 7, urban residents were more than five times more likely to feel unsafe walking in their neighbourhood at night (14.3 percent in urban localities versus 2.6 percent in rural). In the Greater Accra region, 17.9 percent of the people said they feel very safe when walking down the street alone in the neighbourhood compared to about four out of 10 people in the other regions. Perception of safety at home is another area the GLSS 7 measured; a lower proportion of urban households (28.2 percent) feel very safe compared to 54.5 percent of rural households. The actual incidence of crime, however, does not show such a strong urban bias. For example, the proportion of individuals who were victims of theft, robbery and burglary is slightly high among rural localities (13.5 percent) compared to the urban (11.2 percent) dwellers. Only a slightly higher proportion of households in the urban (5.2 percent) experienced intimidation, threat or assault compared to their rural counterparts (3.4 percent).

Yet, the incidence and levels of crime as well as the fear of crime are unequally distributed among individual households and neighbourhoods of various levels of income. The association between crime and poverty in urban Ghana was explored using three different socioeconomic neighbourhoods in Ghana's major cities (Accra, Kumasi, Sekondi-Takoradi, and Tamale) as a case study (Owusu et al. 2016). The intracity analysis found low- and high-income neighbourhoods to be more secure and safe in terms of crime than middle-income neighbourhoods. The Ghanaian case is illustrative of a more complex relationship between poverty, inequality, and crime. It suggests that crime must be examined on a local level to understand the context and the specific dynamics of a given neighbourhood. Poverty and inequality are factors that can increase crime, but this relationship is not always linear. Although low-income neighbourhoods in Ghana have high poverty characteristics, their strong social cohesion and community bonding may have a positive impact on crime. This, in turn, has resulted in these neighbourhoods being perceived as relatively safe when compared to middle-income neighbourhoods. Such social cohesion and community bonding create a sense of belonging and security in the neighbourhood. However, middle- and high-income households' fear of crime and response to crime through target hardening (i.e., security walls, barred windows, and guards), and low-class households' strong social cohesion and community bonding, are unlikely to produce safety and security for all in urban Ghana. Better urban planning and recognition by local authorities and other planning units that built-up urban environments can facilitate crime are critical to producing a more responsive, inclusive and safe urban development agenda (Owusu et al. 2016).

Proximity to basic health centres in urban areas is high, but coverage by the national health insurance scheme remains low. In most places in Ghana, geographic accessibility to health facilities (distance and time) is a major challenge (Agbenyo et al. 2017; Ashiagbor et al. 2020). For instance, about 21 percent of the population lack access to ambulance service during health emergencies within 60 minutes of travel time, and about 30 percent of Ghanaians cannot access essential surgery services within two hours of referral (Tansley et al. 2016; Stewart et al. 2016). In cities, however, the recent census indicates that 91.9 of urban dwellers have access to health facilities within a 5 kilometer distance as recommended by the World Health Organization (WHO) (GSS 2021c). Despite this, only 54.4 percent of Ghanaians are covered by the National Health Insurance Scheme (NHIS) (MoH 2022). In cities where the informal sector is predominant,

only 36.4 percent of informal workers are covered by NHIS (MoH). The low patronage, especially for the urban vulnerable and poor within the informal sector, compromises sustainable health financing in Ghana (Domapielle 2021).

Ghana is experiencing an increasing trend of unhealthy diet and food insecurity. The SDG indicator 2.1.2 seeks to understand the proportion of population with moderate to severe food insecurity using the food insecurity experience scale. In 2022, 33.5 percent of the urban population in Ghana was food insecure; households with many dependent children and elderly are more food insecure. Food insecurity is also more prevalent in families where the head of household does not have formal education (GSS 2022c). Studies have also shown that diet patterns have changed significantly with a shift towards ultra-processed food, with implications for unhealthy diet and non-communicable diseases (Ahmed et al. 2022; Laar et al. 2020).

The Ghana Sustainable Cities Indicators show that several of the largest cities are underperforming in safety and cleanliness (table 10). The cities of Bolgatanga, Denu, Ho, Tamale, and Wa have relatively high levels of perceived unsafety among residents. However, only Wa has an actual higher-than-average level of violent crime as indicated by the percent of deaths due to accident, violence, homicide, and suicide. The same subset of five cities also performs lower than average in the management of solid waste as indicated by the high percentage of household who burn or practice open dumping of their waste and/or the higher-than-average portion of households without garbage receptacles.



Photo: Larabanga, Ghana (iStock-1413220649)

Table 10 Livability Indicators

City	% deaths due to accident, violence, homicide and suicide	% households burning or open dumping waste	Police station within 5km	Health center within 5km	% of population with national health insurance (NHIS) coverage	% feeling unsafe or very unsafe when walking at night in the neighborhood)
Accra	9.3	33.1	93.6	96.8	58.3	7.4
Agona Swedru	10.0	72.6	78.6	97.8	54.1	8.4
Bolgatanga	10.2	73.6	87.0	75.9	92.0	13.4
Cape Coast	11.2	71.4	80.2	95.7	62.9	8.4
Denu	10.4	75.1	85.6	66.7	61.9	12.0
Ho	12.1	79.2	48.2	78.1	70.3	12.0
Koforidua	10.2	56.7	80.0	99.8	76.6	8.4
Kumasi	11.7	51.8	86.5	99.0	74.2	2.5
Obuasi	7.6	65.9	69.4	99.6	74.3	2.5
Sekondi-Takoradi	13.6	61.5	77.2	100.0	65.3	3.4
Sunyani	15.1	64.4	48.1	100.0	85.9	8.5
Tamale	10.7	73.9	41.2	96.4	68.3	14.4
Tarkwa	17.6	68.0	44.5	100.0	59.9	3.4
Techiman	12.3	71.8	65.3	98.6	86.6	8.5
Wa	12.7	57.7	35.3	81.0	87.7	14.3
GHANA						
District Average	**11.3**	**67.2**	**55.2**	**93.3**	**68.6**	**8.4**
District Max	33.8	93.5	100.0	100.0	94.6	14.4
District Min	0.0	2.0	0.0	55.8	25.4	2.5

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Job Friendly

Facilitate firms and industries to grow jobs, raise productivity, and increase the incomes of citizens

Sustainable cities are hubs of innovation, engines of economic expansion, and places where resources are used wisely to create wealth and jobs. However, in Ghanaian cities, the anticipated gains in productivity have not fully materialized. The process of urbanization in Ghana has occurred without significant structural transformation, leading to the emergence of consumption cities (World Bank 2021). The transition from agriculture to informal nonfarm activities has been a driver of structural change, but these activities remain characterized by low productivity. Consequently, Ghana's cities have become specialized in low-productivity services, facing limitations in agglomeration effects and grappling with major challenges related to uncoordinated informal growth (World Bank 2021). According to the Ghana Statistical Service, approximately 90 percent of the employed population is engaged in the informal sector (GSS 2016). The lack of vibrant medium- or high-productivity sectors coupled with the inefficiencies stemming from uncoordinated spatial expansion both within and across cities, remains a challenge to Ghana's productivity growth.

One of the major hindrances to productivity in urban Ghana is congestion. For example, in Kumasi, congestion negatively impacts both formal and informal transport sectors, resulting in an average income loss of 21.9 percent and a loss of around 9 percent of productive hours per day (Arroyo-Arroyo 2021). Moreover, the lack of efficient and affordable mass transportation options adds to the transportation costs of goods, preventing cities from reaping the advantages of agglomeration, specialization, and economies of scale. Surprisingly, even in the capital city of Accra, the road density remains remarkably low, contributing to environmental issues, congestion, and decreased efficiency (Arroyo-Arroyo 2021). Unfortunately, the current development paradigm that heavily relies on private vehicles is likely to continue in big cities like Accra and Kumasi. The escalating demand for urban space dedicated to private vehicles and the subsequent exacerbation of congestion would outweigh any potential productivity benefits that cities might offer.

Ghana's urbanization process is considered to produce extremely unequal urban geographies. This is because it has resulted in the overconcentration of economic opportunities and access to services in large cities such as Kumasi and Accra at the expense of secondary cities and rural areas (Gillespie 2017). Critically, there is a broad consensus within academic literature about how secondary cities can promote equitable and inclusive urban growth, thereby reducing wider poverty. Although poverty may be lower in large cities, the extent to which the agglomeration of opportunities in highly urbanized cities enhances poverty reduction remains questionable (Christiaensen and Kanbur 2017). This diagnosis is borne partly from the idea that the overexpansion of cities could undermine the efficiency of overall economic growth and, by extension, the progress of poverty reduction (Christiaensen and Kanbur 2017). As a result, poverty reduction could be enhanced if public investment is shifted from large cities to secondary cities. In the Ghanaian context, evidence from Ghana's National Urban Policy (NUP) seems to support this position, as the policy advocates for some secondary urban areas in the country to be designated as 'growth centres' of economic activities and infrastructural development (Anarfi et al. 2020; MLGDRD 2013). To realize the potential of designated secondary urban areas as growth centres, their investment portfolios would be enhanced, and resources would be mobilized for their investment and infrastructural needs (Anarfi et al. 2020; MLGDRD 2023). Ultimately, the

expectation is that the designation of secondary urban areas as growth centres would promote equitable and inclusive urban growth by shifting the concentration of economic opportunities away from primate cities such as Kumasi and Accra to secondary cities and, as a result, reduce poverty in such areas.

Greater Accra Metro Area is the main driver of national GDP, contributing over 43 percent of non-oil domestic product. GAMA's economic primacy is evident in its significant contribution to the country's economy. In 2021, despite accounting for only 16 percent of the total population, GAMA contributed over 43 percent to the national GDP. This contribution is 10 times greater than that of Kumasi, 20 times greater than Sekondi-Takoradi, and 38 times greater than Tamale. The manufacturing industry and wholesale and retail services play key roles in GAMA's economic success, contributing 23 percent and 22.5 percent to the GDP, respectively. Additionally, there has been a notable increase in the contribution of information and technology services, which rose from 6.4 percent in 2018 to 11.1 percent in 2021. This growth signifies the importance of the sector in driving GAMA's economic development and diversification (table 11).

Table 11 City-Level Gross Domestic Product Estimates (in Current Prices)

City	GDP estimates, non-oil (US$ million)				Population	GDP/capita
	2018	2019	2020	2021	2021	2021
Accra City Cluster[23]	21,789 (34.3%)	23,104 (36.0%)	24,050 (35.6%)	27,659 (36.7%)	3,993,369 (12.95%)	6,926
Greater Accra Metro Area[24]	25,411 (40.0%)	26,480 (41.2%)	27,618 (40.9%)	32,525 (43.1%)	4,992,911 (16.19%)	6,514
Kumasi City Cluster[25]	2,514 (4.0%)	2,585 (4.0%)	2,704 (4.0%)	3,123 (4.1%)	1,379,335 (4.47%)	2,264
Tamale City Cluster[26]	671 (1.1%)	678 (1.1%)	710 (1.1%)	804 (1.1%)	716,455 (2.32%)	1,122
Sekondi-Takoradi City Cluster[27]	1,229 (1.9%)	1,222 (1.9%)	1,144 (1.7%)	1,375 (1.8%)	419,357 (1.36%)	3,279
National	63,598	64,249	67,565	75,439	30,832,000	2,447

Source: Owusu and Duncan 2023.

23 Defined as the following MMDAs: Ga South, Weija Gbawe Municipal, Ga Central Municipal, Ablekuma North Municipal, Ablekuma West Municipal, Ablekuma Central Municipal, Accra Metropolitan, Korle Klottey, Ayawaso Central Municipal, Ayawaso East, Ayawaso North Municipal, La Dadekotopon Municipal, Ledzokuku, Krowor Municipal, Adentan Municipal, Ayawaso West Municipal, Okaikoi North, Ga North, Ga West, Ga East and La Nkwantanang -Madina Municipal

24 Defined as all the 21 MMDAs in the Accra City Cluster plus Tema Metropolitan, Tema West Municipal, Kpone Katamanso Municipal, and Ashaiman Municipal.

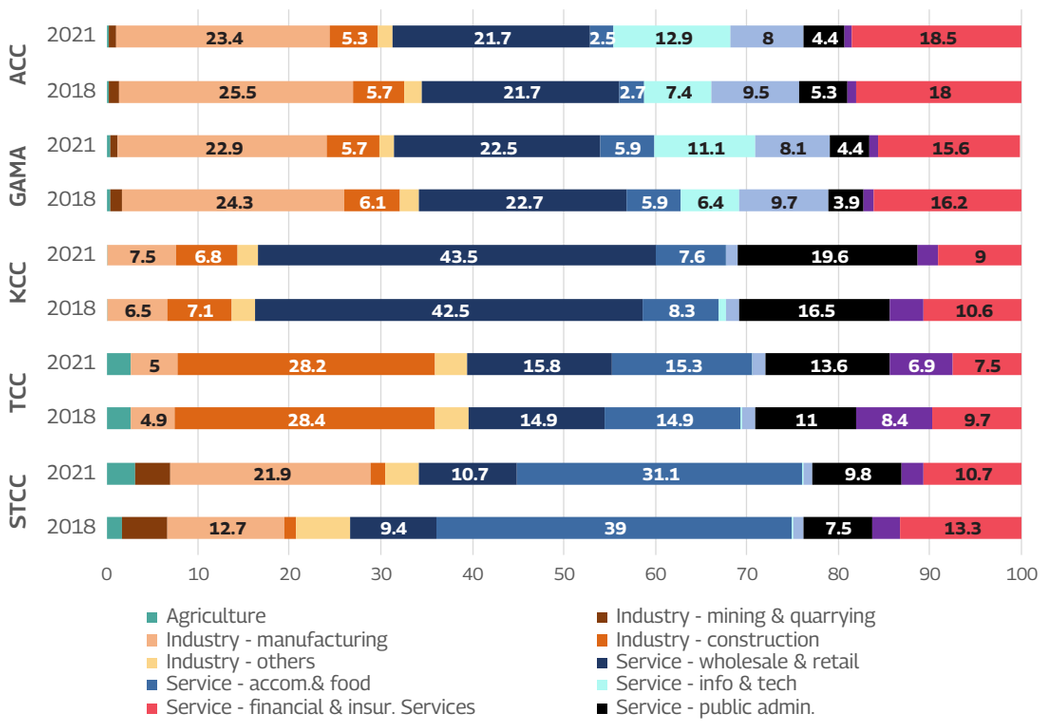
25 Defined as the following MMDAs: Kumasi Metropolitan Assembly, Asokwa Municipal, Kwadaso Municipal, Oforikrom Municipal, Old Tafo Municipal, Suame Municipal and Asokore Mampong Municipal.

26 Defined as Tamale Metropolitan Assembly and Sagnerigu Municipal Assembly.

27 Defined as Secondi-Takoradi Metropolitan Assembly (STMA) and Effia-Kwesimintsim Municipal.

Distinct economic drivers can be observed in the three other largest metropolitan clusters (figure 22). In the Kumasi metropolitan cluster, wholesale and retail services contribute 43.5 percent to the GDP. This sector serves as a major driver of economic growth in the area. In the Tamale metropolitan cluster, the construction industry holds a prominent position, contributing 28 percent to the GDP. Additionally, wholesale and retail services (16 percent) and accommodation and food services (15 percent) make substantial contributions. It is noteworthy that education services contribute more to the GDP in Tamale compared to other metropolitan clusters. However, there exists a disparity between Tamale's population and its share of the national GDP, with 2.3 percent of the total population contributing to a mere 1.07 percent of the national GDP. The Sekondi-Takoradi metropolitan cluster is characterized by the strong presence of accommodation and food services, accounting for 31 percent of the GDP. The manufacturing industry is another key contributor, experiencing notable growth from 13 percent in 2018 to 22 percent in 2021.

Figure 22 Comparison of GDP Share of Four City Clusters

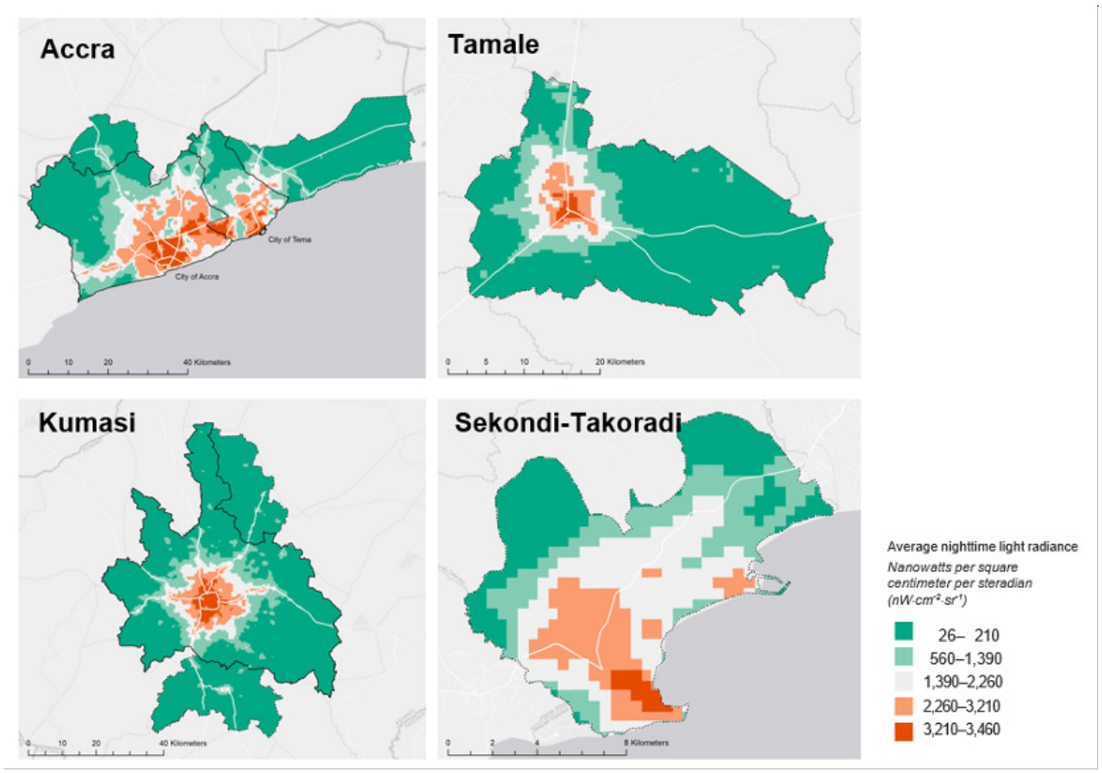


Source: Owusu and Duncan 2023.

Within cities, there is heterogeneity in the location of economic hotspots based on the intensity of nighttime lights (figure 23). In Greater Accra, there are four main nodes of economic activity, two in the City of Accra and two in the City of Tema. The largest sits between the N1 highway and the coast in the City of Accra. In Kumasi, economic activity appears highest in the centre of Kumasi, where multiple highways convene. This is also where population

density is greatest. In Tamale, the main locus of economic activity appears in the centre near the intersection of the major roads, and higher economic activity continues along these major roads. In Sekondi-Takoradi, the main locus of economic activity appears near the Takoradi harbour.

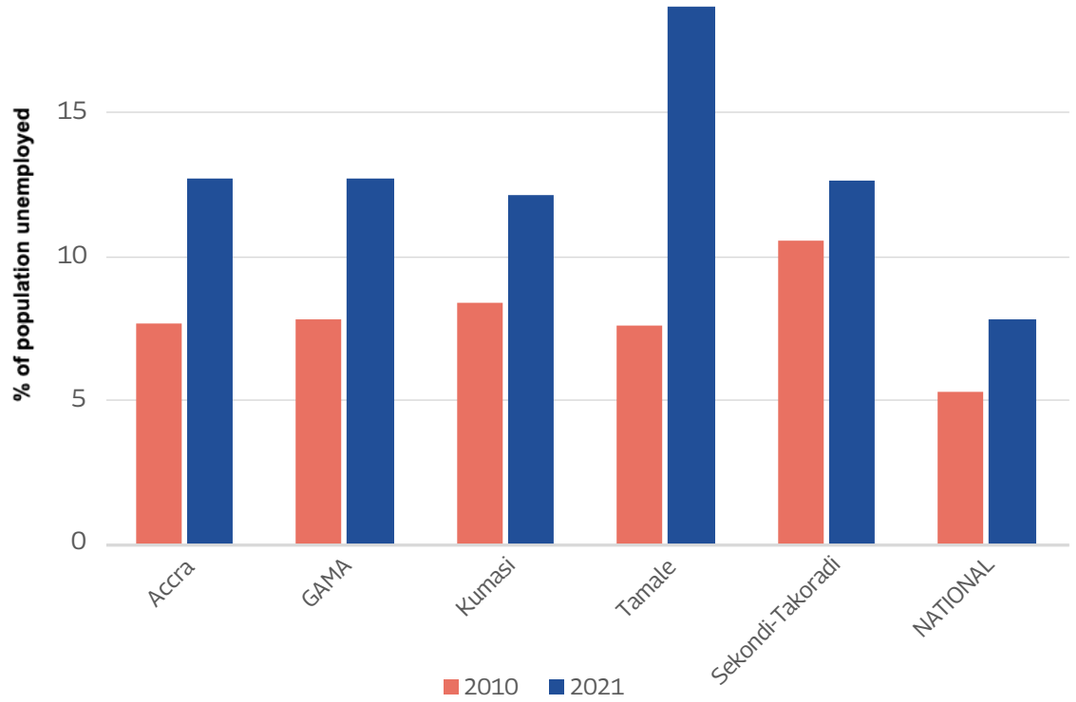
Figure 23 Intensity of Nighttime Lights as Proxy for Economic Activity in Select Cities



Map data from NOAA, "VIIRS Daily Mosaic." This map measures the total emissions of nighttime lights from the monthly average of radiance for 2014 through 2022. Nighttime light radiance is a common proxy for economic activity: where there is more artificial light, there is generally more commercial activity.

Unemployment increased in all of Ghana's major cities during the intercensal period, but the data may be distorted by the impacts of COVID-19 on the economy (figure 24). Tamale experienced the greatest increase in unemployment, well above the national average and that of the other large metropolitan areas. Together with the findings of the city level GDP analysis, which indicated a disparity between population and its share of the national GDP, it appears that Tamale is not reaping the positive economic growth generally associated with urbanization. While most of its job friendliness indicators are within the average range for the country (table 12), or much higher in the case of tertiary education, the labour participation rate is below average. The informal sector dominates the job market on all regions and across levels of urbanization (figure 25).

Figure 24 Unemployment in Ghana's Largest Metropolitan Areas, 2010 vs 2021



Source: GSS 2021 PHC

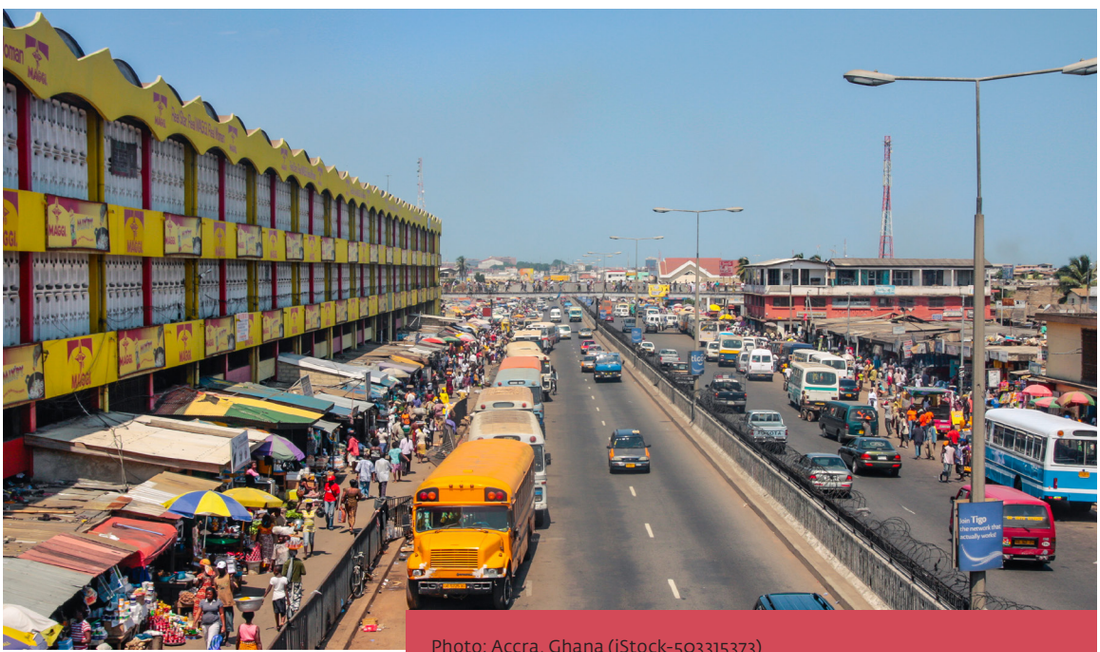
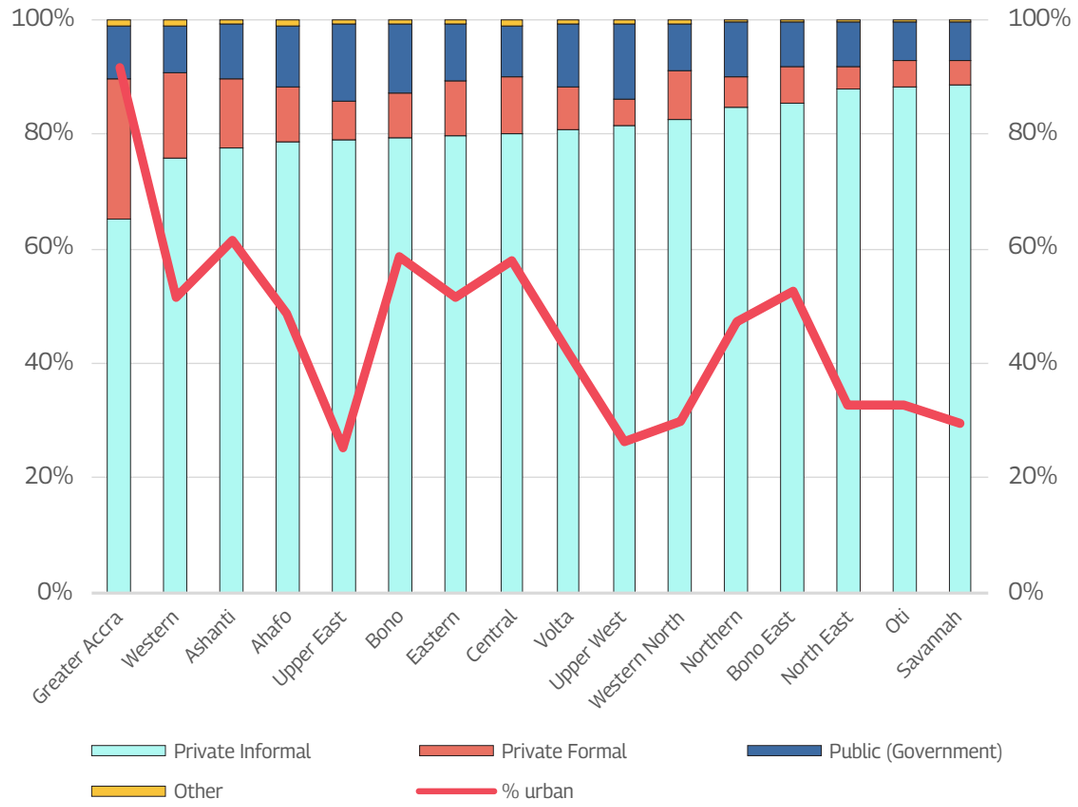


Photo: Accra, Ghana (iStock-503315373)

Figure 25 Employment by Type and Region, % Urban Population



Source: World Bank calculation; GSS 2021 PHC

The importance of economic growth is underpinned by how it affects citizens' quality of life through the provision of adequate good quality employment (Aryeetey and Baah-Boateng 2016). Demographic change, especially due to rapid urbanization, has created a corresponding demand for employment to support the increasing population in Ghana, further underscoring the need for sustainable job creation. Some studies have explored the relationship between economic growth and job creation. Despite the reported economic growth success achieved by Ghana in recent decades, the quality of jobs created raises concerns (Aryeetey and Baah-Boateng 2016). The employment growth rate lags economic growth, as evidenced by an estimated employment elasticity output of 0.47. In other words, for every 1 percent of annual economic growth, there is a corresponding yield of 0.47 percent total employment growth. This situation is aggravated by a vulnerable employment rate of over 68 percent, as reported in an integrated business establishment survey (IBES) conducted by the Ghana Statistical Service (GSS 2015). The implication of vulnerable employment is that formal arrangements, as well as benefits such as social security are limited, if they even exist (Aryeetey and Baah-Boateng 2016).

Furthermore, the 2014 IBES documented job creation according to dimensions such as regional distribution, skill levels, formal and informal establishments (GSS 2015). Crucially absent were an urban dimension and a focus on aspects such as job creation across income groups. However, considering the rapid pace of contemporary and future urbanization, exploring job creation in an urban context and across income groups would be potentially beneficial for urban development planning purposes.

The role of the private sector (including small- and medium-sized enterprises (SMEs), and the informal sector) towards achieving sustainable local economic development in Ghana cannot be understated. SMEs contributed to about 49 percent of Ghana's GDP in 2012 (PWC 2013). Furthermore, at least 70 percent of Ghana's population is estimated to derive their sustenance from the informal economy (Gillespie 2017). In terms of local urban economic growth, the literature has recognized the intentions of Ghana's government to stimulate urban growth and economic development by supporting the private sector, as captured within Ghana's current National Urban Policy (NUP) (Anarfi et al. 2020; MLGDRD 2013). For example, Ghana's NUP provides an impetus for the involvement of the private sector in economic development based on key policy prescriptions with regards to the informal sector (Anarfi et al. 2020). These policy prescriptions include recognizing and supporting informal enterprises by reorienting official attitudes, providing operational capacity and funding support for informal enterprises, and making urban planning provision for the activities of the informal economy (Anarfi et al. 2020; MLGDRD, 2013).

In the context of urban development and service delivery, the important involvement of the private sector in Ghanaian cities is demonstrated by the shift to a more entrepreneurial form of urban governance. This shift indicates limited direct government participation in the delivery of municipal services and encourages pursuing pro-growth strategies in partnership with private actors (Gillespie 2021; Lauermann 2017; Gillespie 2017). Ghana's government is seeking to finance urban development and services efficiently and sustainably through avenues such as PPPs (Anarfi et al. 2020). Overall, strategic efforts must be targeted at supporting the private sector to make Ghanaian cities economically competitive in a sustainable manner.

The Ghana Sustainable Cities Indicators show that most of the largest 15 cities are underperforming in tertiary education and the promotion of new businesses and jobs. Most of the largest cities in Ghana have lower than average levels of tertiary education among the working age population. However, this indicator may be somewhat skewed by the relatively higher labour force participation rates in those cities. Most of the cities failed to achieve the full score for the DPAT 6.2 indicator related to the promotion of new businesses and jobs which involves the organization of at least two business forums per year and evidence of follow-up actions (table 12).

Table 12 Job Friendliness Indicators

City	Labor force participation rate (%)	Employment rate (%)	Tertiary education rate of working age population (%)	Commercial bank within 5km	Availability of district LED activities in the AAP (DPAT 6.1)	Promotion of new business and jobs (DPAT 6.2)	Engagement with business community (DPAT 6.4)
Accra	64.9	87.0	28.5	93.7	2.0	0.5	2.0
Agona Swedru	62.5	86.5	26.1	58.6	2.0	0.7	2.0
Bolgatanga	52.5	81.4	47.8	49.4	2.0	2.0	2.0
Cape Coast	58.9	87.7	31.6	78.4	2.0	0.0	2.0
Denu	58.4	83.0	30.1	51.3	2.0	0.0	2.0
Ho	58.3	89.7	21.5	30.9	2.0	0.0	2.0
Koforidua	59.2	88.1	24.8	79.9	2.0	1.1	2.0
Kumasi	61.0	86.7	25.9	82.5	2.0	1.3	1.9
Obuasi	62.8	83.8	26.0	82.9	2.0	0.5	2.0
Sekondi-Takoradi	61.3	86.8	31.5	82.0	2.0	0.8	2.0
Sunyani	58.3	85.0	34.6	44.0	2.0	0.0	2.0
Tamale	50.2	82.1	70.5	54.7	2.0	2.0	2.0
Tarkwa	62.4	83.4	29.1	51.1	2.0	0.0	2.0
Techiman	64.1	88.0	34.6	58.1	2.0	2.0	2.0
Wa	46.5	85.5	56.1	40.6	2.0	0.0	2.0
GHANA							
District Average	**58.9**	**86.5**	**39.6**	**51.8**	**2.0**	**0.9**	**2.0**
District Max	73.4	96.4	88.1	100.0	2.0	2.0	2.0
District Min	29.1	57.1	14.8	0.0	1.0	0.0	0.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Dimension 3: Environment

Cities in Ghana face environmental challenges that include contamination of air and water, insufficient water and sanitation, lack of disposal of waste, and industrial emissions (Amponsah, 2021). As well, in the urban context, dialogue on environmental issues in Ghana largely focuses on solid waste management, disaster resilience (i.e., urban flood management), and deteriorating air quality due to motorization. Issues such as biodiversity and green and recreational spaces are largely absent. Although Ghana has the potential and ambition

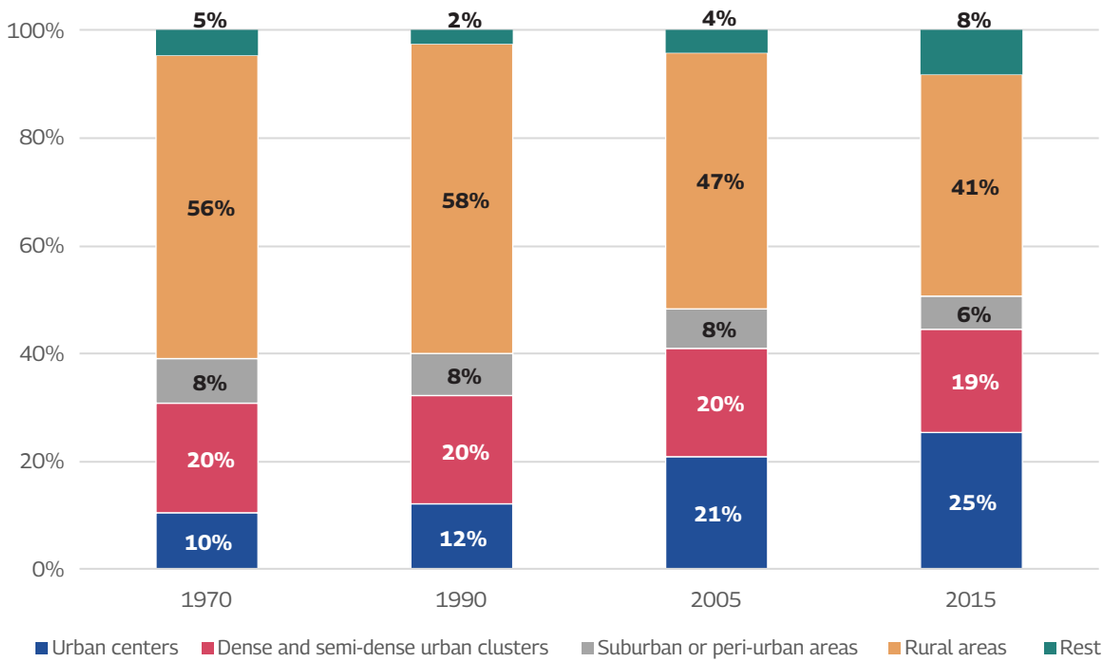
to be a front runner on Circular Economy in Africa[28] and is taking the first steps towards moving to circularity (mostly in plastics and e-waste), a variety of issues prevent the country from truly transforming its economic model.[29]

Carbon Emissions

Promote compact urban form, GHG emissions reduction, nonmotorized transport, and energy conservation

Ghana's cities are increasingly impacted by climate change and contributing to it. Cities contribute a growing proportion of national GHG emissions (51 percent of CO_2; 66 percent of waste emissions), and low-density urban form is locking in a high carbon growth model that may persist for centuries (World Bank 2022). As rapid urbanization continues, so will emissions. Under a business-as-usual scenario, GHG emissions from urban areas would almost quadruple by 2050 (figure 26).

Figure 26 Share of Total CO_2 Emissions by Settlement Type in Ghana, 1970–2015



Source: World Bank, using EDGAR data (Crippa et al. 2021a)

28 Ghana is the first African nation to join the 'Global Plastic Action Partnership (GPAP)', an early member of the 'African Circular Economy Alliance' (ACEA).

29 For example, structure of economy and industries, consumption patterns and limited national awareness on CE concept. See: European Commission (2020). Circular Economic in Africa-EU Cooperation – Country Report for Ghana.

Ghana's urban areas account for a growing proportion of the country's greenhouse gas emissions. Globally, urbanization is an important driver of economic growth and opportunity and urban areas are responsible for over 70 percent of the world's carbon emissions from energy use.[30] In 2015, 51 percent of Ghana's CO_2 emissions were emitted in urban areas (urban centres, suburban and peri-urban areas, and dense and semi-dense settlement clusters), up from 40 percent in 1990 (Crippa et al. 2021b) (figure 27). Methane emissions from urban areas rose from 40 percent in 1990 to 43 percent in 2015, driven primarily by the waste sector which is mostly urban (over 66 percent of total methane emissions are from the waste sector) (figure 28). The proportion of Ghana's total emissions that are attributable to urban areas is even higher than the levels mentioned above, given that these figures do not include emissions sources located in rural areas that are a direct result of people or activities in urban areas (e.g., electricity, products, fuels produced in rural areas that are consumed in cities). As the rapid pace of urbanization continues in Ghana, it is likely that GHG emissions from urban areas will also increase.

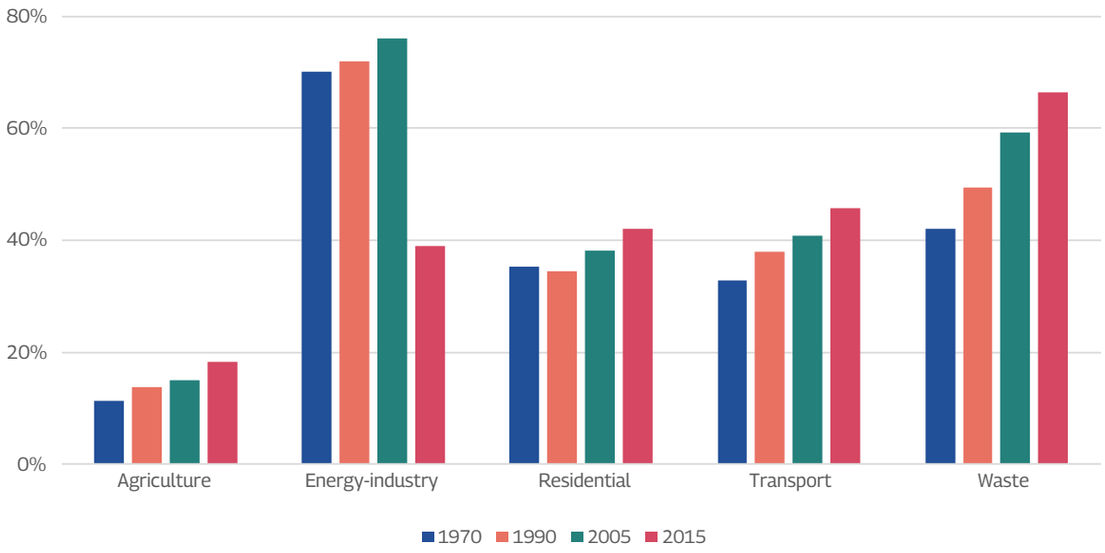
Figure 27 Share of CO_2 Emissions from Urban Areas by Sector in Ghana, 1970–2015



Source: World Bank, using EDGAR data

30 https://www.c40.org/why_cities

Figure 28 Share of Methane Emissions from Urban Areas by Sector in Ghana, 1970–2015

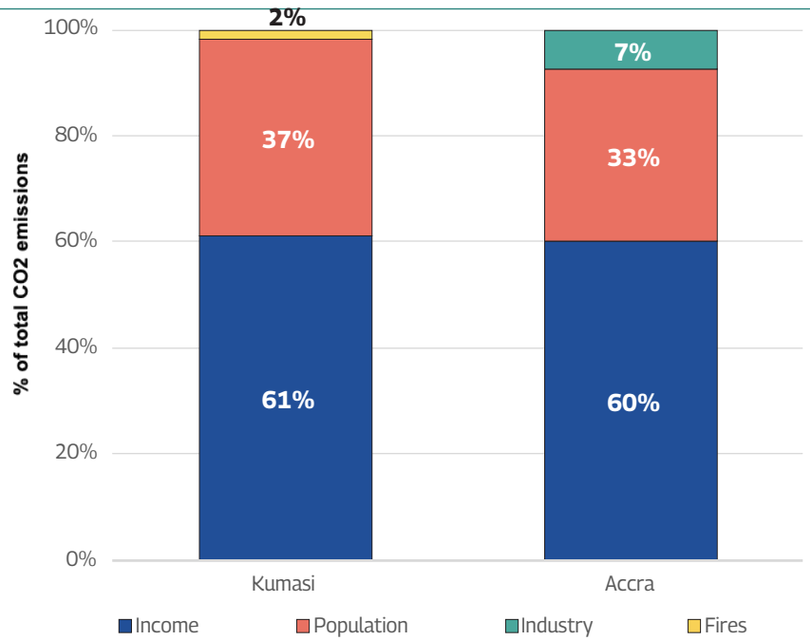


Source: World Bank, using EDGAR data

The sources and intensity of greenhouse gas emissions in Ghana's cities vary from urban cores to peri-urban areas. In general terms, greenhouse gas emissions in cities come from transportation, the use of energy for heating and cooling buildings, electric lighting for streets and buildings, industrial processes, waste management, and embodied carbon in urban infrastructure, among other sources (Carter and Boukerche 2020). A segmentation of emissions by source and settlement type reveals that within urban areas in Ghana, most emissions originate from urban centres with high population density (i.e., of more than 1,500 people per square kilometer). Lower density suburban and peri-urban expansions areas contribute the least (Carter and Boukerche 2020). Carbon dioxide emissions from the energy industry sector and methane emissions from the waste sector are relatively higher in urban centres than in other types of urban settlements. Also, it is noted that CO_2 emissions from the residential sector are significantly higher in dense and semi dense urban areas with populations below 50,000 inhabitants.

A recent World Bank global analysis examines CO_2 concentrations observed from satellite data, for 2014 to 2020, for 1,236 cities with populations over 500,000 in 138 countries. The study uses the model's results to decompose predicted CO_2 concentrations into five source categories: industry (power plants, steel mills, refineries, cement plants); fires (carbon emissions from agricultural and forest burning); income (nonindustrial CO_2 sources that are correlated with income); population (population and population density); and climate (heating degree days). Figure 29 shows this breakdown for Accra and Kumasi. Some 60 percent of Accra's emissions and 61 percent of Kumasi's emissions are driven by income-based urban consumption. By comparison, in lower-middle-income India, Delhi has only 9 percent of its emissions driven by rising income. In Lagos in low-income Nigeria, only 4 percent of emissions are driven by incomes.

Figure 29 Contributors to CO_2 Concentrations in Ghanaian Cities



Source: World Bank; Dasgupta et al. 2021.

Ghana's Third Biennial Update Report to the United Nations Framework Convention on Climate Change (2021) identifies several main drivers of GHG emissions that are closely linked urbanization:

1. Rising urban population: urban population increased by 11 percent from 15.6 million in 2016 to 17.2 million in 2019 at a rate of 3.4 percent per annum.
2. Increased municipal solid waste: municipal solid waste generation increased by 7 percent, from 5 million in 2016 to 5.4 million in 2019.
3. Exponential growth in vehicle population: the cumulative vehicle population more than doubled (147 percent) from 2.1 million in 2016 to 5.1 million in 2019.

Both the Biennial Update and the Updated Nationally Determined Contribution (NDC) of Ghana (2021) highlight the important role urban areas can play in emissions reductions and climate change risks facing urban residents. Specifically, mitigation measures related to Sanitation, Transportation, and Energy, and adaptation measures related to Water Resources and Early Warning Communications have direct links to urban management and growth. This section summarizes the justifications provided in these two key documents for focusing their efforts on these sectors and the measures that include an urban dimension.

Sanitation. The Biennial Update acknowledges that, **"**Most city managers in Ghana face major waste management challenges owing to the high population and associated consumption patterns. New sprawling suburbs with no access to roads, social infrastructure, and waste collection services worsen the waste management situation." NDCs for the sanitation sector

include policy actions to promote the adoption of alternative urban solid waste management such as new engineered landfills and increased composting capacity. With support from the World Bank, cities within the Greater Accra Region are innovating contemporary solid waste management models that legally recognize and incorporate informal waste collectors who utilize pushcarts and tricycles to collect solid waste in densely populated urban communities inaccessible by the formal system. Further rollout of this approach will require policy direction from central government and capacity development within MMDAs to equitably coordinate the interest of formal and informal actors and households.

Transportation. The transport sector mitigation strategy supported by the NDC aims to promote low-carbon mass transport mobility in the long term. This strategy is anchored on the national transport policy. It focuses on electric mobility (e-mobility), fleet renewal, efficient vehicle inspections, and rail-based transit to realize GHG mitigation outcomes. Accra has been a leader in adopting rail transport connecting its central business district (CBD) with the Tema suburb, which is home to many traders that operate and commute daily to the CBD. Wide-scale retrofits of the existing fleet will require strong government signaling to encourage adoption of improved vehicles and investments into renewed infrastructure.

Energy. Within the frame of urban development, NDC actions related to energy focus on promoting energy efficiency in homes, industry, and commerce. Policy actions include, among others, installation of LED streetlights, conversion to LED bulbs, appliance replacement initiatives, and energy efficiency campaigns for the public. Cities will be challenged to mobilize internal revenues to support citizens and small businesses to update to more efficient appliances and lighting at a cost premium.

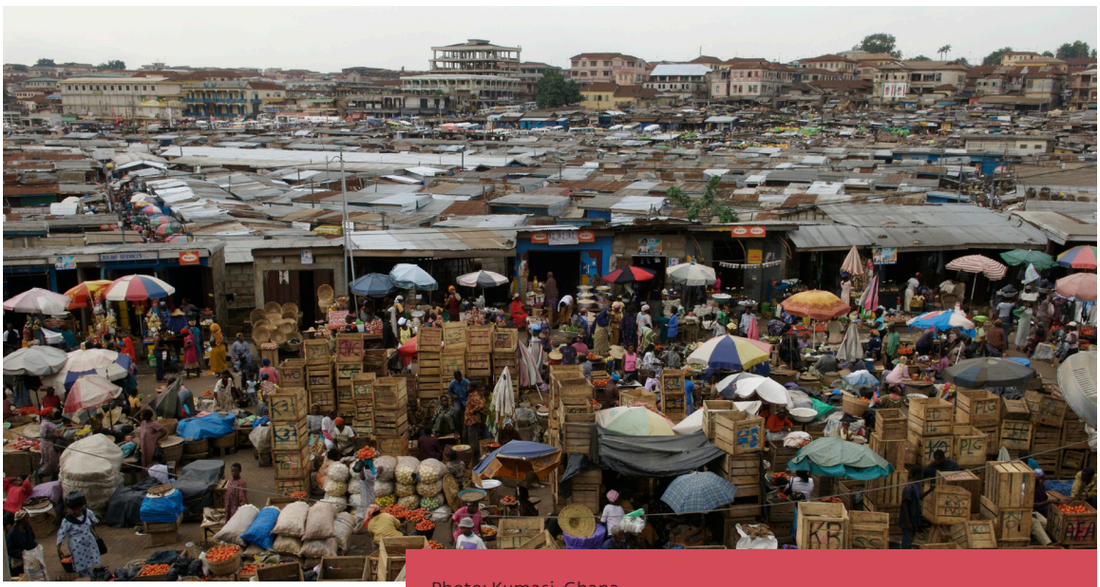


Photo: Kumasi, Ghana

Table 13 Summary of Government Mitigation Commitments Linked to Urban Development

Sector	Policy Actions	NDC Actions (Programme of Action - POA)	POA Index	NDC Type
Sanitation	Adopt alternative urban solid waste management	Build and operate three engineered landfills with 50% methane recovery in Kumasi, Nsawam and Kpone	PO5	Conditional
		Double the current waste to compost capacity of 200 tonnes/day to 400tonnes/day	PO6	Conditional
		Scale up 200 institutional biogas facilities	PO7	Conditional
Transport	Expansion of inter-and intra-city transportation modes	Railway transit system (shift road freight to rail)	PO22	Conditional
		Urban transit (fleet renewal, better maintenance and vehicle standards)	PO23	Unconditional
		Promotion of nonmotorized transport (new bicycle lanes)	PO24	Unconditional
		Restriction of importation of overaged vehicles	PO25	Unconditional
		Electric vehicles	PO26	Conditional
Energy	Promotion of energy efficiency in homes, industry and commerce	Promotion of energy efficient refrigerators (residential)	PO27	Conditional
		Promotion of energy efficient ACs (public buildings and commercial)	PO28	Conditional
		Promotion of energy efficient light bulbs (residential)	PO29	Unconditional
		Promotion of energy efficient light bulbs (public buildings and commercial)	PO30	Conditional
		Promotion of energy efficient air conditioners (residential)	PO31	Conditional
		Promotion of energy efficient and renewable energy powered public water facilities	PO32	Conditional

Source: Word Bank based on NDC (2021).

The bidirectional relationship between urbanization and sustainable development is well recognized (Cobbinah et al. 2015; Owusu and Oteng-Ababio 2015). Despite the positive economic gains associated with urbanization, the degenerative environmental costs and sustainability-related issues cannot be ignored. Extant literature on urbanization has documented the urban transition and how urban growth has transformed the landscape in Ghana. For example, an assessment of the interregional pattern of urbanization in southern Ghana demonstrated the extent of land-cover and land-use change (LCUC) for four continuous regions in southern Ghana, showing that 1.5 percent of land area in southern Ghana had been transformed into built-up land use between 2000 and 2010 at the expense of natural vegetation (Stow et al. 2016). In addition, the implications of urban growth on the urban environment in both large metropolitan areas and relatively smaller ones have been studied. With respect to patterns of LULC change within two major metropolitan areas in Ghana, evidence showed that between 2000 and 2010, the annual urban growth rates for Accra and Kumasi were 4.5 percent and 6 percent, respectively, and the urban growth was relatively compact (Toure et al. 2020). Similarly, the patterns and ramifications of urban growth in the rapidly growing municipality of Wa was studied. Urbanization had increased urban land use from 0.1 percent (614.4 hectares) in 1986 to 7.8 percent (4587.7 hectares) in 2016. The resulting urban change had affected environmental conditions and reduced built-up density (Osumanu and Akomgbangre 2020).

In Ghana, urbanization has propelled GHG emissions in Accra by inducing economic growth, increasing incomes, and changing consumption patterns; increasing vehicle ownership and fuel combustion emissions; transforming the landscape as characterized by urban sprawl, thereby creating more demand for vehicular transport; and increasing demand for housing and the attendant energy use (Mantey and Sakyi 2019). Although disaggregated data and analysis on urban GHG emissions in Ghana are limited, a recent study shows that Ghana's urbanization increased carbon dioxide emission as five out of six models in the research showed a significantly positive relationship between urbanization and carbon dioxide emissions (Kwakwa and Adu 2018). The positive relationship between urbanization and carbon dioxide emissions in Ghana was mainly due to the high concentration of manufacturing industries, increased consumption of fossil fuels from heavy vehicular traffic, and the loss of vegetation cover (Kwakwa and Adu 2018).

In terms of residential energy consumption, research shows that although residential buildings consume approximately 40 percent of total electricity produced in Ghana, 70 percent of residential consumption originates from urban areas (Gyamfi et al. 2018). The high consumption of electricity emanating from urban areas in Ghana is attributed to the rise in ownership of electrical gadgets such as air conditioners, freezers, fans, and televisions (Gyamfi et al. 2018). Energy inefficient architectural design is also an issue. For example, most residential housing in urban Ghana had been fitted with glazed windows and consumed more energy due to dependence on air conditioners and fans compared to houses fitted with wooden and louvre blade windows, which consumed less energy due to dependence on natural ventilation (Bawakyillenuo and Agbelie 2020). The use of carbon-intensive concrete frames infilled with sandcrete blocks is dominant in Ghana (Ansah et al. 2020), and previous research has suggested that 64 percent and 35 percent of residential buildings are constructed with sandcrete blocks and mud/burnt bricks respectively (Konadu-Agyemang 2001). Although research on embodied energy for full buildings in urban Ghana is scant, Ansah et al. (2020) have conducted an integrated life-

cycle assessment of different façade systems for a typical residential building in the Greater Accra Metropolitan Area (GAMA). Their findings showed that the total embodied energy and global warming potential for the predominantly used concrete block and mortar façade were 313,167.34 (MJ) and 33,342.65 (kg CO_2e) respectively (Ansah et al. 2020). In comparison, the findings showed that a stabilized earth block façade was a more sustainable option, as evidenced by the recorded total embodied energy and global warming potential of 130,793.23 megajoules and 14,819.71 kilograms of CO_2e, respectively (Ansah et al. 2020).

As Ghana motorizes and continues to develop, recognition of environmental costs will become increasingly important. Currently, vehicle ownership is low, at only eight to 10 cars per 1,000 people, and most urban Ghanaians walk to school, jobs, and markets (Arroyo-Arroyo 2021). But ownership is increasing by 10 percent annually and will continue to rise as Ghana gets wealthier. The increase in vehicles has detrimental environmental and health consequences. Air pollution in Accra is almost twice the regional average in Africa despite a relatively low motorization rate. This can also be attributed to the high average age of vehicles (14.2 years) in Ghana (Angnunavuri et al. 2019) The emission of pollutants from transport activities has a wide range of environmental consequences, including atmospheric emissions that affect air quality, contamination of surface and groundwater through accidental and nominal runoff from transport pollutants such as oil spills, as well as noise pollution. The direct link between road infrastructure, urban expansion, growing vehicle ownership, and increase in GHG emissions is concerning.

Local air pollution and congestion hinder human capital and productivity within cities, making local climate actions imperative. It is projected that outdoor air pollution will quadruple by 2050, while transport congestion will significantly increase (World Bank 2022b). Polluted air diminishes workers' energy and cognitive function, and there are noticeable decreases in labour productivity on days with higher air pollution. Pollution has negative health consequences, including mortality and morbidity. Congestion undermines the agglomeration economies, productivity, and competitiveness of urban economies. The relationship between labour productivity and air pollution is not extensively studied, but early estimates indicate that urban air pollution from 2020 to 2050 could have a more detrimental effect on Ghana's labour productivity compared to heat stress caused by climate change, potentially resulting in parallel GDP impacts (World Bank 2022b). To address these challenges, cities can take measures such as improving the quality of gasoline and diesel fuels and supporting fleet renewal for public transport. By replacing old, low-quality tro-tros with vehicles meeting Euro 4 emissions standards, local air pollutant emissions in Accra could be reduced by 76 percent, and in Kumasi, by 98 percent, accompanied by moderate reductions in corresponding GHG emissions (World Bank 2022b).

The Ghana Sustainable Cities Indicators highlight challenges related to urban mobility and urban sprawl. In many of the 15 largest cities, there appears to be a low level of bicycle use as a form of nonmotorized transport as suggested by the low share of households with at least one functioning bicycle. In addition, in many of the cities, an above average share of households are located more than a 20-minute walk from the nearest bus stop. The ratio of built-up area growth rate to population growth rate is used as a measure of sprawling urban growth. Eight of the 15 largest cities have a ratio of built-up area greater than 1, indicating a trend toward outward development. Notably, all cities achieved the full score on DPAT 5.5 which comprised two parts—

one point if the district has delivered or implemented at least 80 percent of climate adaptation activities from their Annual Action Plan, and another point if the district has a program on tree planting/afforestation and there is evidence of implementation (table 14).

Table 14 Low Carbon Development Indicators

City	Residential electricity demand (kWh/ capita)	Households using LPG for cooking (%)	Share of household with at least one functioning bicycle (%)	Share of household with nearest bus stop more than 20-minutes walking distance (%)	Ratio of built-up area rate to population growth rate	Availability of final dumping site (DPAT 5.2)	Climate change interventions (DPAT 5.5)
Accra	332.4	62.6	13.5	8.4	0.7	2.7	2.0
Agona Swedru	253.5	40.1	5.5	26.7	2.1	3.0	2.0
Bolgatanga	187.1	32.0	70.6	66.4	0.7	3.0	2.0
Cape Coast	214.7	29.4	5.5	26.7	1.8	3.0	2.0
Denu	299.0	36.1	30.6	36.4	0.3	3.0	2.0
Ho	197.7	18.0	30.6	36.4	6.2	3.0	2.0
Koforidua	194.9	45.0	11.1	14.9	18.9	3.0	2.0
Kumasi	507.2	44.2	15.3	22.0	0.5	2.8	2.0
Obuasi	902.0	38.7	15.3	22.0	5.3	3.0	2.0
Sekondi-Takoradi	787.7	44.3	10.2	43.0	0.5	3.0	2.0
Sunyani	225.6	39.3	42.2	23.6	1.2	2.7	2.0
Tamale	113.5	11.1	70.6	29.6	2.2	2.6	2.0
Tarkwa	162.0	45.5	10.2	43.0	1.2	3.0	2.0
Techiman	165.2	26.7	42.2	23.6	0.9	3.0	2.0
Wa	234.5	18.0	66.6	73.9	0.7	3.0	2.0
GHANA							
District Average	**248.3**	**27.2**	**29.5**	**28.8**		**2.9**	**2.0**
District Max	2,697.4	79.2	70.6	73.9		3.0	2.0
District Min	43.1	0.0	5.5	5.7		1.0	1.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Disaster Resilient

Low exposure to natural hazards and proactivity to invest in climate adaptation and disaster risk management

The settlement of environmentally fragile flood plains and hazard zones in peri-urban areas threatens informal occupants as well as the natural ecosystem they occupy. Population growth and rapid urbanization correlate with increased land degradation, which tends to be greater in districts where population growth is strongest. Not surprisingly, the Greater Accra Region has the highest soil erosion rate in the country (World Bank 2020). An analysis of built-up area in Ghana since 1975 found that cities grew at least partially at the expense of their hinterland (Fafchamps and Shilpi 2020). From 2000-2010, 85 percent of the transition to built-up area occurred from agricultural land cover, while 15 percent transitioned from natural vegetation (Stow et al. 2016). It can be assumed that most of the newly built area was not constructed through a formal process in which a risk evaluation was conducted as an input to a change in land use category. In Accra, for example, over 90 percent of flood-prone communities are informal settlements that have been repeatedly impacted by flood events leading to asset damage and loss of life (Amoako, 2020). Such threats will further increase due to continued population growth and the impacts of climate change.

Coastal Cities in Ghana are vulnerable to flooding and erosion. More than 5.5 million people and 550 km^2 of built-up area within less than one kilometre from the shoreline are vulnerable to coastal flooding (World Bank 2022b). Along the coast, there are 28 MMDAs, including the highly urbanized four metropolitan assemblies of Accra, Tema, Sekondi-Takoradi, and Cape Coast. In Accra, flood risk to assets exceeds US$20 million per year (average annual losses), which is one of the highest in Sub-Saharan Africa (World Bank 2022b). Additionally, Ghana's coastline is eroding at an average rate of 4 to 12 meters per year, and in certain areas downstream of port infrastructure, the erosion rate reaches 20 meters per year (World Bank 2022b). As sea level rises, the most affected areas out of the 28 MMDAs will be the Accra Metropolitan Assembly, Tema Metropolitan Assembly, La Dade Kotopon Municipal Assembly, and Ledzokuku/Krowor Municipal Assembly (Adortse 2019). The Ledzokuku/Krowor Municipal Assembly will experience the highest impact on sea level rise, affecting over 400,000 people, and the anticipated sea level rise-induced flooding is expected to affect almost the entire population (Adortse 2019).

Increasing surface temperatures and the loss of vegetation in urbanizing areas have resulted in urban heat islands (UHI) in which urban development leads to higher temperatures in urban areas compared to the surrounding peri-urban and rural areas. Between 1991-2017, the built-up area of Greater Accra increased by 18 percent while the vegetation coverage decreased by 35 percent; it is estimated that the UHI effect in Greater Accra is 4.86 degrees Celsius (Wemegah et al. 2020). Moreover, the impact of urban heat island on the daily air temperatures of the region is causing a faster increase in nighttime temperatures than the daytime. Studies on urban green spaces in other cities in Ghana also indicate that areas reserved for parks, gardens, forests, and nature reserves are continually encroached on. In Kumasi, for example, it is estimated that green space per capita is just 4.7 square meters, well below the World Health Organization's recommendation of 9 square meters and far below that of Johannesburg (60+), Nairobi (37.3), and Addis Ababa (36.5) (Adjei Mensah 2017). The heat island effect increases energy costs related to air conditioning, air pollution levels, and heat-related

illness and mortality, and it is anticipated to worsen due to climate change. Information that documents the extent to which nature-based solutions are being used to mitigate UHI in Ghana is scant.

Settlement of environmentally fragile flood plains and hazard zones in peri-urban areas put at risk residents as well as the natural ecosystem. In Accra, over 90 percent of flood-prone communities are informal settlements, now home to 40 percent of the urban population. Infrastructure development in most cities has not kept pace with urbanization and exposure to high temperatures, droughts, and floods poses major threats to housing, transport, water, sanitation, and energy assets. Urban floods have become more frequent and of higher intensity because of several factors, including fast-growing occupation of flood risk areas, inadequate and unmaintained drainage systems, heavy siltation, and waste accumulation along waterways, increased impervious surfaces with lower water infiltration capacity and faster run-off, and increased extreme precipitation events. Urban floods have major impacts on people and infrastructure, with 2015 flood events affecting 53,000 people in Accra, causing around US$55 million in damages and requiring US$105 million for reconstruction.

Historical trends in urbanization in Ghana have jeopardized progress towards sustainable development, resulting in environmental degradation and decreasing access in basic urban services.[31] Despite the positive economic gains associated with urbanization, the degenerative environmental costs and sustainability-related issues cannot be ignored. The rapid replacement of natural vegetation by urban development threatens ecological integrity by destroying biodiversity and undermining the provision of ecosystem services (Osumanu and Akomgbangre 2020).

The interlinkages between urbanization and climate change are widely acknowledged, and by virtue of characteristics such as the concentration of population and the attendant heavy demands on resources, cities have been identified to be highly vulnerable to the impacts of climate change (Araya-Munoz et al. 2016; Hoornweg et al. 2011). The impacts of climate change are already manifesting in Ghanaian cities. For example, studies have attributed the incidence of heavy rainfall and floods, as well as urban heat, to climate change (Mensah and Ahadzie 2020; Wemegah et al. 2020). In a study which explored climate change vulnerability in Ghanaian cities and the corresponding strategies for resilience, it was found that the understanding of urban resilience at the institutional and community level was poor, thereby rendering institutional initiatives for urban resilience uncoordinated and incomprehensive (Darkwah et al. 2018). In the Ghanaian context, despite the plethora of policies, plans, and programs for adapting to and mitigating climate change, success has been marginal due to weak institutional capacity and inadequate funds (Cobbinah et al. 2019).

The government of Ghana acknowledges that people and assets in urban areas are under increasing threat due to climate change. NDC policy actions focus on citywide resilient infrastructure planning, enhancing climate services for efficient weather information management, and strengthening early warning and disaster risk management capacity (table 15).

31 See, for example, Cobbinah et al. 2015, Owusu and Oteng-Ababio 2015, Stow et al. 2016, Toure et al. 2020, and Anarfi et al. 2000.

Table 15 Summary of Government Adaptation Commitments Linked to Urban Development

Policy Actions	NDC Actions (Programme of Action - POA)	POA Index
Citywide resilient infrastructure planning	Establishment of policy and regulatory framework for green and resilient infrastructure	PO8
	Policy and regulatory framework and investing flood control measures	PO9
	Investing in coastal protection infrastructure	PO10
Enhance climate services for efficient weather information management	Establish 265 automatic synoptic stations covering the whole of Ghana at a spatial resolution 30km. Acquire 3 meteorological radar	PO12
Early warning and disaster risk management	Strengthen and expand emergency operation centres nationwide	PO13

Source: World Bank, based on the NDC 2021.

The Ghana Sustainable Cities Indicators highlight vulnerability to natural disaster based on historic data at the regional scale. The data suggests that Accra and Tamale have experienced the greatest number of disasters. However, all the 15 largest cities have been affected by disaster at some point over the past 50+ years (table 16). Notably, all cities have delivered or implemented at least 80 percent of the climate adaptation activities from their Annual Action Plan.



Photo: Accra, Ghana (iStock-1637732928)

Table 16 Disaster Resilience Indicators

City	% built-up area exposed to floodings (region)	% increase in built-up area exposed to flooding, 1985-2015 (region)	# deaths, missing persons, and directly affected persons attributed to disasters/100 residents (region)	Incidence of natural disasters (number of recorded events since 1968, region)	District has delivered or implemented at least 80% of climate adaptation activities from their Annual Action Plan (DPAT 5.5)
Accra	10.8	0.5	22.6	11.3	2.0
Agona Swedru	10.9	0.9	36.8	4.0	2.0
Bolgatanga	3.8	1.7	60.9	5.0	2.0
Cape Coast	10.9	0.9	36.8	4.0	2.0
Denu	8.9	0.1	2.2	3.0	2.0
Ho	8.9	0.1	2.2	3.0	2.0
Koforidua	12.6	1.4	38.2	3.0	2.0
Kumasi	7.9	1.4	0.4	3.0	2.0
Obuasi	7.9	1.4	0.4	3.0	2.0
Sekondi-Takoradi	12.5	0.2	66.2	5.0	2.0
Sunyani	4.2	0.6	0.3	2.0	2.0
Tamale	5.9	1.1	22.6	6.0	2.0
Tarkwa	12.5	0.2	66.2	5.0	2.0
Techiman	4.2	0.6	0.3	2.0	2.0
Wa	2.5	1.0	73.7	3.0	2.0
GHANA					
District Average	**8.9**	**0.1**	**32.2**	**4.8**	**2.0**
District Max	12.6	1.7	73.7	13.0	2.0
District Min	2.5	0.1	0.0	2.0	1.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Solid Waste Management

Promotes reductions in generation of solid wastes, proper collection and disposal, and recycling

Ghana generates nearly 8 million metric tonnes (MT) of solid waste per year, a number that is expected to nearly triple by 2050 (World Bank 2022). Most households do not have access to door-to-door waste management services (67 percent) and thereby rely on public dumps and open space (38 percent) or uncontrolled, open burning (23 percent) (GSS 2021a). While progress has been made in waste collection in general, it has not translated into improved environmental conditions. This is especially the case in low-income areas and informal settlements in cities such as Kumasi and Accra. Currently, the most common method of final disposal in Ghana are open dumpsites, mostly located at the perimeters of major urban areas on open lots, wetlands or close to surface water sources (Okyere et al. 2019). Besides health and environmental hazards associated with open dumps and current waste management practices, the increasing amounts of waste generated, the scarcity of land, and the lack of access to land call for holistic changes towards a more sustainable waste management system. Inadequate solid waste management contributes to urban flooding by blocking drainage infrastructure and increasing debris in waterways. Waste is a major driver of GHG emissions in Ghanaian cities. It is estimated that solid and liquid waste account for 44 percent of GHG emissions in Accra, followed by transportation which accounts for 30 percent (AMA 2020).

Current trends in general mismanagement of solid waste in Ghana emit 5 MT CO_2e of methane in 2020.[32] Given the projected threefold increase in total generated waste, significant investments will be needed just to sustain the current level of waste management including resulting emissions. In absence of these, emissions are projected to double by 2030 to 10 MT CO_2e. Under an ambitious scenario, 54.8 percent of methane emissions (6.2 MT CO_2e) could be mitigated by 2035 with a 50 percent reduction in open dumping. Under a more conservative scenario, 36.6 percent of methane emissions (4.1 MT CO_2e) could be mitigated by 2035 with a 25 percent reduction in open dumping.[33]

The total MSW recycling rate is estimated at 8.4 percent. The informal sector contributes about 74 percent of total recycling.[34] Much of the material is recovered by waste pickers on disposal sites and sold to recycling companies via junk dealers and processors. Their vital role, however, is not formally recognized within the MSW management value chain and decision-making except for a current World Bank project[35] that is piloting formalization of waste picker cooperatives with city waste management departments to better serve the urban poor (Oteng-Ababio et al. 2017).

Plastics have a disproportionately negative impact on climate change compared to other materials found in MSW (Tsydenova and Patil 2021). Global plastics production accounts for 6 percent of global oil consumption, projected to rise to 20 percent of oil consumption by 2050 (World Economic Forum 2016). Reduction and recycling of future plastics production could reduce total sector emissions by 40 percent but significant growth in recycling behavior and facilities will

32 CURB Modelling Tool and the What a Waste 2.0 database, https://datatopics.worldbank.org/what-a-waste/
33 ibid.
34 ibid.
35 Greater Accra Resilient and Integrated Development Project.

be needed to achieve these targets (Ellen MacArthur Foundation 2021).

In Ghana, over 3,000 tonnes of plastic waste are generated every day—equivalent to 1.1 MT per year—comprising 16 percent of the MSW stream (NPAP 2021). Less than half of all plastic waste is collected (49 percent), split between the formal sector (35 percent) and the informal sector (14 percent); an estimated 9.5 percent is recycled, 26.2 percent is littered indiscriminately or buried, 22.6 percent is disposed at uncontrolled dumpsites, 17.9 percent is burned openly, and 9.5 percent directly leaks into water bodies (NPAP 2021). The result is widespread environmental and urban pollution with long-term ecological, economic, and eco-toxicological effects (Thompson et al. 2009).

Marine plastic pollution breaks down into microplastics and contributes to climate change both through direct GHG emissions and indirectly by negatively affecting ocean organisms. Plankton sequesters 30-50 percent of carbon dioxide emissions from anthropogenic activities, but after it ingests microplastics, plankton's ability to remove carbon dioxide from the atmosphere decreases (CIEL 2019). Additionally, mismanaged plastic wastes break down at sea and on land via ultraviolet exposure from the sun to generate methane and ethylene, major GHGs (Royer et al. 2018). Over 80 percent of ocean plastics comes from unmanaged or poorly managed MSW on land (Ocean Conservancy 2020)**.** Three-quarters of that quantity is found to come from uncollected waste with the remaining quarter leaking from within the waste management system due to poor controls and secondary pollution, such as unauthorized dumping of collected waste (Ocean Conservancy 2020). Estimates for Ghana's contribution to global marine debris range from approximately 0.092 MT to 0.26 MT every year, or 1 percent to 3 percent of the global total. Without comprehensive interventions, marine debris inputs are expected to soar over 0.35MT/year by 2025 (Jambeck et al. 2015; Troutman and Asiedu-Dankwah 2017).

Waste collection is informal, and community based. Different actors such as private and civil society organisations conduct community-based waste management activities throughout major cities. These activities are often in the form of clean-up exercises, sensitisation and advocacy. These community-based initiatives are informal but play critical roles in waste management. Some studies have shown that informal waste pickers contribute 58 percent of global plastics collection (Velis 2022). In Ghana, informal waste picking is a primary source of livelihood, income and employment (Hartmann et al. 2022).

The Ghana Sustainable Cities Indicators highlight the solid waste management challenges faced by the largest cities (table 17). Two-thirds of the cities have lower-than-average solid waste collection at the household level. And while most of the cities score within the average range for DPAT 5.2, which measures the availability and functionality of a well-maintained dumping site, site visits to such dumpsites indicate that the maintenance and environmental risk measures in place may not be sufficient.

Table 17 Solid Waste Management Indicators

City	Proportion of households with solid waste collected	Municipal waste generated (kg/p/day)	Availability of final dumping site (DPAT 5.2)	Sanitation services (DPAT 2.3)	% households without receptacle for storage of solid waste	% non-biodegradable waste
Accra	57.4	0.74	2.7	1.9	8.4	28.9
Agona Swedru	7.2	-	3.0	2.0	6.3	-
Bolgatanga	12.4	0.21	3.0	2.0	19.5	-
Cape Coast	6.5	0.67	3.0	2.0	5.4	32.7
Denu	4.4	-	3.0	2.0	16.6	-
Ho	1.3	0.31	3.0	2.0	20.6	-
Koforidua	14.9	0.61	3.0	2.0	11.3	-
Kumasi	37.8	0.75	2.8	2.0	4.5	45.1
Obuasi	6.5	-	3.0	2.0	4.7	-
Sekondi-Takoradi	17.8	0.70	3.0	2.0	3.5	32.7
Sunyani	12.4	0.49	2.7	2.0	7.5	-
Tamale	6.5	0.33	2.6	2.0	15.3	38.2
Tarkwa	16.1	-	3.0	1.0	5.7	26.5
Techiman	8.9	-	3.0	2.0	5.0	-
Wa	7.5	0.25	3.0	2.0	27.0	49.0
GHANA						
District Average	**13.8**	**0.51**	**2.9**	**2.0**	**13.6**	**34.0**
District Max	96.9	0.75	3.0	2.0	53.4	49.0
District Min	0.0	0.21	1.0	0.0	0.6	24.0

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average

Biodiversity and Green Space

Ensures preservation of green spaces and proper capture and treatment of wastewater

Urban green infrastructure, such as parks, forests, gardens, and open spaces, enhances the health and wellbeing of urban citizens by providing opportunities for socializing and physical activities (Suarez et al. 2020). As such, urban citizens are unable to exploit the potential benefits when there is a lack of access to urban green infrastructure. In Ghana, there

is suggestive empirical evidence that shows how urbanization and urban expansion have significantly threatened urban green space. For example, urban land cover within the boundaries of the Accra Metropolitan Assembly expanded from 55.1 percent in 1991 to 83.8 percent in 2018, at the expense of natural environment. As a result, green spaces reduced from 41 percent to 15 percent over the 27-year study period. The reasons attributed to the reduction of urban green space in Accra included improper planning and densification (Puplampu and Boafo 2021). In the Sekondi-Takoradi Metropolis, residents' access to green spaces for recreational purposes is limited because designated green areas have been appropriated for infrastructural development while the quality of public parks have suffered from lack of maintenance (Mensah et al. 2018). Therefore, in alignment with Target 7 of the UN SDG Goal Number 11 which advocates for "universal access to safe, inclusive and accessible, green and public spaces" (United Nations 2015), it is critical to explore ways of increasing citizens' access to urban green areas in Ghana.

Green space conservation is largely community-based and informal. Across the country and in most urban areas, there are series of ongoing conservation efforts. These activities such as conservation of parks, forests, gardens, and open spaces in cities are done by through a series of both formal and informal arrangements involving active role of private sector (Kuusaana et al. 2021). For example, in most cities urban agriculture is unregulated and hence there are no dedicated land-use planning efforts to zone places in cities for urban agriculture (Kuusaana et al. 2021). Such informal activities occur on vacant spaces and unapproved sites. Nonetheless, these informal activities are contributing in various ways not only towards food security but other ecosystem services. However, national data on these activities is rare, making it difficult for state engagement and regulation. In cases where such dwellers are organized such as La Farmers Association and Dzorwulu Vegetable Farmers Association, security of land tenure remains a major challenge (Puppim de Oliveira and Ahmed 2021).

Rapid urbanization in Ghana poses challenges to the integrity of the natural environment as the process is known to contribute to habitat loss and fragmentation (Kirk et al. 2021). A large body of research in Ghana has documented how urban expansion has transformed natural vegetation and wetlands into urban land uses and the attendant ecological consequences, including threats to biodiversity (e.g., Kuusaana et al. 2021; Asomani-Boateng 2019; Cobbinah and Darkwah 2016) (table 18). There has been an inadequate integration of biodiversity considerations into mainstream urban planning. For example, it has been observed that rapid urban development threatens biodiversity in Kumasi and the extent to which biodiversity is incorporated in the Assembly's planning instruments (e.g., master plans, building codes, and permits) is limited (Ahmed and Puppim de Oliveira 2016). Moreover, wetlands (key urban biodiversity space) are inefficiently incorporated in urban green infrastructure plans, thereby undermining the sustainable use of urban wetlands in Ghana (Kuusaana et al. 2021). Furthermore, the inadequate integration of biodiversity into mainstream urban planning in Ghana is exacerbated by challenges including land tenure systems, institutional and financial constraints, poor management, etc. (Kuusaana et al. 2021; Asomani-Boateng 2019; Ahmed and Puppim de Oliveira 2016).

The Ghana Sustainable Cities Indicators show that most households dispose of wastewater on the ground or street outside their homes, and the largest cities have relatively low levels of green space. While Bolgatanga, Denu, Ho, Sunyani, Tamale, Techiman, and Wa have scores that are higher than the national average, the data suggest that all cities

need improved wastewater collection utilities. On average green land cover in Ghana's urban districts accounts for 83.4 percent of land use. This is primarily comprised of trees (73 percent), grass (15 percent), shrubs (7 percent), and crops (5 percent). In terms of total green land cover within the boundaries of the urban clusters, only Accra and Denu fall below the national average. However, an analysis of each MMDA within Ghana's largest urban clusters indicates that the core urbanized zones in Accra and Kumasi suffer from extremely low green cover. In Accra, for example, nine MMDAs have less than 10 percent green cover, and five MMDAs in Kumasi have less than 25 percent. Ayawaso Central Municipal Assembly in Accra has only 0.3 percent green land cover. As a result, over 1.5 million people in Accra reside in neighborhoods with less than the World Health Organization's recommended minimum 9 square meters of green space per capita.

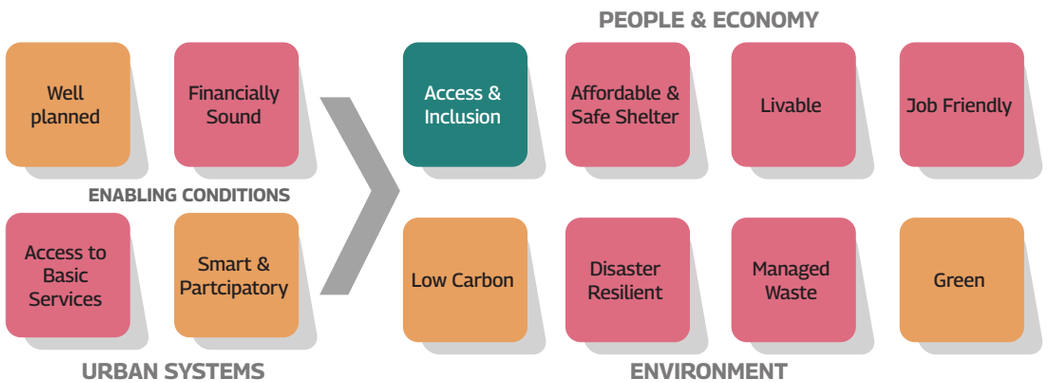
Table 18 Biodiversity and Greening Indicators

City	Proportion of households throwing wastewater onto ground/street/outside	Total green land cover in urban cluster (%, 2021)	Median green land cover of MMDAs within the urban cluster (%, 2021)
Accra	46.5	80.7	24.9
Agona Swedru	75.9	95.7	96.1
Bolgatanga	82.1	93.0	92.5
Cape Coast	68.4	92.9	93.7
Denu	95.5	68.7	72.8
Ho	90.7	99.0	99.0
Koforidua	73.2	94.6	95.4
Kumasi	58.3	88.2	78.6
Obuasi	65.8	94.6	92.7
Sekondi-Takoradi	52.3	92.5	90.5
Sunyani	81.1	96.4	97.4
Tamale	81.6	96.6	98.2
Tarkwa	60.7	96.6	96.0
Techiman	86.0	94.4	94.8
Wa	83.2	97.0	96.1
GHANA			
District Average	77.4	97.9	97.9
Urban District Average	-	83.4	83.4
District Max	97.4	99.9	99.9
District Min	4.7	0.3	0.3

Note: Highlighted cells indicate lower sustainability relative to the Ghana District Average and Urban District Average

How sustainable are Ghana's cities? The Sustainable Cities Implementation Framework applied to Ghana provides some insights. Under the dimension of Urban Systems, financial soundness and access to basic services stand out as areas for strengthening. Under the dimension of People & Economy, cities in Ghana rate well in terms of inclusivity, but are less sustainable regarding housing, livability, and local economic development. In terms of the Environment dimension, more attention is needed to build disaster resilience and better manage waste. Figure 30 summarizes the overall scoring of the 15 largest cities using a stoplight approach. Categories in green denote higher sustainability, and those in orange and red indicate lower levels of sustainability. It is important to keep in mind that these measures are relative to all MMDAs in the country, not an international standard.

Figure 30 Summary of Sustainability of Ghana's 15 Largest Cities





Strategy to Promote Sustainable Urban Growth in Ghana

In a context of scarce resources, the Ghana Sustainable Cities Strategy aims to focus attention, funding, and capacity building on the cities and sectors with the most potential to shift the trajectory of urban growth in Ghana. The Strategy is unpinned by analytics that draw from Ghanaian sources of data as well as the significant body of research on urban issues by local academics and practitioners. Global data and studies were used to fill in knowledge gaps not covered by local data and research. For a comparative assessment of cities in Ghana, the World Bank Sustainable Cities Implementation Framework was adapted to the Ghanaian context with indicators to measure sustainability along three dimensions – People & Economy, Environment, and the Urban System.

Strategic Action 1: Focus on the Fastest Growing Metropolitan Areas that Show Indications of Unsustainable Growth Trajectories

As described earlier, a morphological definition of urban areas was used to identify the 15 largest cities in Ghana. These 15 cities, which all cross administrative boundaries, present multiple growth dynamics along two dimensions—population growth and urban sprawl. As highlighted in table 19, they fall into three general typologies: **STABLE** (i.e., low population growth combined with low expansion growth), **CONSOLIDATING** (i.e., low to moderate population growth combined with low to moderate expansion), **EXPANDING** (i.e., rate of expansion is higher than rate of population growth or high overall).



Photo: Accra, Ghana (iStock-1448753927)

Table 19 Urban Growth Dynamics in Ghana's 15 Largest Cities

City	Annual pop growth, 2010-21 (%)	Annual growth in built-up area, 2010-20 (%)	Population growth dynamic	Urban sprawl dynamic
STABLE				
Sekondi-Takoradi	-0.6	0.7	Low	Low
Cape Coast	1.1	1.4	Low	Low
CONSOLIDATING				
Accra	3.4	1.1	Moderate	Low
Denu	2.9	0.4	Moderate	Low
Kumasi	0.8	1.7	Low	Moderate
Obuasi	1.3	1.9	Low	Moderate
Bolgatanga	2.8	1.8	Moderate	Moderate
EXPANDING				
Koforidua	1.8	5.3	Moderate	High
Sunyani	3.5	2.6	Moderate	High
Tamale	5.6	1.9	High	Moderate
Wa	4.6	2.1	High	Moderate
Techiman	4.8	4.0	High	High
Tarkwa	5.5	5.1	High	High
Ho	-0.7	5.6	Low	High
Agona Swedru	-0.6	4.0	Low	High

Based on relative measures adapted to the Ghanaian context, the cities of Accra, Denu, Bolgatanga, Tamale, Wa, and Ho are currently the least sustainable of the 15 largest cities. Table 20 summarizes the indicators from the Sustainable Cities Implementation Framework for which each city scored above average for all districts in the country. The cells with red circles indicate outliers from within the tallied scores. For example, for the sub-category of Affordable & Safe Shelter, Accra, Bolgatanga, Tamale, and Wa each scored above the national average on three indicators.

Table 20 Indications of Relative Unsustainability

City	People & Economy				Environment				Urban System				
	Affordable & Safe Shelter	Livability	Job-Friendly	Access and Inclusion	Low Carbon	Disaster Resilience	Managed Waste	Biodiversity & Greening	Basic Services	Financially Sound	Smart & Participatory	Well-Planned	Highest Relative Unsustainability
STABLE													
Sekondi-Takoradi					✓	✓							
Cape Coast						✓				✓			
CONSOLIDATING													
Accra	✓				✓	✓	✓	✓		✓			⚠
Denu		✓	✓					✓	✓	✓	✓		⚠
Kumasi					✓		✓	✓					
Obuasi					✓				✓				
Bolgatanga	✓			✓		✓			✓		✓		⚠
EXPANDING													
Koforidua						✓						✓	
Sunyani			✓										
Tamale	✓	✓		✓	✓		✓		✓	✓	✓		⚠
Wa	✓	✓		✓			✓		✓	✓			⚠
Techiman										✓			
Tarkwa			✓			✓						✓	
Ho		✓	✓	✓	✓				✓			✓	⚠
Agona Swedru					✓	✓							

Limitations of the framework of indicators and their use in prioritization. It is important to note that the analysis above gives each of the 67 indicators in the Framework equal weighting in terms of its contribution to measuring urban sustainability, and each MMDA that comprises the 15 largest cities equal importance. As such, the Framework is measuring the intensity of sustainability in each city, rather than the scale of impact. In addition, some indicators are at a regional scale while others are at the district scale. This could distort the outcome depending on the level of overall urbanization within the region.

There are a few ways to approach the prioritization of cities based on the analyses of urban growth dynamics and relative magnitude of urban sustainability challenges. The first would be to prioritize the cities that fall within the 'expanding' typology. The second would be to prioritize the cities that show indications of being the least sustainable. And the third, a hybrid, would be to prioritize those cities that are expanding, showing indications of unsustainable growth, and form part of a strategic city network (table 21). *The Ghana Sustainable Cities Strategy advocates for the latter by giving priority to the cities of Bolgatanga, Denu, Ho, Sunyani, Tamale, Techiman, and Wa*. This is consistent with the NSDF that indicates that deliberate urban development interventions in these urban networks will significantly address a major national challenge of north-south migration (GoG, 2015).

Table 21 Strategic Action 1 – Next Steps on City Prioritization

ACTION	ACTOR(S)
Refinement of the Sustainable Cities Indicators	MLGCRA, GSS
Refinement of city definitions (composition of MMDAs that comprise the 'city')	MLGCRA, MMDAs
Consultation and ground truthing with MMDAs	MLGCRA, MMDAs

Strategic Action 2: Invest in the Sectors with the Greatest Potential to Improve Sustainability

Ghana's infrastructure deficit is far greater than the resources available to fill it. Given the objective of promoting compact, low carbon, safe, and livable cities, which sectors should be prioritized? Based on the analysis of GHG emissions trends, climate change projections, historic natural disaster patterns, local and international research findings, and the collection of sustainable cities presented here, the most impactful areas for investment in Ghana's cities are solid waste management, urban mobility, affordable housing, and land management.

Counteracting the trend of urban sprawl in Ghana by promoting compact, connected urban neighbourhoods will make cities more livable, economically efficient, and equitable. It will also help hold down urban GHG emissions, which made up half of Ghana's CO_2 emissions in 2015, up from 40 percent in 1990. Key strategies to tackle urban GHG emissions

in Ghana include improved urban planning that favours compact and transit-oriented urban growth; investments in infrastructure for public transit, walking, and cycling; and improved solid waste management. These strategies have multiple socioeconomic and environmental benefits. For example, compact urban form reduces the cost of municipal infrastructure and service delivery and makes it easier for people to access jobs, education, and other opportunities. It also reduces urban expansion, protecting natural ecosystems, biodiversity, and food security. Comprehensive solid waste management reduces pollution and GHG emissions, while also reducing flood risk and improving the quality of the urban environment.

Solid Waste Management[36]

Invest in solid waste management to curb methane emissions, reduce urban flooding, and improve quality of life for urban residents. Comprehensive solid waste management is key to mitigating and adapting to climate change in Ghana's cities. Methane from waste is a growing and important segment of GHG emissions in the country and is primarily driven by urban population growth and increasing incomes. In the context of increasing urban flooding, the solid waste sector also plays a key role in adaptation as improper solid waste disposal can be a significant factor contributing to flooding in urban areas. Indiscriminately dumped waste blocks drains and reduces the limited capacity of the drainage systems, causing storm water to overflow with severe damage to properties and infrastructure, and causing business and transport interruptions or even loss of life. Aside from climate change benefits, substantial benefits can be achieved through improved solid waste management such as reduced pollution of soil and the marine environment, including from plastics; better local health and environmental outcomes; improved quality and access to a basic local government service; a better integrated informal sector; enhanced environmental awareness of the population; and strengthened conditions for local economic development, city competitiveness, and livability.

Transitioning to a circular economy model will require a suite of reforms to create an enabling policy environment to catalyse planning, investments, behaviour change, innovation, and good governance. First, a comprehensive financial plan for the sector is needed to enable new facilities to be brought online and existing facilities to operate according to environmental standards, to enhance the solid waste sector's long-term sustainable performance, and to increase the value-for-money of public expenditures by increasing competitiveness. In parallel, the government should develop a long-term integrated resource plan to anticipate future waste generation and develop infrastructure before critical shortages occur. Cost recovery for waste management services can be improved through a mix of measures, such as restructuring how fees are calculated based on income and ability to pay and expanding property taxes. Collection practices should also be strengthened by standardizing contracting, monitoring, and evaluation. Including key performance indicators for service providers would support the achievement of minimum performance, especially if remuneration is linked to performance. As indicated in the National Plastics Management Policy (2020), the government should introduce an extended producer responsibility scheme (EPR) for plastics and other packaging materials to cover costs of collection and processing of recoverable material streams, thereby reducing total waste volumes requiring disposal and creating incentives for growth of

36 These recommendations are from the Ghana Climate Change Development Report (World Bank 2022).

private sector operations. Finally, it is essential to address gaps in monitoring and evaluation and empower the national regulator to enforce standards. This includes building the capacity of MMDAs to manage private sector contracts for waste collection, transfer, treatment, and disposal, for instance by providing national standardized contracts and monitoring and reporting.

Engage households in the sustainable city transition through changing household practices and behaviours related to solid waste. Whereas significant interventions are required at the aggregate city level, such as the provision of large-scale infrastructure like recycling facilities, a balance between city-level solutions and household-level interventions is necessary for sustainable cities. Decisions at the household level have implications for sustainability in cities (Anarfi et al. 2022). Household choices on production and consumption preferences and waste management behaviours directly influence the sustainability trajectories of cities. They also have the capacity to significantly slow the curve in capital investment requirements for new facilities and increase the profitability of existing facilities. Household-level interventions allow for private sector involvement in designing solutions (e.g., source separation of organics and recyclables for higher recovery rates and revenues) that can improve urban sustainability and affordability of urban services and infrastructure (Tetteh and Kebir 2022) (table 22).

Table 22 Strategic Action 2 – Next Steps on Solid Waste Management

ACTION	ACTOR(S)
Prioritize source separated recovery of organics (for composting) and plastics (for recycling) for greatest reductions in GHG emission and final disposal capacity requirements	MLGCRA
Develop and adhere to a comprehensive, sector-wide financial plan and long-term integrated resource management plan to facilitate realization of critical infrastructure in advance of population and waste growth trajectories	MoF, MLGCRA
Foster competition and pursue value-for-money for public expenditures	MoF, MLGCRA
Introduce extended producer responsibility for packaging and other products to help finance collection, recovery, recycling and environmentally sound management infrastructure and services	MLGCRA
Increase cost-recovery for waste management services through restructuring of waste collection user fees based on income and affordability to pay and final disposal tipping fees	MLGCRA
Encourage sustainable household and institutional behaviours to reduce waste generation, encourage source separation of compostable and recyclable materials, and end open dumping, burning, and littering	MLGCRA
Standardize contracting, monitoring, and evaluation, including key performance indicators for service providers and build capacity of MMDAs in contract management	MLGCRA, MoF

Urban Mobility[37]

Improve urban mobility and rural-urban connectivity through investments in high-quality walking and biking infrastructure, public transport services, and resilient transport infrastructure. Major investments are needed in public transport infrastructure and services. Although motorization is relatively low in Ghana compared with global levels, vehicle ownership continues to increase. In addition, longer travel distances in expanding urban areas have increased travel mileage by an estimated tenfold in the past 25 years. Public transport infrastructure and services—largely provided by informal tro-tros (minibuses)—have failed to keep up with demand. The result is worsening accessibility, spatial exclusion, and congestion, particularly for the most vulnerable, and these trends are projected to continue. It is estimated that from 2015 to 2030, the primary road length per 1,000 residents will decrease by 43 percent in Kumasi and 71 percent in Tamale, whereas the private vehicle fleet will increase by 177 percent and 192 percent, respectively. If nothing is done, spatial exclusion will be exacerbated for the most vulnerable. Areas on the periphery of the city—hosting mostly low-income residents lacking private vehicles—will be excluded from accessing jobs via public transport. The cost of congestion will outweigh any productivity benefits the cities can deliver, and it will be too costly to retrofit these cities to become competitive, inclusive, and sustainable (World Bank 2022).

Focus on improving transport networks and promoting a significant mode shift to low-emissions urban public and nonmotorized transport. Cities across Ghana will need to curtail urban sprawl and pursue transit-oriented development to enable a complete mode shift to public and nonmotorized transport. To achieve this, Ghana should maintain high mode shares for walking and biking (15 percent by 2030 and 40 percent by 2050) and public transit (5 percent by 2030, 20 percent by 2050), enabled by improved urban development and investments in safe, high-quality infrastructure. In addition, investments will be critical for road maintenance and emergency repair, along with improving the integration of climate risk into feasibility studies and designs and building institutional capacities (World Bank 2022).

In Ghana's cities, most trips are made by foot out of necessity and providing high-quality walking infrastructure can improve pedestrian safety, promote inclusion, and make walking a more sustainable choice. In Accra, Kumasi, and Tamale, around 60 percent of trips to schools or markets and 40 percent of trips to work are made on foot (Arroyo-Arroyo 2021). This is not by choice. Unpaved roads, particularly prevalent in informal settlements, create difficult conditions for walking and bicycling, and even more so during the rainy season. In Accra, only about 20 percent of roads have sidewalks (Arroyo-Arroyo 2021). As Ghana's cities continue to develop outward, people must walk exceptionally long distances to access economic opportunities or education and health care services. Low-income groups, women, and people with disabilities face greater barriers to mobility. They are also exposed to road traffic fatalities and serious injuries. In 2016, the WHO estimated that road crashes were responsible for 7,018 premature deaths and 105,270 serious injuries; fatalities per registered vehicle are approximately 100 times those in EU comparators. These were valued at US$4.5 billion, using the value of a statistical life (VSL) approach. And with 70 percent of road crash fatalities and injuries in the country affecting individuals in the most economically productive age groups (15-64 years), there

37 These recommendations are from the Ghana Climate Change Development Report (World Bank 2022).

are important indirect costs to livelihoods and welfare. Thus, creating attractive, high-quality infrastructure for walking and biking is a "no regret" climate action that would deliver large economic and social benefits (World Bank 2022) (table 23).

Strengthening rural-urban interlinkages for food security and urban periodic markets to boost local economic development in cities. Cities do not exist in isolation, as they depend on the hinterlands for resource consumption. Cities in Ghana depend on rural areas for food supply and other resources because land available for urban agriculture is limited within cities (Puppim de Oliveira and Ahmed 2021). Urban periodic and daily markets remain critical for urban food security as a substantial proportion of urban dwellers rely on food purchases from the market (Addai et al. 2023). Strengthening rural-urban interlinkages through better transportation infrastructure will not only improve rural economies but also improve cities' access to resources, especially food and biomass energy. Deliberate government interventions to improve rural-urban interlinkages are imperative for sustainable cities (Brühl and Visser 2021).

Table 23 Strategic Action 2 – Next Steps on Urban Mobility

ACTION	ACTOR(S)
Develop a strategy to promote transit-oriented development in cities	MOT, LUSPA
Promote a significant mode shift to low-emissions urban public and nonmotorized transport	MOT, MRH, MLGCRA
Integrate climate risk data into feasibility studies and designs for transport investment	MOT, MRH, LUSPA
Build institutional capacity at the local level for urban mobility planning	MOT, LUSPA, MMDAs
Provide high-quality walking infrastructure to improve pedestrian safety, promote inclusion, and make walking a more sustainable choice	MMDAs
Strengthen rur*al*-urban interlinkages and road connections between strategic networks of cities	MOT, MRH
Increase investment in public transport, especially through PPP modalities	MRH, MLGCRA, MOF

Affordable Housing

Ghana's housing sector faces several challenges both on the demand and supply sides. With a reduction in average household size over the last decade and corresponding increase in number of households, demand for housing increased substantially. Even though the country faces a severe housing deficit, the lack of a functioning housing finance system has rendered the excess demand ineffective. On the supply side, developers face several impediments, from challenges with land acquisition, lack of infrastructure, and excessive cost of construction. Given the pivotal role the housing sector can play in the socioeconomic transformation of the country, it is important that the appropriate policy interventions are designed and implemented as a matter of urgency.

Ghana's National Housing Policy (2015), which sets out a well-articulated policy for the housing sector, requires political and financial support for its realization. The policy follows the stance that has been adopted by all previous governments since the mid-1980s by recognizing the need for the government to play a less direct role in the housing sector. The policy sets out the following as its main objectives:

1. To promote greater private sector participation in housing delivery;
2. To create an environment conducive to investment in housing for rental purposes;
3. To promote housing schemes that maximize land utilization;
4. To accelerate home improvement (upgrading and transformation) of the existing housing stock;
5. To promote orderly human settlement growth with physical and social infrastructure;
6. To make housing programs more accessible to the poor (social housing);
7. To involve communities and other nontraditional interest groups in designing and implementing low-income housing initiatives; and
8. To upgrade existing slums and prevent the occurrence of new ones.

Access to well-located land at affordable prices is key for the delivery of affordable housing, especially within large urban areas such as Accra and Kumasi. In the well-planned and serviced areas of most urban centres where lands tend to be held and managed by the government through the Land Commission, the processes of acquisition and registration are streamlined and less complicated. This has, however, resulted in intense competition for the limited available sites. Not surprisingly, land values in such areas have surged over the past two decades, and consequently, the lower and middle-income segments of the market have effectively been priced out. At the same time, in peri-urban areas where land prices tend to be lower, acquisition and registration process and ownership uncertainty impose high transaction and holding costs. As such, the government has an enabling role to play in identifying and consolidating land that is apt for residential development. This is also a fundamental element of structuring PPPs for affordable housing development.

Housing will constitute most of the building construction in the coming decades and must be both green and resilient to ensure sustainable urban growth. The high consumption of electricity emanating from urban areas in Ghana is attributed to the rise in ownership of electrical gadgets such as air conditioners, freezers, fans, and televisions, especially in private homes. There is an opportunity to promote energy efficient architectural design, materials selection, and locations that facilitate walking and collective transport for mobility. Ensuring that new housing in cities integrates green and resilient design measures, including site-specific risk assessments, is a no-regret action that will promote safe and healthy shelter for residents (table 24).

Table 24 Strategic Action 2 – Next Steps on Affordable Housing

ACTION	ACTOR(S)
Articulate an affordable housing strategy and an institutional arrangement for its implementationo	MWHWR, MOF, MLGCRA
Prepare a strategy for the promotion of green and resilient housing development	MWHWR, MESTI, GREDA
Adopt a transparent and competitive process for developer selection for sites serviced by Government	MWHWR, MOF
Prepare a PPP model for affordable housing delivery	MWHWR, MOF
Prepare a feasibility analysis on mixed-income housing development to promote affordability and social inclusion	MWHWR, MOF
Establish a database/land bank of public land that is apt for residential development	MWH, MMDAs, Lands Commission, Traditional Authorities
Improve targeting systems to ensure an equitable allocation of housing subsidies and support	MWHWR, MMDAs
Develop an action plan for the implementation of the Nation Slum Upgrading Policy	MWHWR, MLGCRA

Land Management

Sound land management underpins all efforts to curb urban sprawl and incentivize more efficient, compact urban growth. Ghanaian cities are both crowded and sprawling, highlighting an important distinction between compact urban development and overcrowding. Compact urban development accommodates higher density through more vertical development (i.e., the construction of taller buildings), and preserves the amount of living space per person. By contrast, overcrowded development involves the proliferation of slums and ever tighter living spaces. Vertical cities use land more efficiently, house more people, and are more prosperous (Mukim and Roberts 2022). In Ghana, compact cities should develop vertically as well as through infill development, rather than only through horizontal spread. Through increasing the supply of available floor space, vertical development also makes housing and commercial space in a city more affordable (Mukim and Roberts 2022).

To achieve compact urban growth, metropolitan scale collaboration is needed to create and enforce spatial plans that transcend district boundaries. Ghana has launched an ambitious goal to extend the decentralization of urban planning and service delivery management. Strict enforcement of the provisions for creation of joint district planning entities and statutory technical subcommittees in the Land Use and Spatial Planning Act 2016, Act 925 is imperative for MMDA collaborations in spatial planning. While urban MMAs have expanded

their functional assignments, most district assemblies lack the human and financial resources to fulfil their land planning mandates. To thwart haphazard and sprawling development at the edge of cities, all MMDAs in a metropolitan area need to buy into a unified and cohesive citywide spatial plan. All 15 largest cities in Ghana have footprints that cross district boundaries, from 33 in Accra to two in Bolgatanga. As such, the 15 largest cities need to collaborate to address this interjurisdictional issue.

Integrated approaches to urban planning and development that are risk-informed and that facilitate cross-sectoral coordination are essential in Ghana to build climate resilience, enhance the quality of life for all urban residents, and improve city economies (table 25). NDC policy actions on citywide resilient infrastructure planning should be underpinned by risk analyses specific to each city, integration of risk data into land-use plans and building codes, and enforcement of urban development regulations. To enhance the resilience of Ghana's cities and ensure the equitable delivery of public services, coordinated planning across multiple sectors like transport, water, sanitation, and housing is fundamental. Institutional strengthening to improve the governance of infrastructure service provision will also be critical, particularly given that infrastructure has a life span of several decades. While this may involve some grey infrastructure such as constructing seawall, upgrading bridges, or elevating or relocating energy substations, the use of nature-based solutions will be key for improving the livability in Ghana's cities and their attractiveness for business. For example, multifunctional urban green spaces can provide recreational areas while absorbing stormwater runoff and reducing the urban heat island effect; afforestation along riverbanks and catchment areas can help protect flood-prone areas, reduce sedimentation, and safeguard exposed roads. Planning and coordination should extend to existing informal settlements and adapt to their context as well as to in situ urban upgrading initiatives. Further efforts are also needed at the municipal level to enforce existing building regulations and implement minimum engineering standards to reduce damage from disasters and build resilience.

Integrating transport planning with urban growth management will be particularly important for supporting the development of efficient, compact, resilient, and inclusive urban areas. Transit-oriented development can act as anchor for urban land use planning in Ghana, reversing the trend of low-density expansion of existing cities over the past several decades. Transit-oriented development aims to create compact, walkable urban spaces that include a mix of commercial and residential buildings around public transit nodes, such as bus rapid transit (BRT) stations, making it easier for residents to get around without a car. This type of planning is seen as way to provide better access to jobs, housing, and amenities for people of all ages and incomes, while also reducing air pollution and traffic congestion from vehicles.

The development of a citywide land information system and an urban data platform is a priority in improving land management and bolstering smart city solutions. Smart solutions currently under design or implementation in Ghana for various sectors, such as transport, land management, water and sanitation, have limited-service coverage and operate in isolated silos, hindering collaboration between them. To integrate data for better interoperability among smart solutions, a citywide land information system and an urban data platform are needed to serve as the centralized source of common urban attributes (e.g., location of roads, utilities, land plots, buildings, etc.) (table 25). Policymakers and city officials

can use this information for evidence-based and informed decision-making. The data from the land information system can serve various purposes, including climate-smart urban planning, property valuation, taxation, and land allocation for public services and private development. Additionally, an urban data platform can collect, analyse, and disseminate data spatial and non-spatial data from various sources to provide a holistic view of the city, encompassing government data, traffic flow, air quality, waste management, public safety, and more. From a citizen's perspective, such a platform would enable easy access to government services and information, eliminating the need for multiple sites and platforms. This would lead to greater transparency and accountability and promote citizen engagement with government decisions and services.

Engage traditional authorities on land management issues to co-create solutions. Several studies and policy documents such as the NUP have highlighted the key role of urban actors in urban governance. Whereas all actors are important, in the context of urban land management, the role of traditional authorities is crucial for sustainable land-use planning (Akaateba et al. 2021). Codesigning different interventions with traditional authorities will pave the way for local legitimacy and ownership, thereby improving sustainability.

Establish a centre of excellence on land management and sustainable cities. Data is a major challenge, and for continuous monitoring the progress of the relative magnitude of urban sustainability challenges annually in priority cities, there is a need for a dedicated centre of excellence in land management and sustainable cities in one of the public universities located in a secondary city (for example, Tamale, Wa, Sunyani, Ho)—especially one with a well-established urban planning school or faculty. The centre can produce yearly sustainability assessments of these cities, undertake other capacity development training for staff of the MMDAs, provide support in the preparation of medium-term development and spatial plans for the MMDAs, and host an urban data platform.



Photo: Accra, Ghana (Dominic Chavez/World Bank)

Table 25 Strategic Action 2 – Next Steps on Land Management

ACTION	ACTOR(S)
Foster MMDA collaboration on urban growth management – citywide spatial planning and enforcement	MLGCRA, RCCs, MMDAs
Build capacity for land planning mandates in MMDAs	LUSPA
Prepare risk analysis specific to each city, integration of risk data into land use plans and building codes, and enforcement of urban development regulations	LUSPA, RCCs, MMDAs
Promote coordinated planning across multiple sectors like transport, water, sanitation, and housing	MLGCRA, Line Ministries
Strengthen institutions to improve the governance of infrastructure service provision	MLGCRA, Line Ministries
Promote the use of nature-based solutions at the local level	LUSPA, RCCs, MMDAs
Enforce existing building regulations and implement minimum engineering standards to reduce damage from disasters and build resilience	LUSPA, RCCs, MMDAs
Extend planning and coordination to existing informal settlements and be adaptive to their context as well as to in situ urban upgrading initiatives	
Implement consultative spatial planning processes with customary land authorities	LUSPA, MMDAs, Local Authorities
Promote registration, recording and mapping of land ownership in peri-urban areas	MLGCRA, MMDAs
Develop inclusive, participatory, and multistakeholder platforms related to urban planning and land management	MLGCRA, MMDAs
Develop a citywide land management and urban data platform	LUSPA, RCCs, MMDAs
Identify institutional partners for the establishment of a centre of excellence on land management and sustainable cities	Lands Commission, LUSPA

Strategic Action 3: Mobilize Locally Generated Funds and Private Capital for the Delivery of Urban Infrastructure and Services

Ghana's urban infrastructure needs exceed available resources by 40-fold. The bulk of capital expenditure for infrastructure comes from the national budget, with local government contributing only a small fraction of funding. Moreover, analysis of expenditure data indicates that most MMDA investment projects are small and fragmented, and focused on social sectors with only a minor share invested in infrastructure such as roads and sanitation (World Bank 2015). To address the infrastructure gap and increase access to basic services in urban areas, Ghana must enable cities to significantly increase IGF and help crowd in private sector capital.

The two main channels through which Ghanaian cities can expand their own source revenues are increased property taxation and land value capture from public assets and land. Improving municipal finances requires enhanced valuation and documentation of existing assets to generate new sources of local revenue. For example, property taxation can and should become an important source of revenue given the rapidly increasing land and property values in Ghana's cities. To realize this source of funding, support is needed to update land cadastres and registries, update and renew the tax base valuation system, and implement new institutional models for revenue collection.

Several land value capture instruments are authorized for use in in Ghana but have not had significant uptake by MMDAs. Developer obligations, such as development charges and building permit fees, are in frequent use, but strategic land management and infrastructure levies are only occasionally or rarely used to recover costs from the impact of developments on public infrastructure use, to consolidate land, control urban growth or facilitate spatial planning. The main obstacles that limit broader use of land value capture include lack of administrative capacity, lack of financing for the acquisition of land, resistance from landowners, and an inadequate land registry (OECD 2022). The improvement of land management systems, as highlighted under Strategic Action 2, would help facilitate this source of financing of urban services as well.

Mobilize private investment in sustainable urban infrastructure and service delivery through PPPs, especially for urban transport, solid waste management, and land management. The Ministry of Finance, through the GIIF, has advanced the regulatory framework to facilitate PPPs for urban infrastructure. However, the current pipeline is not maximizing possible private sector engagements to enhance the sustainability of Ghana's cities and close the infrastructure gap. While the pipeline of projects does include urban transport—Kumasi Light Rail Transit, Kumasi Bus Rapid Transit, Accra Cable Car, and Accra Light Rail Transit—it misses opportunities to leverage private capital to expand basic services and affordable housing. Piped water, sanitation, and solid and liquid waste management are areas where accessibility to services remains critically low, especially considering the projected growth of the urban population and ongoing urbanization. Mobilization of private sector capital is constrained by lack of transparency in government expenditures and bidding processes, short-term contracts that do not maximize investments into capital expenditure, lack of security on payments and insufficient recourse mechanisms in advent of default, and improper allocation of risk between contractual parties.

Improve private sector engagement in solid waste management to gain efficiency and create a circular economy in Ghana's cities. Sustainability in the solid waste management sector implies a system that provides universal collection, ensures safe treatment of waste, has appropriate legislation and control, appropriate risk allocation, and is fully funded. Projects could be commercially viable, but this does not mean that they are sustainable. For example, operations and maintenance contracts are viable in the short term, even following current practices in Ghana, but this is not a model that should be replicated indefinitely as it is not successful in mobilizing private sector capital into high-value infrastructure, which is an industry-wide practice in other markets. A sustainable sector creates the foundation for commercial and economic viability. Ghana's private sector is keen to participate in solid waste management but

lacks an enabling legislative and financial environment to unlock private investments. Most solid waste collection is managed by the private sector through contractual arrangements with MMDAs and several compost, recycling and final disposal facilities are owned and/or operated by the private sector. However, the system is opaque and lacks performance standards. Current practices in the sector limit risk transfer to the private sector and fail to deliver the true benefits of private sector participation, including technological innovation, operational efficiency, and whole-of-life cost savings. There is an opportunity to work with GIIF to structure a PPP modality in the solid waste sector that includes all components necessary for a sustainable system, including economic justification, defined business model, clear key performance indicators, credible enforcement mechanisms, and financial viability.

Explore the use of PPPs to improve land management and administration. While some land administration services, such as registration, may be better suited to public sector provisioning or services such as field surveys, land information system development, e-services, and others, can benefit from private sector participation to introduce efficiencies and reduce costs of service delivery. The PPP modality has been implemented in several high-income countries but use in low- and middle-income countries has been limited. Entry points along the land administration service delivery value chains that could be suitable for provision through a PPP modality in Ghana include management and operations (e.g., establishing IT infrastructure and systems and providing technological upgrades), land register (e.g., developing and maintaining an e-conveyancing solution), spatial data infrastructure (e.g., designing and developing a cadastral data management system), and valuation and taxation (e.g., developing a mass appraisal system) (World Bank 2020b) (table 26).

Table 26 Strategic Action 3 – Next Steps on Mobilizing Funds

ACTION	ACTOR(S)
Develop scheme to update land cadastres and registries	MLGCRA, MMDAs
Update and renew the tax base valuation system	MLGCRA, MMDAs, GRA
Prepare an inventory of MMDA assets including public land	MLGCRA, MMDAs
Provide training and capacity building on land value capture instruments	MLGCRA, OHLGS
Organize a consultative workshop with MMDAs to review the pipeline of PPPs with the objective of identifying additional projects and diagnosing bottlenecks in the identification of PPP opportunities in urban service delivery	MLGCRA, MOF, MMDAs
Compile and consult with stakeholders on recent studies on private sector participation the solid waste sector	MLGCRA, MOF
Prepare a feasibility study on PPPs for land management and administration	MLGCRA, MOF

Strategic Action 4: Facilitate and Incentivize Coordination Among Key Local Government Actors and Development Partners to Improve the Impact of Investment

Facilitate and incentivize interjurisdictional collaboration at the metropolitan scale. Ghana's key urbanization challenges—climate change, urban sprawl, transport, solid waste management, and affordable housing—are best addressed at a metropolitan scale that transcends administrative boundaries. Currently, there is weak enforcement of the current legal framework that facilitates inter-jurisdictional coordination or collaboration in planning. Both Local Governance Act 2016 and the Land Use and Spatial Planning Act 2016, Act 925 made provisions for interjurisdictional coordination in planning and implementation through joint district planning entities and statutory technical subcommittees. The Regional Coordinating Council has the mandate for interjurisdictional coordination but needs capacity support and political buy-in to carry out its role. It is therefore necessary to incentivize metropolitan-scale collaboration for improved urban service delivery solutions (table 27).

Table 27 Strategic Action 4 – Next Steps on Improved Coordination

ACTION	ACTOR(S)
Prepare study/guidance on interjurisdictional collaboration and incentive mechanisms	MLGCRA, RCCs, MMDAs
Conduct consultations with stakeholders to discuss and formulate an action plan on inter-jurisdictional collaboration.	MLGCRA
Organize a workshop with development partners to present the draft National Urban Policy and discuss donor coordination	MLGCRA, Development Partners
Prepare a mapping of development partner activities in Ghana's cities	MLGCRA, MOF, Development Partners

Collaboration could be achieved through monetary incentives or changes to the governance structure. One approach could include the allocation of resources to metropolitan scale initiatives through a performance grant program based on collaboration criteria. As interjurisdictional plans get formulated, their implementation would be coordinated, and incentives (grants) provided for specific projects agreed by the local and national governments. Such coordination would bring together adjoining assemblies that share common problems and would benefit from pooled resources and decision-making. Other approaches currently being explored in relation to metropolitan scale flood risk management in Greater Accra include (i) creation of a *Consolidated Local Government* in which multiple districts are amalgamated to form one local government unit, (ii) establishment of a *Metropolitan Authority* to provide a specific service across jurisdictional boundaries, and (iii) implementation of a *Metropolitan Government Model* in which there is an upper-tier governing body that manages region-wide services such as transportation, land-use planning, housing and solid waste disposal, and a lower-tier comprised

of district assemblies that manage local needs such as roads and bridges, street lighting, play grounds and school infrastructure (MLGDRD 2022).

Rally development partners around a unified sustainable cities agenda. Capital expenditure in Ghana is heavily dependent on donor grants and financing. Although there are efforts to increase the investment in infrastructure from domestic funds, it is likely that development partners will continue to play an important role in the near term. In addition to the World Bank, multiple donors are actively supporting urban related studies and investment in Ghana (i.e., EU, UK, UN-Habitat, Norway, AFD, Hungary, SECO, UNICEF, KFW, GIZ, Denmark, JICA). It is difficult for the government to keep track of all the disparate activities and initiatives promoted by development partners in the country. There is an opportunity to strategically convene development partners around a unified sustainable cities agenda. This could be anchored in the Ghana Sustainable Cities Strategy, the Update of the National Urban Policy and Action Plan, the Spatial Development Framework, or another national planning instrument that would help focus donors on the government's areas of priority and reduce the overlap or redundancy in the use of scarce resources.



Photo: Tema, Ghana (iStock-514211853)"

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Annex 1: Ghana Sustainable Cities Framework

1. Affordable and Safe Shelter

Ensure safe and affordable housing for all residents

Sub-topic	Indicator	Data Source	Scale
Housing availability and tenure	Home-ownership rates (% of home ownership as total number of dwellings)	Census	District
	Vacancy rate (% residential structures vacant)	Census	District
Housing supply	% change in number of residential structures	Census	Region
	Overcrowding rate	Census	District
Housing affordability	Housing cost as a percentage of household expenditures	GLSS7	Region
Housing quality	Percentage of households in poor housing conditions (non-cement walls)	Census	District
	Percentage of households in poor housing conditions (mud floors)	Census	District

2. Livability

Promote healthy, safe, and clean cities conducive to well-being

Sub-topic	Indicator	Data Source	Scale
Air quality	Concentrations of PM2.5 particles in 2019 micrograms per cubic meter (μg/m3)	Global Annual PM2.5 Grids	City
Safety	% of household deaths due to accident, violence, homicide and suicide	Census	District
	Proximity to police station (% HH with police station <5km)	Census	District
	Safety level when walking down the street at night in the neighbourhood (% unsafe or very unsafe in urban areas)	GLSS7	Region
Health	Proximity to health centre (% HH with healthcare <5km)	Census	District
	Proportion of population with national health insurance (NHIS) coverage (%)	Census	District
Cleanliness	% Burning or open dumping of waste	Census	District

3. Job-Friendly

Facilitate firms and industries to grow jobs, raise productivity, and increase incomes of citizens

Sub-topic	Indicator	Data Source	Scale
Employment generated and labour market	Labor force participation rate (%)	Census	District
	Employment rate (%)	Census	District
	Change in employment rate (2010-2021)	Census	District
Growth	GDP growth	GDP study	Select cities
Labour force	Tertiary education rate (%)	Census	District
Banking	Proximity to commercial bank (% HH with access <5km)	Census	District
Local Economic Development	Availability of District LED activities in the AAP: • District has implemented at least 50% of the LED activities in the Annual Action Plan (2 points)	DPAT 6.1	District
	Promotion of new business and jobs	DPAT 6.2	District
	Engagement with business community: • District has organized at least two business forums/platform meetings with the business community in the district (1 point) • Evidence of follow-up action on agreed actions from all the engagements above (1 point)	DPAT 6.4	District

4. Access and Inclusion

Ensure equal opportunity and promote the social, economic, and political inclusion of all

Sub-topic	Indicator	Data Source	Scale
Gender	Female labor force participation rate (%)	Census	District
	Deepening gender mainstreaming: At least 20% of members on each of the statutory subcommittees are women (2 points) District Assembly supports 80% of gender activities to promote equality and nondiscrimination against women and girls in the district (1 point) Evidence of planning of infrastructural projects and programmes according to women needs (1 point)	DPAT 4.5	District
Youth	Young people neither in employment nor in education and training (NEET) rate (%)	Census	District

Sub-topic	Indicator	Data Source	Scale
Aging and youth	Population dependency ratio (%)	Census	District
Migration	% residents born outside the district	Census	District
Poverty/inclusion	% poor	GLSS7	District
Inequality	Inequality of income dist. S80/S20 income quintile share ratio (%)	GLSS7	District
Social Protection	Social protection services available in the District: • List of social services is available to the citizens (1 point) • District has implemented at least 60% of its action plans on social protection from their AAP (1 point) • Report on services rendered including referrals and collaborations with other stakeholders in social protection (1 point)	DPAT 4.1	District
	Availability of shelters (transitional housing) in the district: • District has at least one (1) residential home centre and there is a report on the operations of the centre (1 point)	DPAT 4.2	District
	Service to people living with disabilities (PWDs): • District has enrolled at least 90% of PWDs registered with the District on National Health Insurance Scheme (1 point) • District has provided resources and engaged at least 50% of the registered PWDs on productive inclusive /income generating activities (1 point) • District has built the capacity of at least 30% of the registered PWDs in a vocation or skill (1 point)	DPAT 4.4	District

5. Carbon Emissions

Promote compact urban form, GHG emissions reduction, nonmotorized transport, and energy conservation

Sub-topic	Indicator	Data Source	Scale
Energy	Residential electricity demand - quantity (kWh/ capita)	Energy Commission 2019	District
Clean cooking energy	Households using LPG for cooking (%)	Census	District
Nonmotorized transport	Share of household with at least 1 functioning bicycle (%)	2012 Transport Indicators	Region

Sub-topic	Indicator	Data Source	Scale
Public transport	Share of household with nearest bus stop more than 20 walking distance (%)	2012 Transport Indicators	Region
Spatial form	Ratio of built-up area rate to population growth rate	GHSL/Census	District
Solid Waste	Availability of final dumping site • Availability of a well-maintained dumping site or Engineered landfills according to environmental health standards (1 point) • District has a functional final disposal site or co-ownership for solid/liquid waste with documentary evidence (2 points)	DPAT 5.2	District
Climate Actions	Climate change interventions: • District has delivered or implemented at least 80% of climate adaptation activities from their AAP (1 point) • District has a programme on tree planting/ afforestation and there is evidence of implementation (1 point)	DPAT 5.5	District

6. Disaster Resilience

Low exposure to natural hazards and proactivity to invest in climate adaptation and disaster risk management

Sub-topic	Indicator	Data Source	Scale
Exposure	% built-up area exposed to flood risk	GHSL/Fathom	Region
	% increase in built-up area exposed to flood risk (1985 v 2015)	GHSL/Fathom	Region
	Number of deaths, missing persons, and directly affected persons attributed to disasters (double counting when multiregional event)/100 residents in 2021)	EM-DAT	Region
Natural Disasters	Incidence of natural disasters (number of recorded events since 1968)	EM-DAT	Region
Adaptation	District has delivered or implemented at least 80% of climate adaptation activities from their AAP (1 point)	DPAT 5.5	District

7. Managed Waste

Promotes reductions in generation and waste, proper collection and disposal, and recycling

Sub-topic	Indicator	Data Source	Scale
Generation	Municipal waste generated (kg/capita)	Adapted - Miezah, et al. (2015)	City
	% non-biodegradable waste	Adapted - Miezah, et al. (2015)	City
Collection	Proportion of households with solid waste collected	Census	District
	Proportion of households without receptacle for storage of solid waste	Census	District
Disposal	Availability of final dumping site • Availability of a well-maintained dumping site or engineered landfills according to environmental health standards (1 point) District has a functional final disposal site or co-ownership for solid/liquid waste with documentary evidence (2 points)	DPAT 5.2	District
Financing	Sanitation services: At least 20% of the IGF was spent on sanitation improvement services in the district and there is evidence of implementation (2 points)	DPAT 2.3	District

8. Biodiversity & Greening

Ensures preservation of green spaces and proper capture and treatment of wastewater

Sub-topic	Indicator	Data Source	Scale
Green space	% green land cover	MODIS	District
Ecosystem impact	Proportion of households throwing wastewater onto ground/street/outside	Census	District

9. Basic Services

Ensures access to basic services for all residents

Sub-topic	Indicator	Data Source	Scale
Water & wastewater	Population connected to at least secondary wastewater treatment	Census	District
	Proportion of population with access to adequate and safe drinking water	Census	District
	Access to household toilet	Census	District
Electricity	Population connected to electricity (%)	Census	District
Solid waste	% of the population with regular solid waste collection	Census	District
O&M	Maintenance of Infrastructure of public interest: • Operations & maintenance plan includes public places of interest such as markets, community centres, lorry parks, U-drains, schools, hospitals or clinics, CHPS compounds, etc. (1 point) • Budget allocation for O&M is at least 10% of capital expenditure budget (1 point) • Evidence of expenditure for O&M Budget proportional to 10% of the capital expenditure and there is evidence of implementation of the O&M Plan (1 point)	DPAT 2.4	District

10. Financially Sound

Ensures long-term sustainability of services through sound financial practices

Sub-topic	Indicator	Data Source	Scale
Fiscal autonomy and performance	Own-source revenue as a % of total revenues	MOF	District
	Revenue from ratable properties and businesses: • There is an established computerized billing system, linked to property rate roll and business inventory (1 point) • Property rates and business operating permit bills have been generated and delivered to all property and business owners (2 points) • There is evidence of follow-up actions by the MMDA on defaulters/non-payers (2 points)	DPAT 3.2	District
Capital investment	Capital spending as a % of total expenditures	MOF	District
	Capital spending per capita	MOF, Census	District
Transparency	Availability of approved annual action plan and composite budget	DPAT 4.2	District

11. Smart & Participatory

Ensures access to the internet, use of technology to improve the delivery of services, and promotes the participation of residents in planning and public decision-making

Sub-topic	Indicator	Data Source	Scale
Internet Access	Households that have internet access at home (%)	Census	District
Participatory	Organization of town hall meetings & MMDCEs engagement with communities	DPAT 4.5	District
	Frequency of government consultation with public before amendment of laws by region (% occasionally or never)	GLSS7	Region
Government responsiveness	Meetings of the Public Relations and Complaints Committee of the Assembly	DPAT 2.4	District
	Functionality of Client Service Unit (CSU)	DPAT 4.1	District

12. Well-Planned

Promotes well-planned growth and urban development services

Sub-topic	Indicator	Data Source	Scale
Spatial	Street naming database and property addressing: • Assembly has a functional street naming and property addressing database (1 point) • Database has been mapped out, printed, and displayed at the Assembly premises and substructures (1 point) • Assembly has installed at least 60% of its named streets (1 point)	DPAT 3.3	District
	Annual growth rate of building footprint (2010-2020)	GHSL	District
Governance	Building permit processing & issuance: • At least 90% of permit applications received were processed, approved, issued, and communicated to applicants within 90 days of receipt of applications, by the Spatial Planning Committee, (2 points) • All the building permits approved and issued to applicants are traceable to the local plans (1 point)	DPAT 3.2	District

Annex 2: List of MMDAs Comprising Ghana's 15 Largest Cities

No.	Region	District name 2021	District status 2021	City
ACCRA CITY				
1	Central	Gomoa East	District	Accra
2	Central	Awutu Senya East Municipal	Municipal District	Accra
3	Central	Awutu Senya	District	Accra
4	Greater Accra	Ga South Municipal	Municipal District	Accra
5	Greater Accra	Weija Gbawe Municipal	Municipal District	Accra
6	Greater Accra	Ga Central Municipal	Municipal District	Accra
7	Greater Accra	Ablekuma North Municipal	Municipal District	Accra
8	Greater Accra	Ablekuma West Municipal	Municipal District	Accra
9	Greater Accra	Ablekuma Central Municipal	Municipal District	Accra
10	Greater Accra	Accra Metropolitan Area	Metropolitan Area	Accra
11	Greater Accra	Korle Klottey Municipal	Municipal District	Accra
12	Greater Accra	Ayawaso Central Municipal	Municipal District	Accra
13	Greater Accra	Ayawaso East Municipal	Municipal District	Accra
14	Greater Accra	Ayawaso North Municipal	Municipal District	Accra
15	Greater Accra	La Dade-Kotopon Municipal	Municipal District	Accra
16	Greater Accra	Ledzokuku Municipal	Municipal District	Accra
17	Greater Accra	Krowor Municipal	Municipal District	Accra
18	Greater Accra	Adentan Municipal	Municipal District	Accra
19	Greater Accra	Ayawaso West Municipal	Municipal District	Accra
20	Greater Accra	Okaikoi North Municipal	Municipal District	Accra
21	Greater Accra	Ga North Municipal	Municipal District	Accra

No.	Region	District name 2021	District status 2021	City
22	Greater Accra	Ga West Municipal	Municipal District	Accra
23	Greater Accra	Ga East Municipal	Municipal District	Accra
24	Greater Accra	La Nkwantanang Madina Municipal	Municipal District	Accra
25	Greater Accra	Kpone Katamanso Municipal	Municipal District	Accra
26	Greater Accra	Ashaiman Municipal	Municipal District	Accra
27	Greater Accra	Tema West Municipal	Municipal District	Accra
28	Greater Accra	Tema Metropolitan Area	Metropolitan District	Accra
29	Greater Accra	Ningo-Prampram	District	Accra
30	Greater Accra	Shai-Osudoku	District	Accra
31	Eastern	Upper West Akim	District	Accra
32	Eastern	Ayensuano	District	Accra
33	Eastern	Akwapim South Municipal	District	Accra
AGONA SWEDRU CITY				
34	Central	Gomoa Central	District	Agona Swedru
35	Central	Agona East	District	Agona Swedru
36	Central	Agona West Municipal	Municipal District	Agona Swedru
BOLGATANGA CITY				
37	Upper East	Bolgatanga Municipal	Municipal District	Bolgatanga
38	Upper East	Bolgatanga East	District	Bolgatanga
CAPE COAST CITY				
39	Central	Komenda Edina Eguafo Abirem Municipal	Municipal District	Cape Coast
40	Central	Cape Coast Metropolitan Area	Metropolitan District	Cape Coast
41	Central	Abura Asebu Kwamankese	District	Cape Coast
42	Central	Mfantsiman Municipal	Municipal District	Cape Coast
DENU CITY				
43	Volta	Keta Municipal	Municipal District	Denu

No.	Region	District name 2021	District status 2021	City
44	Volta	Ketu South Municipal	Municipal District	Denu
45	Volta	Ketu North Municipal	Municipal District	Denu
HO CITY				
46	Volta	Ho West	District	Ho
47	Volta	Adaklu	District	Ho
KOFORIDUA CITY				
48	Eastern	Akwapim North Municipal	Municipal District	Koforidua
49	Eastern	Okere	District	Koforidua
50	Eastern	New Juaben South Municipal	Municipal District	Koforidua
51	Eastern	New Juaben North Municipal	Municipal District	Koforidua
52	Eastern	Suhum Municipal	Municipal District	Koforidua
53	Eastern	Abuakwa North Municipal	Municipal District	Koforidua
54	Eastern	Yilo Krobo Municipal	Municipal District	Koforidua
KUMASI CITY				
55	Ashanti	Bekwai Municipal	Municipal District	Kumasi
56	Ashanti	Amansie West	District	Kumasi
57	Ashanti	Atwima Kwanwoma	District	Kumasi
58	Ashanti	Bosomtwi	District	Kumasi
59	Ashanti	Juaben Municipal	Municipal District	Kumasi
60	Ashanti	Ejisu Municipal	Municipal District	Kumasi
61	Ashanti	Oforikrom Municipal	Municipal District	Kumasi
62	Ashanti	Asokwa Municipal	Municipal District	Kumasi
63	Ashanti	Kumasi Metropolitan Area (KMA)	Metropolitan District	Kumasi
64	Ashanti	Kwadaso Municipal	Municipal District	Kumasi
65	Ashanti	Suame Municipal	Municipal District	Kumasi
66	Ashanti	Old Tafo Municipal	Municipal District	Kumasi

No.	Region	District name 2021	District status 2021	City
67	Ashanti	Asokore Mampong Municipal	Municipal District	Kumasi
68	Ashanti	Kwabre East	District	Kumasi
69	Ashanti	Afigya Kwabre South	District	Kumasi
70	Ashanti	Atwima Nwabiagya North	District	Kumasi
71	Ashanti	Atwima Nwabiagya South Municipal	Municipal District	Kumasi
72	Ashanti	Atwima Mponua	District	Kumasi
73	Ashanti	Afigya Kwabre North	District	Kumasi
OBUASI CITY				
74	Ashanti	Amansie Central	District	Obuasi
75	Ashanti	Obuasi East	District	Obuasi
76	Ashanti	Obuasi Municipal	Municipal District	Obuasi
77	Ashanti	Adansi North	District	Obuasi
SEKONDI-TAKORADI CITY				
78	Western	Ahanta West Municipal	Municipal District	Sekondi-Takoradi
79	Western	Effia Kwesimintsim Municipal	Municipal District	Sekondi-Takoradi
80	Western	Sekondi Takoradi Metropolitan Area (STMA)	Metropolitan District	Sekondi-Takoradi
81	Western	Shama	District	Sekondi-Takoradi
82	Western	Mpohor	District	Sekondi-Takoradi
SUNYANI CITY				
83	Ahafo	Tano North Municipal	Municipal District	Sunyani
84	Bono	Sunyani Municipal	Municipal District	Sunyani
85	Bono	Sunyani West Municipal	District	Sunyani
TAMALE CITY				
86	Northern	Nanton	District	Tamale
87	Northern	Tamale Metropolitan Area (TMA)	Metropolitan District	Tamale
88	Northern	Sagnarigu Municipal	Municipal District	Tamale

No.	Region	District name 2021	District status 2021	City
89	Northern	Kumbungu	District	Tamale
90	Northern	Savelugu Municipal	Municipal District	Tamale
TARKWA CITY				
91	Western	Tarkwa-Nsuaem Municipal	Municipal District	Tarkwa
92	Western	Prestea/Huni Valley Municipal	Municipal District	Tarkwa
TECHIMAN CITY				
93	Bono East	Techiman Municipal	Municipal District	Techiman
94	Bono East	Techiman North	District	Techiman
WA CITY				
95	Upper West	Wa Municipal	Municipal District	Wa
96	Upper West	Nadowli Kaleo	District	Wa





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