

Future Proofing Cities

Ghana - Metropolitan Cities



Foreword

It is a great pleasure to introduce these Future-Proofing Cities Studies, covering cities in Ethiopia, Ghana, Mozambique and Uganda. These studies, form an integral part of the Future Cities Africa (FCA) Programme that the Cities Alliance has undertaken over the past two years, with financial support of DFID. These studies covered nine cities that were carefully selected to represent metropolitan cities, secondary cities, regional capitals and cities within growth corridors. Together, they exemplify the challenges of contemporary rapid urban growth, and the opportunities and promise that African cities can and must hold for the future of the continent.

While demonstrating important differences between the cities, there is a common thread that is well understood by national governments and city managers alike: a combination of enabling national policies, strong institutions, well-resourced and accountable local governments, and informed and engaged citizens are essential for local and national prosperity. On the African continent it is precisely these type of cities, in every country, that will have to be empowered to contribute to the successful implementation of Agenda 2030, and grapple with the consequences of climate change. However, time is very short, as the majority of urban growth is determined more by facts on the ground than by effective policy-making.

I would like to thank Jamie Simpson, Erika Puspa and the entire FCA team for their outstanding work in completing a complex work programme against demanding deadlines, our colleagues at Arup International Development for the high quality of these studies, and Simon Ratcliffe and his colleagues at DFID (UK) for their constant support and encouragement.

William Cobbett

Cities Alliance Director

Ghana – Metropolitan Cities is part of the Future Cities Africa (FCA) initiative in partnership with Cities Alliance and the UK Department for International Development (DFID).

FCA is a partnership initiative launched by Cities Alliance and DFID to support cities in Ghana, Ethiopia, Uganda and Mozambique as they transform themselves into resilient, inclusive centres of economic growth.

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Contents

Introduction	2
Approach.....	5
Ghana	7
Metropolitan Cities	14
GAMA.....	17
Final Thoughts	37
Appendix	41
Information mapping	42
Low-carbon initiatives	43
References.....	46

African governments are counting on urbanisation to lift their nations out of poverty.



Figure 1. Street in Accra

Introduction

▶ The majority of Africa’s population will shift from rural to urban in the next thirty years. Future Cities Africa aims to help cities achieve inclusive economic growth, manage demographic change, and address environmental risks.

Africa is going through an economic boom and cities are at the centre of this pathway to economic prosperity. Two key features are set to alter Africa’s future: a youthful population and urbanisation. Combined, these features are defining the boom in trade and industry and will push modernisation and increase connectivity across the continent (KPMG, 2012).

Africa’s cities are emerging as centres of entrepreneurship, innovation, creativity and invention. Africa is now the fastest-growing region in the world in terms of mobile telephone and internet access. It is anticipated that mobile data usage will increase twenty times between 2013 and 2019 (Ericsson, 2014). Africa is also the final inhabited continent on the planet to urbanise.

Globally, future city growth will be almost exclusively in Africa and Asia, representing over 90% of the world’s urban population growth (WEF, 2015). In its recent report, *Future of African Cities: Poles of Prosperity or Slums of Despair* (2015), the Brenthurst Foundation indicates that by mid-2030 half of all Africans will live in cities. They suggest that three main drivers of African urbanisation are fuelling these historic changes in the continent: natural population growth, rural-urban migration, and large-scale dynamics such as connectivity, technology and globalisation (The Brenthurst Foundation, 2015). Linked to these drivers of growth, greenhouse gas emissions in the region are expected to grow rapidly, primarily through increased fossil fuel use, and agricultural expansion (Hogarth et al, 2015).

“The emerging future of cities largely depends on the way we plan and manage urbanisation, and the way we leverage this transformative process to ‘provide the setting, the underlying base and also the momentum for global change”

*Joan Clos
Executive Director UN-Habitat*

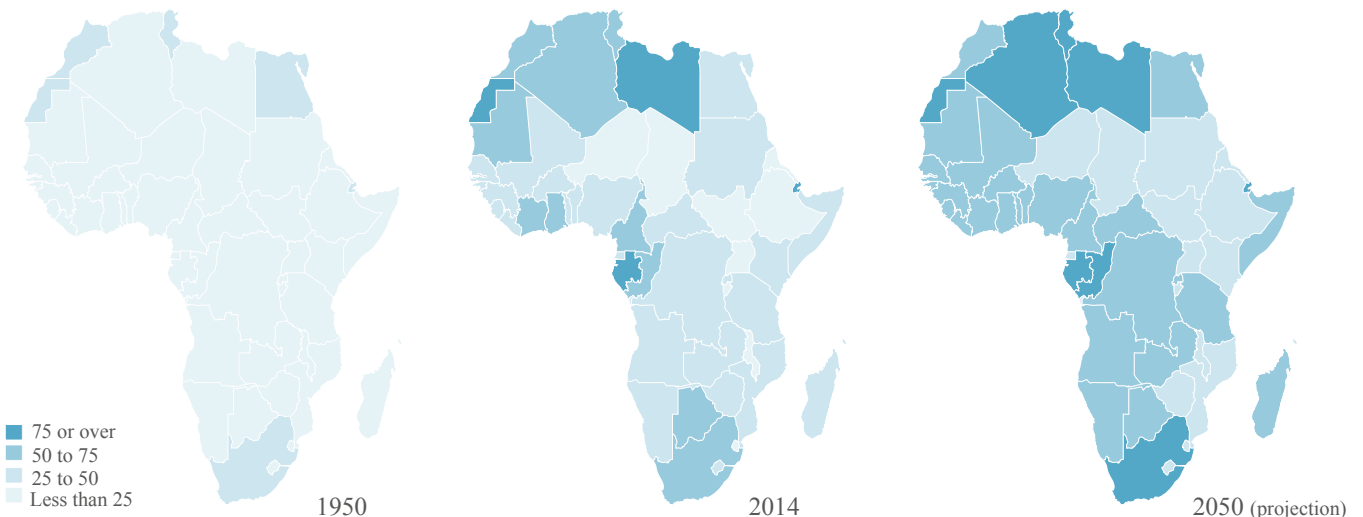


Figure 2. Percentage of the population residing in urban areas
Based on World Urbanization Prospects, The 2014 Revision. UN 2015

African city megatrends

Development megatrends impacting African cities can be viewed as opportunities or risks depending on a city's context.



Figure 3: African city megatrends - highlighting Ghanaian megatrends based on Z-punkt, n.d. & Arup Cities Alive, 2014

“The current wave of urban growth in Africa is occurring faster and on a larger scale than anything the world has yet witnessed, and therefore poses the greatest challenge yet for urban and national policy-makers.”

Brenthurst Foundation, 2015

The challenge facing African cities is to provide their citizens with equal economic opportunities while transitioning to a low carbon economy, using limited resources efficiently, and managing rapid urban and population growth. African cities also need to manage the impacts of a youthful population. In Uganda, for example, the majority population is younger than 15. This leads African leaders to question whether their demographic profile is an economic godsend or ticking time-bomb (World Bank, 2012).

For African cities to be successful they should adopt integrated and holistic urban planning practices that consider not only inclusive economic development and low-carbon development pathways but also the environmental and social impacts of growth to promote liveable cities. Cities need to plan for growth that is future-proofed for our changing climate, the challenges of scarce natural resources, and underlying geophysical risks.

This report relates to urbanisation as it is currently taking place in Ghana. It discusses how Ghana plans to take advantage of rapid economic growth that has been matched by its rapid urbanisation in recent years. The urban population in Ghana has grown over 3.5 times in the last 30+ years.

Currently, the majority – over 53% – of Ghana’s population live in urban areas (World Bank, 2016). This report will also discuss the impact the urbanisation strategy is having on the regional development of the country. As part of the Future Cities Africa programme, two cities have been selected, Accra and Tema to discuss these messages to indicate the current urbanisation trends and highlight key challenges these cities may face in the future. This report considers these two cities together as key parts of the Greater Accra Metropolitan Area (GAMA). GAMA has evolved from a series of small coastal fishing villages to be the most populated urban area in Ghana. It is the gateway to the country, generating a quarter of the country’s GDP and attracting over 80% of all foreign direct investment in Ghana.

This report relates to metropolitan cities in Ghana and represents one of four reports prepared for Future Cities Africa. Each report covers a specific country, its national urbanisation strategy and its specific regional planning typology. The other three reports include: regional cities in Ethiopia, secondary cities in Uganda, and urban growth corridors in Mozambique.

Figure 4. Aerial view of Accra
Credit: Jason Armstrong / Flickr



Approach

▶ Future Cities Africa seeks to support cities in Africa to become future-proofed for climate, environment and natural resource challenges, so that they are inclusive and resilient, and have growing economies. It will help make cities work for the urban poor. It will conduct an in depth feasibility and scoping study and develop innovative tools to enable rapidly growing African cities to realise their potential as centres of growth and job creation; and use research and evidence to develop targeted urban action plans.

Future Cities Africa Business Case and Intervention Summary (DFID, 2014)

City Governments are trying to...

Future Cities Africa is working with Sub-Saharan Africa (SSA) cities to future-proof them for the range of social, economic, and environmental risks they are exposed to now and will be exposed to in the future. As discussed above, African cities are experiencing rapid population growth and urbanisation alongside a range of severe environmental shocks and stresses. City governments in Africa tend to have limited institutional capacity, over-stretched financial and human resources, and limited data to guide decision-making. Future Cities Africa has identified three key drivers (see Fig. 5) that are shaping African cities: achieving inclusive economic growth, managing demographic change, and addressing local risks associated with climate change, natural resources, and geophysical risks.

Arup was asked to prepare Future-Proofing City Studies for nine cities in four countries: Mekele and Dire Dawa (Ethiopia); Accra and Tema (Ghana); Tete, Nampula, and Nacala (Mozambique); and Jinja and Arua (Uganda).

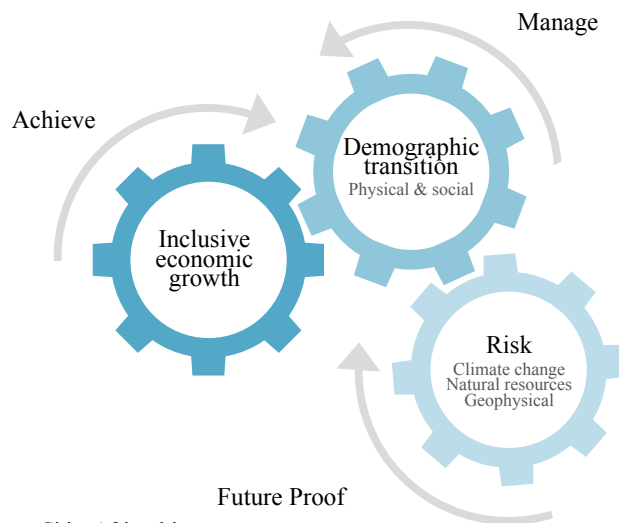


Figure 5: Future Cities Africa drivers

These studies are part of an in-depth feasibility and scoping phase to develop diagnostic tools to enable these cities to realise their growth potential and begin to guide this growth toward a more resilient and inclusive future. We hope that these city studies will help practitioners in local municipalities, national administrations, and international organisations better understand the specific challenges each city is facing.

Two tools are used as part of our data analysis to help us dig deeper into understanding the capacity to act and risks in the cities — the Cities Alliance Normative Framework and the Arup Environmental Risk Framework.

Normative Framework

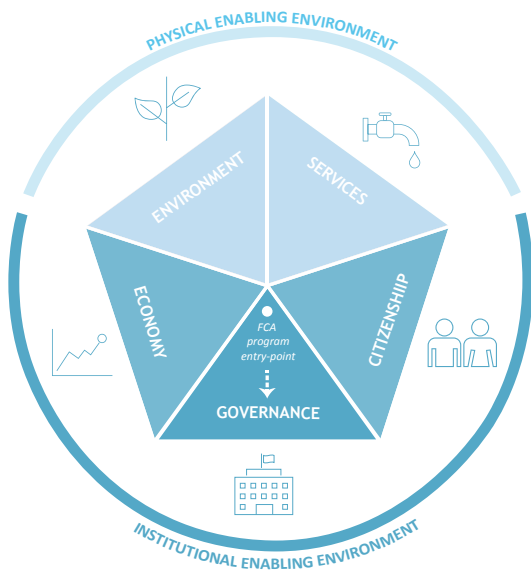


Figure 6: Normative Framework

The Normative Framework describes the physical and institutional environment which can support cities to achieve inclusive economic growth, manage demographic change and future-proof against environmental risks. The Framework helps to: identify relevant data sources, facilitate discussions and build understanding of the factors that African cities need to ‘get right’ to achieve inclusive growth, manage demographic change, and address future risk. The Framework is a tool to assess the physical and institutional enabling environment within African cities, and provides an evidence base for future planning, investment and decision-making. As part of this work, the Framework was used to map the available information for each city and to provide an holistic understanding of each city’s assets according to the five dimensions of the Framework.

Urban ER

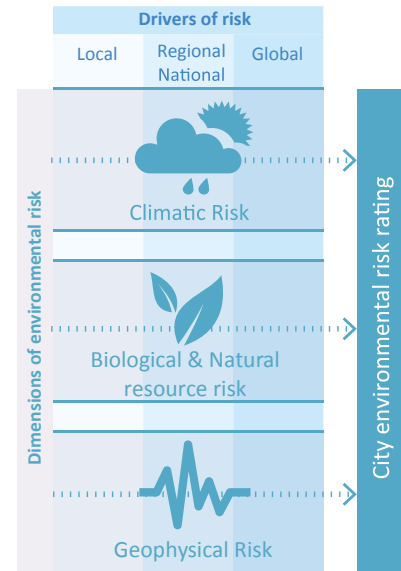


Figure 7: Urban ER Framework

Arup has developed an Urban Environmental Risk Framework (Urban ER) in order to help cities to understand and address the critical environmental challenges which shape urban wellbeing. The Framework identifies three dimensions of environmental risk for African cities: climatic, biological, and natural resource and geophysical hazards. A current risk rating is provided through an understanding of existing threats. A future risk rating is provided based on the drivers of risk at three scales: local (such as loss of local biodiversity), regional (such as poor regional planning policy), and global (such as climate change). Through understanding the drivers of environmental risk, we can help city governments, advisors and stakeholders understand how local urban development pathways can create or compound risk. Urban ER can also help cities evaluate their capacity to act at different levels in order to mitigate current risk, and collaborate with others on a local, regional and global level to achieve a more resilient future.

Ghana

▶ In the last 30 years political stability in Ghana has enabled significant economic growth and rapid urbanisation. Much of the economy still relies on the extraction of natural resources including newly discovered oil reserves.

5.6%

average annual GDP growth rate over almost 30 years

Ghana has been inhabited for over a thousand years and in that time has been contested by multiple nations for its resources and trading rights. It declared independence in 1957, the first SSA nation to do so. Located just north of the equator in West Africa the country had a population of 14.6 million in 2010 and is rapidly growing (Cities Alliance, 2015a). The country is geographically diverse with ecozones ranging from grasslands, coastal shrub lands and forest. It has a wide range of ethnic, linguistic and religious groups and one of the strongest and most diverse economies in Africa. It is now moving along the pathway

to achieving its goal to become a middle-income country by 2020 (Government of Ghana, 1996).

Ghana is known as the ‘Gold Coast’, a name it received by Europeans when significant natural resources such as gold, cocoa, hard woods, and other valuable cash crops were traded, first by the Portuguese in the 1600s and then under British colonial rule. The lucrative trans-Atlantic slave trade also featured prominently in West Africa including Ghana until the early 1800s. Traditional chiefs were given significant local authority under British colonial administration in the mid-19th Century. In the thirty-five years following independence,

the Republic of Ghana underwent several political changes including military and civilian governments, and several military coups that have impacted the economic and social development of the nation. At a regional level the country changed from a local authority system to a district assembly system in 1988, changing from 140 local authorities to 110 districts. Since then a further 60 districts have been created, sitting within 10 regions. The Government of Ghana implemented a multi-party constitution in 1992 which brought political stability to the country, leading to improved economic management and rapid growth.

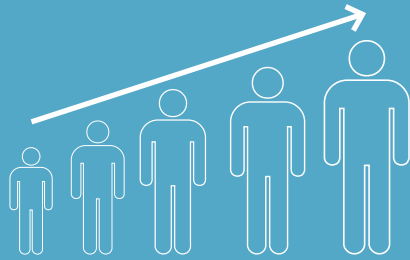


Figure 8: Accra street
Credit: Francisco Anzola / Flickr

Ghana at a glance

Population

26.79M



2.5%

Annual population growth

GDP per capita

US\$ 1,441.6



5.6%

Average GDP growth rate 1986-2014

Poverty



24.6%

Population living below the national poverty line

Child labour



33.9%

Adult literacy



71.5%

Figure 9: Ghana infographic

Economically the country is performing very well, with a 7.8% GDP growth rate between 2005 and 2013. Annual real GDP growth has not fallen below 3.3% since 1984, which is an impressive achievement in a volatile global economy. National health and education rates improved between 1980 and 2014. Life expectancy at birth has increased 9.1 years, mean years of schooling has increased 3.9 years and the GNI per capita increased by 82.6% (World Bank, 2015). Ghana's absolute Human Development Index (HDI) increased by nearly 40%, putting the country now 140th out of 188 - in the 'medium' human development category (UNDP, 2014). Ghana's employment to population ratio is 66.2%, just under the average for SSA (65.7%) (World Bank, 2016).

Overall, national GDP has grown and absolute poverty has decreased.

Ghana's vision to achieve middle-income status by 2020 is based on diversified economic growth including natural resources such as industrial minerals, petroleum, and natural gas; agricultural commodities – Ghana is the second largest producer of cocoa, which makes up a sixth of the country's GDP, and information and communication technology. Ghana's emerging digital economy is modelled after Taiwan, with a focus on primary manufacturing and export of digital technology. In 2011 Ghana began producing commercial quantities of crude oil and natural gas from the Jubilee Oil Field. Both Iranian and Singaporean companies have declared interests in investing in offshore platforms as Ghana aims to increase output of both oil and gas to revenues of \$65 billion in 2014 (Sedzro, 2013). At an estimated five to seven billion

barrels, the reserves are the sixth largest in Africa, with great potential for continued sector growth. The country has recently recorded a 5.8% increase in manufacturing, leading the World Bank to observe that the location of more people and more firms in dense urban areas is contributing to economies of scale and network effects on increased productivity (World Bank, 2015).

Despite the recent discovery of oil, the majority of the Ghanaian economy is in economic sectors sensitive to climate change, such as agriculture, forestry and energy. Recent observations show an increase in rainfall variability and frequency of extreme weather events nationally. Given that 99% of all agriculture in Ghana is reliant on rainfall, the predicted impact of climate change on Ghana's population and economy is significant. To effectively deal



with the projected impacts, the government's strategy is to build climate resilience and sustainably manage the country's natural resources. Ghana Vision 2020 views the integration of Science and Technology as central to achieving rapid economic growth and sustainable management of natural resources and the environment. Finally, with the rise of cities, urban migration is leading to a structural transformation away from subsistence agriculture, spurring a 21% decrease in agricultural employment between 1992 and 2010 (Government of Ghana, 1996).

Ghana's rapid economic growth in recent years has been matched by its rapid urbanisation. Ghana's 'urban transformation' has been huge, with a 3.5 times increase in urban population between 1984 and 2014 (World Bank, 2016). In Accra, the poverty incidence decreased

by 20% between 1991 to 2012 but the World Bank (2015) recorded a 22.5% decline in access to piped water between 2000 and 2010. In all likelihood the high rate of urbanisation, which is above 4%, will continue in the future, leading the Government to estimate that 72% of the population will be living in cities by 2035 (Government of Ghana, 2015).

Figure 10. Accra panoramic view
Credit: Felix Krohn / Flickr



The national government has responded to the trend of urbanisation linked with economic growth through the First and Second Ghana Shared Growth and Development Agenda (2010-2013) and the National Urban Policy (NUP) released in 2012. Currently, the country’s urban hierarchy is dominated by the “golden triangle” consisting of the centre of governance, Accra; the centre of commerce, Kumasi; and the coastal port twin-city of Sekondi-Takoradi, all located in the south of the country (Cities Alliance, 2015). GAMA is the most dominant and influential urban region in Ghana and is responsible for 83% of all foreign direct investment in the country.

GAMA also dominates in terms of urban employment in both formal and informal sectors, at 32% and 28% respectively (Cities Alliance, 2015b). The National Spatial Development Framework (NSDF), 2015-2035, suggests that the Accra capital region should be developed as a “world-class city” alongside the promotion of regional and lower order urban centres to serve more of their regional communities. The NSDF also recommends avoiding relocating industry and services to secondary GAMA cities and rather letting these cities grow “naturally, in a mutually-beneficial way” (Republic of Ghana, 2015).

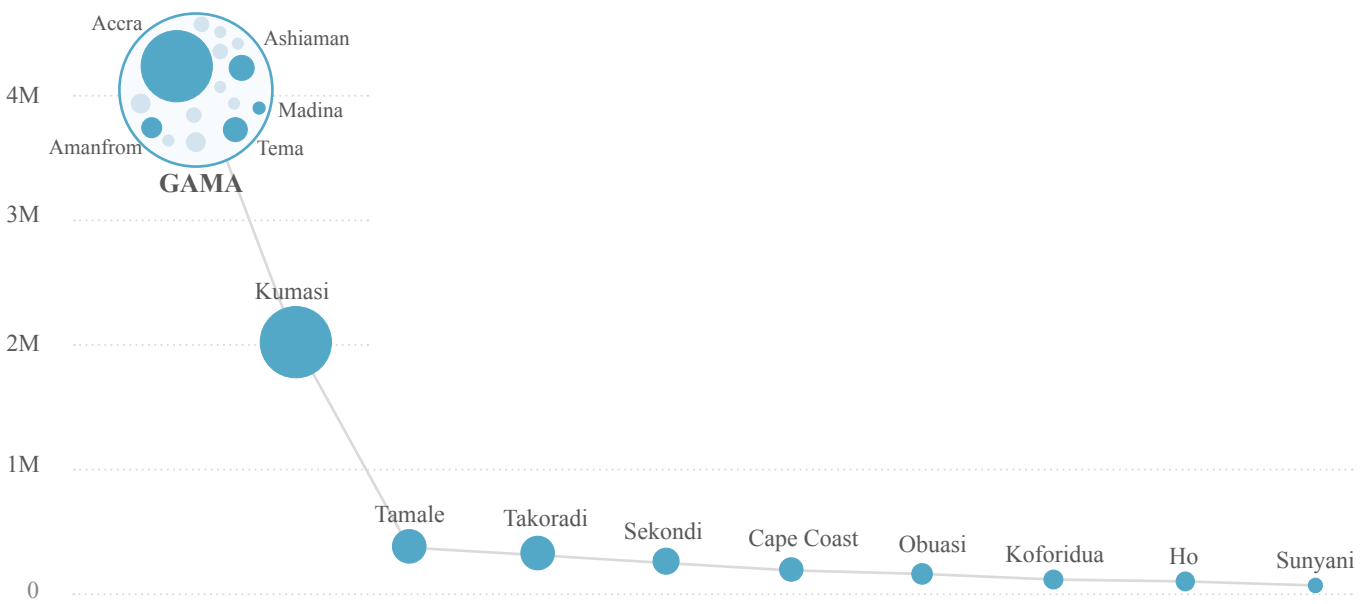
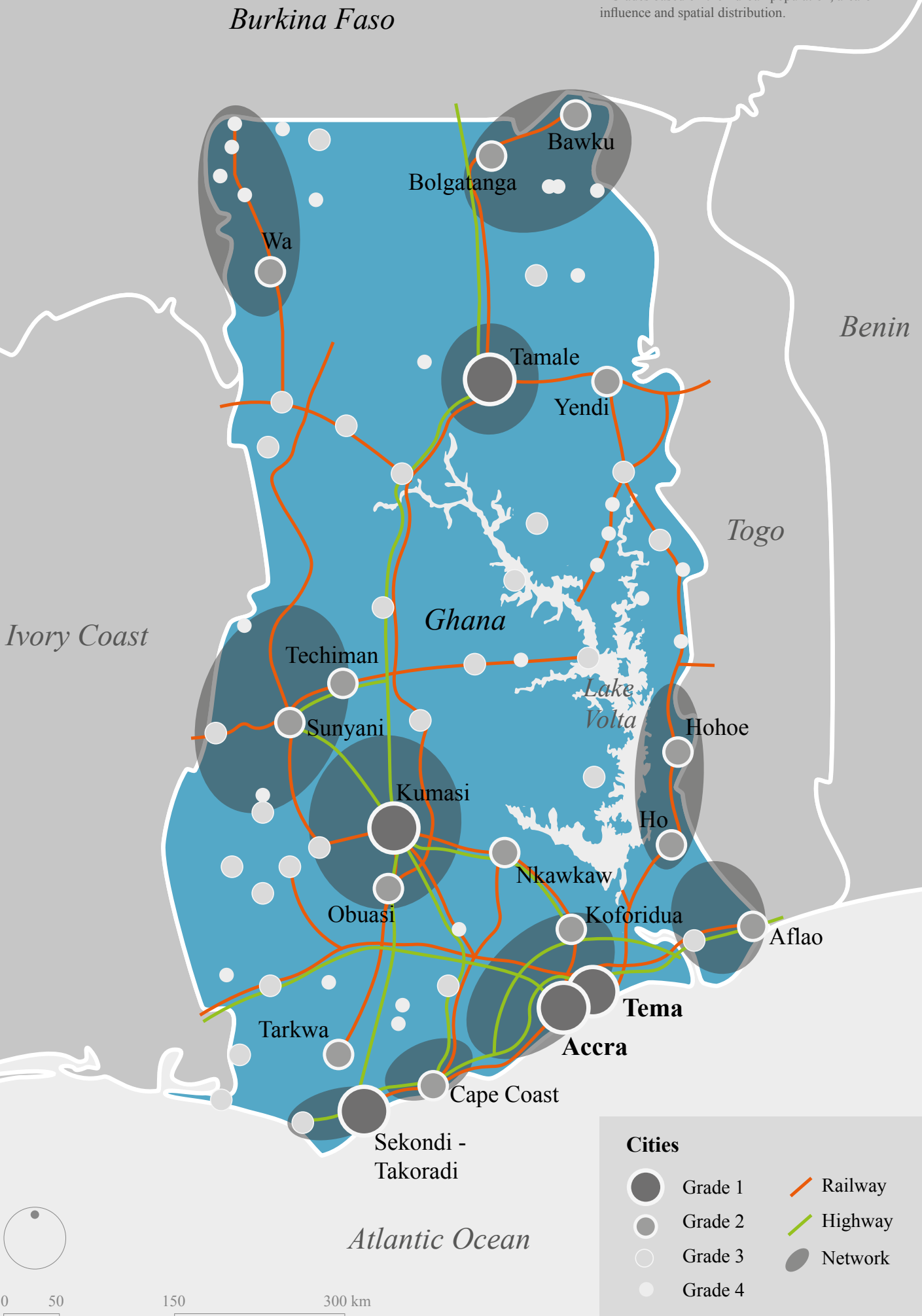


Figure 11: Most populated cities in Ghana

Figure 12: Map of Ghana

The National Spatial Development Framework (2015) urban settlement hierarchy divides Ghanaian cities into 4 Grades based on their urban population, area-of-influence and spatial distribution.



The government recognises the need to promote Accra as a world-class capital city, but also to devolve power from the golden triangle to smaller centres in the country. Seemingly contradictory, the intention is to gradually release the pressure on Accra and Kumasi by supporting growth in a broader system of cities, which promotes the role of secondary cities (Cities Alliance, 2014). To achieve this goal the NUP is focused on urban growth strategies, urban planning and urban management to “promote 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” (Government of Ghana, 2012).

Finally, cities in Ghana are typically characterised by a high degree of informality. The NUP recognises the role of the informal sector, including businesses, markets and settlements and identifies the need to “change the official attitude towards informal enterprises from neglect to recognition and policy support.” Several initiatives address informal settlements, including a commitment to end evictions, supporting in-situ upgrading, and introducing new forms of housing finance (Cities Alliance, 2014).



Figure 13: Busy vehicular street in Accra
Credit: Jason Armstrong / Flickr

Metropolitan cities

- ▶ GAMA is a metropolitan area or region with Accra and Tema interdependently linked to both each other and other surrounding settlements.



Figure 14: Independence arch in Accra
Credit: Shiran De Silva / youtube

Dominant primary cities

Both economic and population growth have focused largely around **Accra** and **Kumasi**, which make up approximately **40% of the total urban population**.

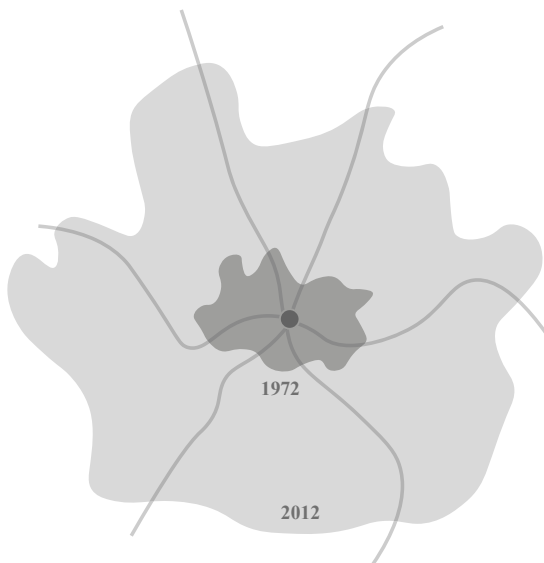
While the latest census data suggests that the majority of Ghana's population, over 53%, lives in urban areas (World Bank, 2016), the Ghana Statistical Service views any settlement with a population above 5,000 people as 'urban'. Ghana has hundreds of small urban settlements of 5,000 to 100,000 people. Just ten settlements are larger than 100,000 (City Population, 2016).

The two major urban settlements in Ghana are Kumasi and Accra. Both cities had estimated populations of around two million in the 2010 census. By contrast Tamale, Ghana's third largest individual city, is a quarter the size of both Accra and Kumasi, with a population of just over 370,000 in 2010 (City Population, 2016).

Given the size distribution of urban centres mentioned above, Kumasi and Accra are the only two cities in Ghana that have significant metropolitan areas. A metropolitan area develops when a city gradually becomes more economically interdependent with its surrounding settlements, becoming a single economy and labour market, and a community with common interests. They can either develop outwardly from a single centre through concentric circles, such as Kumasi, or through several nearby settlements coming together which gradually become connected to allow business interaction, such as Accra (Andersson, 2012).

Greater Kumasi Metropolitan Area

No natural boundaries constraining urban growth.



Greater Accra Metropolitan Area

Two Ramsar sites are constraining urban growth east and west and the Atlantic Ocean to the south, leading cities to expand northward.

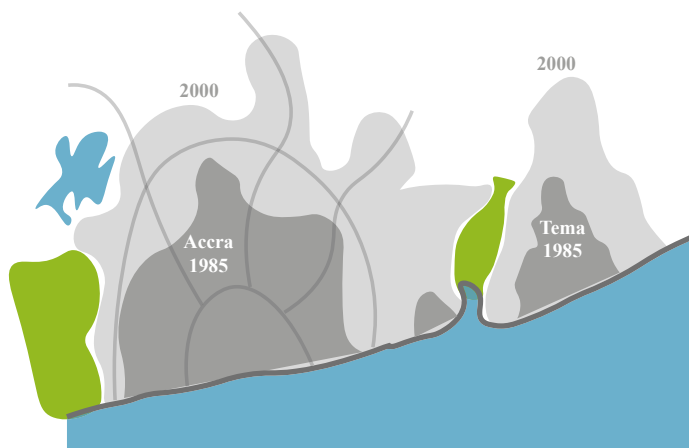


Figure 15: Growth pattern in GKMA and GAMA
Based on Aduro et al, 2014.

Decentralised governance

The national constitution outlines a strategy of **decentralised governance at local level.**

GAMA is home to some of the smallest but most densely inhabited districts in the country. Administratively, GAMA consists of fifteen connected local government districts such as Tema Metropolitan Area. The metropolitan area is managed as a collection of Metropolitan, Municipal and District Assemblies (MMDAs) but does not have a central administrative authority responsible for setting joint economic, environmental and social policies (Cities Alliance, 2015). Each MMDA is managed as a separate administrative planning entity.

Under the new governing arrangements they do not have a formal role within policy making and governance for traditional communities and their chiefs,

however they feature strongly in the urban process and are a key owner and stakeholder in land resources. Entrusted with the role of establishing customary law in their areas, chiefs are useful for the administration of the territory. But this often comes at the expense of wider local participation in governance of the area, its land and resources (Jerry, 2016).

The rest of this report introduces GAMA as the primary ‘metropolitan city’ within Ghana. Considering the inter-connectivity of Accra and Tema within GAMA, this document discusses the two cities jointly from the metropolitan perspective.

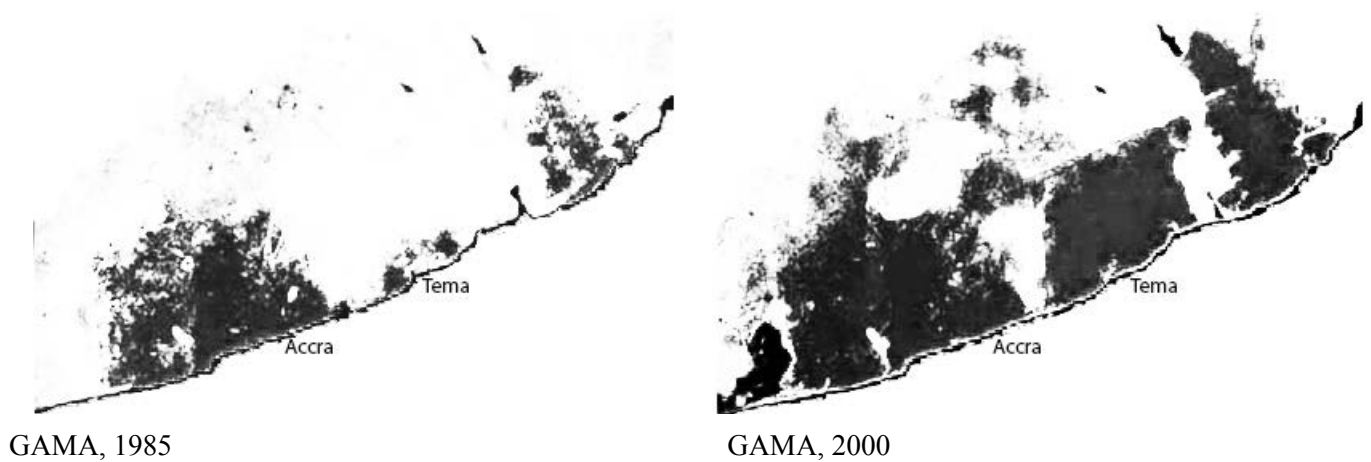


Figure 16: Urban growth in GAMA region
Credit: World Bank, 2008

Traditional communities in GAMA

The rapid urbanisation witnessed in GAMA during this century covers an area that has been inhabited for over 500 years by the Ga and Dangme communities, whose economy and subsistence was characterised by farming, fishing and foraging. Accra itself originated as a small settlement that experienced significant growth over the past century to become the city it is today.

Similarly, Tema originated as a small fishing settlement and began to grow into a major conurbation after national government identified it as a strategic sea-port in the 1950s. It has continued to grow over the last 30 years.

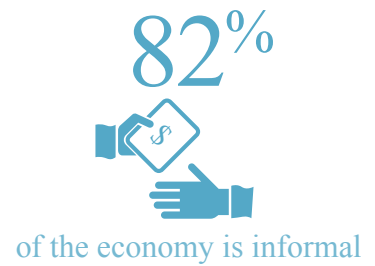
Greater Accra Metropolitan Area

▶ GAMA has evolved from a series of small coastal fishing villages to be the most populated urban area in Ghana. It is the gateway to the country, generating 25% of national GDP and attracting over 80% of all foreign direct investment in the country.

GAMA stretches out along the Atlantic coast and has a population of approximately four million people. Originally built around a port, GAMA has evolved from a series of small coastal fishing settlements to be the most populated urban area in Ghana. Today the area comprises the cities of Accra and Tema as well as 13 other MMDAs. The region is characterised by high rural to urban migration as well as internal movement of people within the GAMA districts. GAMA serves as the economic gateway to Ghana, receiving over 80% of foreign direct investment (World Bank, 2016). At its heart, the city of Accra is a modern metropolis, with architecture reflecting its history ranging from 19th Century buildings to modern skyscrapers and housing developments.

GAMA's growth in recent years is demonstrated by the significant increase in built-up areas, high migration and rural-urban commuting. GAMA covers a huge area of over 3,000 sq. km and has an overall average population density of just 103 people per sq. km in 2010 (Cities Alliance, 2015). Population distribution is uneven within the metropolitan area due to the availability of natural resource and connectivity, as well as policies affecting population re-distribution in the country. Between 1985 and 2000, GAMA's population increased by 50% and the urban extent increased by 160% (World Bank, 2015). From 2000 to 2010, people moved out of Accra to surrounding municipalities and districts where land was cheaper, with population growth highest in districts 10km from the city centre.

Regular commuting in shared transport is now a feature of life for many GAMA residents, with only 3% using private cars nationally (World Bank, 2015). Despite active measures to promote growth outside Accra, the centre still suffers from traffic congestion and accounts for almost half of the total metropolitan population. It is five times more populated than Tema, and has a population density of about 40,000 people per sq. km (Chicago Sister Cities, 2016; GSS, 2014). Urban migrants represent 55% of Accra's population, who have moved for work or to study. However there is no specific policy to attend to their needs or to benefit from their productive capacity (Pescina, 2013). Ghana's Department of Social Welfare estimates that 1% of Accra's population are street children (IRIN, 2007).



GAMA in numbers

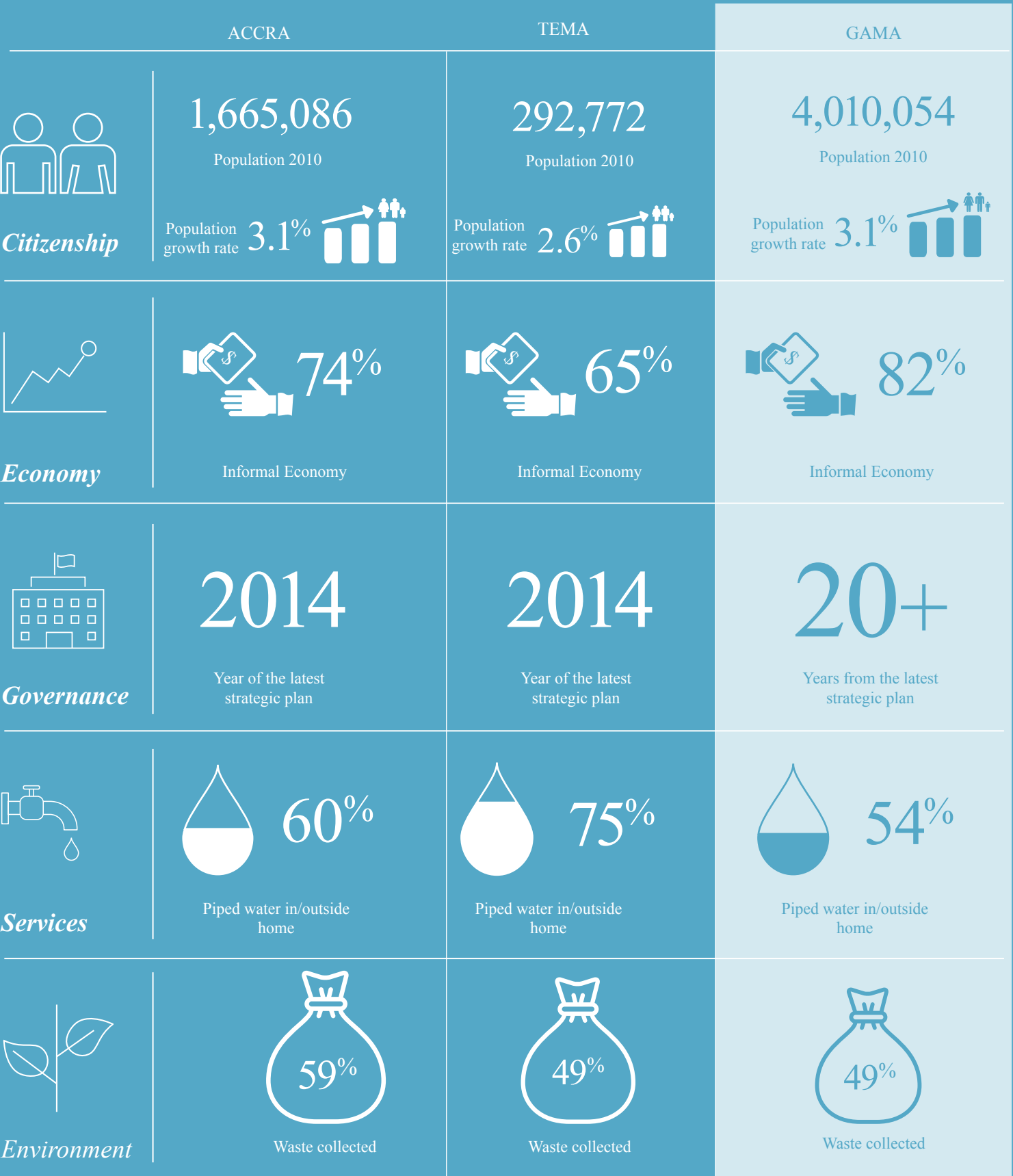


Figure 19: GAMA infographic

Accra also dominates Ghana economically, providing 25% of national GDP. Given the uneven population distribution within GAMA, there is a desire to alleviate the pressure on the centre of Accra and to integrate with other parts of the metropolitan area. The National Spatial Development Framework (NSDF) encourages the dispersion of economic activity to the edges of GAMA and the increase of rural-urban linkages within the metro area. The NSDF also stresses the importance of planning for migration flows: 35% of the GAMA population has moved during their lifetime, many to Accra. It is anticipated that the economic lure of opportunities within the metropolitan area, combined with environmental stresses such as climate change and economic stresses in the north of the country will continue to push and pull people to GAMA looking for jobs and a better life (Republic of Ghana, 2015).

Despite considerable economic growth, GAMA represents a mixed picture when it comes to alleviating poverty and providing infrastructure services for its people. House prices in GAMA have also increased, which reserves ownership for the wealthy. An estimated 55% of the population live in informal housing (UN-HABITAT, 2009). The limited access to land has meant that urban poor households have been displaced to rapidly expanding slums in environmentally fragile

flood plains and hazard zones in and around Accra. While there has been no formal assessment of slums, 78 slum settlements have been identified across GAMA. Most are found along and within corridors of railways and high-tension transmission lines and on the banks of water courses (Cities Alliance, 2015b).

In terms of services in Accra, the proportion of households with access to piped water dropped from 91% in 2000 to 69% in 2010 (World Bank, 2015). Toilet facilities in both Kumasi and Accra have deteriorated in this period, most prominently in the peri-urban areas of the city. Overall basic services such as piped water, waste disposal and toilet facilities decrease with distance from the city centre. However, the region has experienced the highest national improvement in secondary education attainment.

Key industries in Accra include manufacturing, marketing, finance, insurance and transportation. It has a significant financial sector, hosting numerous banks, building societies, the Ghana Stock Exchange and other finance houses. The service sector provides the largest source of employment in Accra, and primary resource extraction the smallest. Despite the growth in new economic sectors, between 70-80% of all workers in GAMA are employed in the informal sector. This is partly due to a lack of formal employment, training and education (Pescina, 2013).

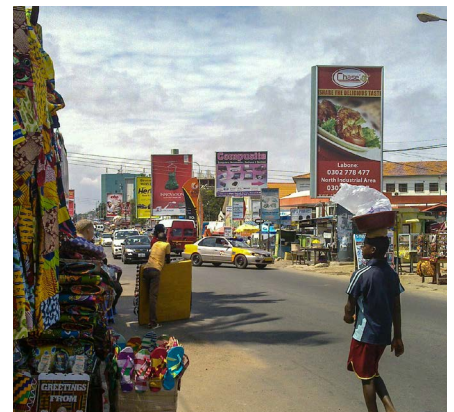


Figure 20: Accra commercial street
Credit: Jbdodane/Flickr



Figure 21: Advertising on commercial building
Credit: Fairphone / flickr

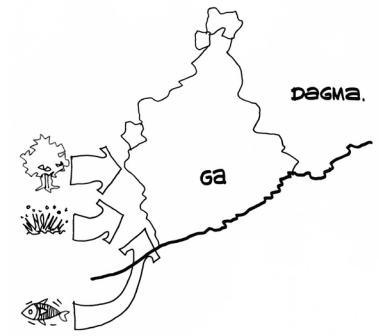
Environmental change

As shown in the illustrations below, over time, environmental change in GAMA has coincided with economic practices. For most of the last 500 years the GAMA area was dominated with subsistence-led practices of fishing or farming. Empirical evidence also shows that a large number of households within GAMA continue to rely on resources ‘given by nature’. Cocoa, gold and timber extraction and export practices followed, which led to significant environmental changes at a wider scale. These have been more complex to replenish. Efforts to control the decimation of hardwoods were implemented in the late 20th century.

In the post-colonial period particularly in this century, investment – or expectation of investment – in real estate has led to rapid expansion and development of the built environment. As a result vast areas of green cover have been permanently lost. Inward investment in real-estate and services has also given rise the need to establish building material supply chains. It is believed that GAMA now imports a staggering 70% of its building materials into the country.

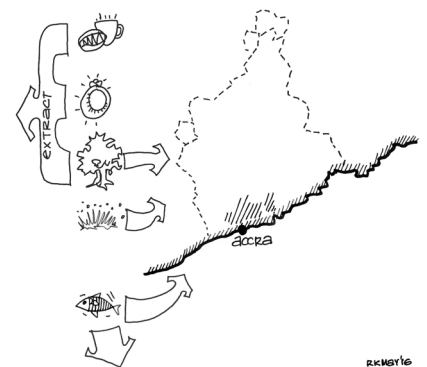
E-waste dumping is another alarming development that has grown in the GAMA area in the last two decades. Some of this waste is dumped on sites that are both ecologically sensitive as well as important for subsistence for local communities, affecting access to water, or plant- or fisheries-based food sources. The urbanisation of recent years has led to both environmental pollution and depletion in GAMA. The financial cost of this is enormous and much of the damage is irreparable.

The loss of environmental livelihoods has also eroded local culture and reinforced existing vulnerabilities. Not only have farming and fishing traditionally provided a livelihood to the Ga and Dangme communities, but they have also made a significant contribution to the creation and cohesion of local communities (UCL, 2012). The loss of livelihoods in rural areas has also been cited as a reason for the high prevalence of children living and working on the streets of Accra. Since they can no longer be supported at home, many have to seek work in Accra, losing the opportunity for a formal education in the process (IRIN, 2007).



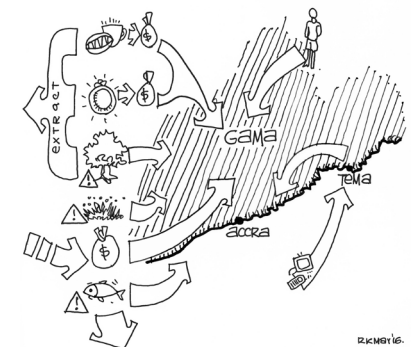
Circa 1500: Subsistence

R.K. MAY '16



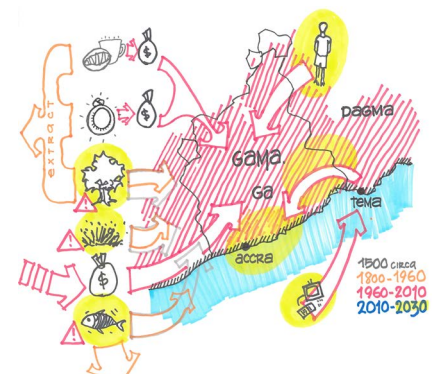
Circa 1800-1970: Extraction

R.K. MAY '16



Circa 1970-2016: Rapid urbanisation

R.K. MAY '16



Circa 2016 onwards: Future environmental risk points

Figure 22: Environmental change in GAMA

What is shaping GAMA?

▶ An emerging practice of cross-boundary collaboration should be broadened to promote future investment and support integrated planning in areas such as environmental management, inclusive economic development, infrastructure service provision and transport planning.

Influence of the global economy

One of Accra’s main strengths is its links to the international economy, at the corporate, individual and family levels. These links present themselves in high transnational entrepreneurship, remittances from abroad and an overall increase in productivity due to the regular contact with other business practices (Pescina, 2013). Ghana’s economy has historically relied on global prices of commodities such as cocoa and more recently oil. GAMA, as the most dominant economic region within Ghana, is the most influenced by the changes in commodity markets. Since gaining independence, Ghana has

carried out a series of reforms and strategic activities to diversify its economy and reduce dependence on an economy based on exporting primary goods and environmental resources.

GAMA’s links to the international economy has impacted its spatial development. Market forces rather than urban planning are shaping GAMA’s spatial growth. In recent decades the potential for inward investment into real estate is driving substantial spread of the built environment in GAMA. Much of this investment is driven through speculative development by local developers and aimed at Ghanaian expatriates living in the US and Europe who are

seeking to invest in property back home. This is particularly the case in Accra and Tema and the areas between these two centres. Approximately three million Ghanaians, and 30% of all highly educated Ghanaians, live abroad. Their investments in Accra’s real estate market are sizeable, ranging from more affordable units in gated communities to incrementally built houses. It is estimated that 3% of dwellings in Accra are now within gated communities such as East Legon Hills compared with 60% in informal settlements. The rise of gated communities is a trend that will likely reduce equality within the city.



Figure 23: Street signage in Accra Credit: Jbdodane / Flickr

Integration of the informal economy

It is believed that between 70-80% of the workforce within GAMA lies within the informal sector and it is the predominant source of household income in GAMA. There is also a strong link between formal and informal economies as the former provides a market for the latter. Getting the balance right is complicated as the power relationship between the formal and informal sellers is not generally equal. The overall importance of

the informal economy to GAMA is clearly articulated in the Ghana Shared Growth and Development Agenda II and the National Urban Policy. This policy recognises the role of the informal sector, including businesses, markets and settlements, and identifies the need for a change in the official attitude towards informal enterprises from “neglect to recognition and policy support”.

Several initiatives are required address informal settlements, including a commitment to end

evictions, supporting in-situ upgrading and introducing new forms of housing finance (Cities Alliance, 2014). The general institutional framework is fairly broad and does not distinguish between traditional occupations, street traders and other informal professions. How the informal economy is integrated within the planning system will significantly shape the emerging metropolitan city.



Figure 24: Informal economy in Accra
Credit: Genderandenvironment.com

Environmental threats

GAMA is threatened by many natural and man-made hazards. Natural hazards include surface and coastal flooding as described earlier, drought, extreme temperatures, vector-borne disease, as well as seismic hazards from local fault-lines. The city also faces man-made threats including air or water pollution, depletion of natural resources and related health impacts such as respiratory illness and water-borne pathogens such as Cholera, which has dominated as a priority issue to address (100 Resilient Cities, 2016).

Climate change is expected to

play a significant role in exposure to hazards in the future. The Gulf of Guinea coastline is already battered by the Atlantic and is facing coastal erosion. An expected sea-level rise of at least 34.5cm by 2080 will impact low-lying coastal communities, particularly those that have inhabited these locations for over hundreds of years (NCCAS, 2010). Mean temperature increases of 3.9°C are also forecast by 2080, presenting increased drought risk across the country, and possibly triggering secondary impacts such as migration into urban areas and further shortages in hydropower-based energy supply (Cities Alliance, 2015a).

These hazards have a number of potential risks, which will be potentially significant in shaping the future of GAMA by placing additional burden on the already fragile economy of the GAMA region. These include loss of property and life; health impacts on people of all ages and gender; disruption to economic activity and loss of livelihoods; and the loss of the economic base, particularly environmental resources.



Figure 25: Informal settlement in Accra

A metropolitan area without a metropolitan authority

GAMA is made up of fifteen contiguous local government districts. Each of these districts is managed as a separate administrative and planning entity, which means GAMA is not managed as an established metropolitan area with strong economic, environmental and social connections. The Greater Accra Region does exist but its clear mandate is unknown.

A strong regional planning authority with a clear metropolitan scale mandate will be key to helping GAMA become a world-class city and a prominent national capital zone as identified in the Ghana Shared Growth and Development Agenda (2010-2013). This is significant as issues such as environmental risks and economic development are often shared across a region of this scale and require a metropolitan-wide response. The NSDF (2015-2035) also stresses the importance of planning for migration flows, given that the majority of the population are migrants to GAMA. As people will continue to be drawn to GAMA in search of a better life, a metropolitan authority would be an effective body to enable regional planning such as spatial development frameworks, regional accessibility strategies including public transport; coordination of infrastructure utilities and integrated planning that promotes co-ordinated development.

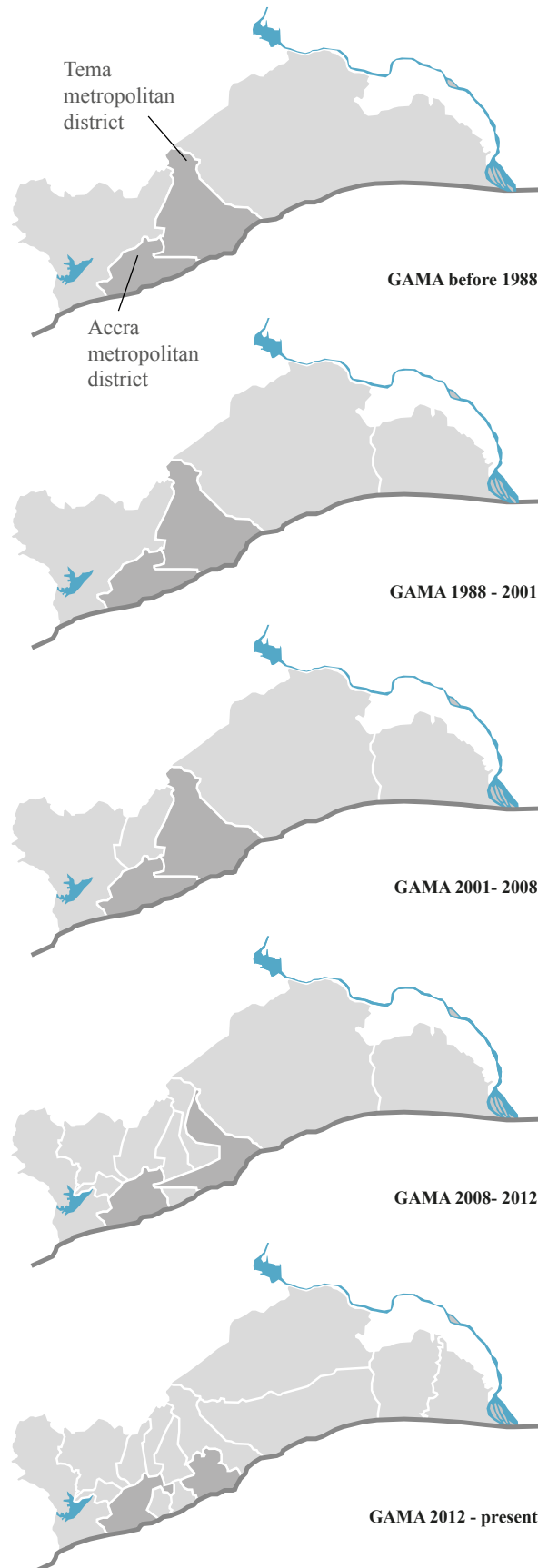


Figure 26: Fragmenting administrative boundaries

Unplanned urban growth

Ghana's rapid urbanisation has been accompanied by the unplanned spatial expansion of metropolitan areas. GAMA now covers a large area of over 3,000 sq. km – an area that increased by 160% between 1985 and 2000. The population of GAMA also increased by 50% over the same period. It is now estimated that 55% of Accra's population is from urban immigration. From 2000 to 2010 people continued to move out of Accra to surrounding municipalities and districts within GAMA where land was cheaper.

Population growth was highest in districts over 10km outside the city centre. Currently the largest increase of manufacturing in Ghana is occurring on the edge of GAMA, recording a growth of 7.8% 10-20km from the city centre (World Bank 2015). This sprawling growth is encouraged in the NSDF, which promotes economic activity at the edge of GAMA.

A Strategic Plan for GAMA prepared almost 20 years ago remains a reference point for establishing a functional metropolitan-wide governmental

framework although much of it remains unimplemented. Unplanned urbanisation and limited infrastructure connectivity both within the metropolitan area and between Ghanaian cities has reduced local economic efficiency. In 2010, only 51% of GAMA's population had direct access to utility water supply services (Allen, 2011). Transport costs for goods are relatively high: in 2014, Ghana ranked 100 out of 160 survey countries in the Logistics Performance Index, only slightly above the average for SSA.



Figure 27: Unplanned growth in Accra
Credit: Shack Dwellers International

A lack of infrastructure connectivity prevents Ghanaian cities from reaping the gains of agglomeration, specialisation, and economies of scale. These emerging problems call for new solutions for effective management and coordination in large urban agglomerations. The NSDF (2015-2035) describes the need to focus development along transport corridors between secondary cities; and also plans to increase GAMA's international connectivity to the neighbouring megacities of Abidjan and Lagos, creating major international transport corridors (Government of Ghana, 2015).



Figure 28: GAMA sprawl
Credit: Philip Mensah

Flooding and drainage

Within Accra, drainage infrastructure is particularly at risk, with inadequate existing infrastructure and poor waste management practices leading to years of accumulated waste in the drainage system. Korle Lagoon and Odaw River in particular have accumulated much waste over the years – including plastics, scrap-metals, fridges and mattresses (McTernan, 2015). The responsibility for primary drains lies with the Hydrological Services

Department of the Ministry of Water Resources, Works and Housing. The responsibility for constructing secondary and tertiary drains lies with the Department of Urban Roads of the Ministry of Roads and Transport, as drains are usually installed as part of road construction. This activity falls under the Urban Roads Department (Metro Roads Department) under the MMAs. The MMAs within GAMA are responsible for maintaining tertiary drains, in this case mainly cleaning and de-silting them (Verhagen et al, 2010). Poor drainage infrastructure

combined with changing rainfall patterns and extreme rainfall events will have a profound implication for people’s livelihoods, especially in informal settlements like Old Fadama, located in a low-lying riverine area in GAMA.



Figure 29: Flooding due to heavy rainfall, May 2016
Credit: Kasapafmonline.com

Key Themes



Citizenship

<p>Low voter turn-out</p> <p>Less than half of Ghanaians voted in the most recent elections.</p>	<p>High levels of literacy</p> <p>Overall levels of English literacy are high (89%) although illiteracy among females is more than twice that of males.</p>	<p>High urban migration</p> <p>Over half the Accra's population has recently moved to the city looking for work opportunities or to study in one of the cities numerous educational institutions.</p>
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Economy

<p>Clear economic dominance</p> <p>GAMA dominates the Ghanaian economy generating a quarter of the national GDP and internationally forming part of a larger mega-city region connecting metropolitan cities of Lagos-Accra-Abidjan.</p>	<p>Significance of the informal economy</p> <p>Three-quarters of the GAMA population, almost 75% relies on the informal economy for its livelihood. The proportion of women reliant on the sector is considerably higher than men.</p>	<p>Foreign Direct Investment</p> <p>GAMA attracts the vast majority (80%) of all foreign direct investment in Ghana.</p>
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Governance

<p>Outdated strategic plan</p> <p>The latest strategic plan for the Greater Accra Metropolitan Area was prepared over twenty years ago. Discussions are currently underway to update the GAMA plan which is needed urgently.</p>	<p>Weak metropolitan governance</p> <p>GAMA is not managed as an established metropolitan area with strong economic, environmental and social connections. The Greater Accra Region does exist but its clear mandate is unknown.</p>	<p>Science and technology</p> <p>Ghana Vision 2020 views the integration of Science and Technology as central to achieving rapid economic growth and sustainable management of natural resources and the environment.</p>
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Services

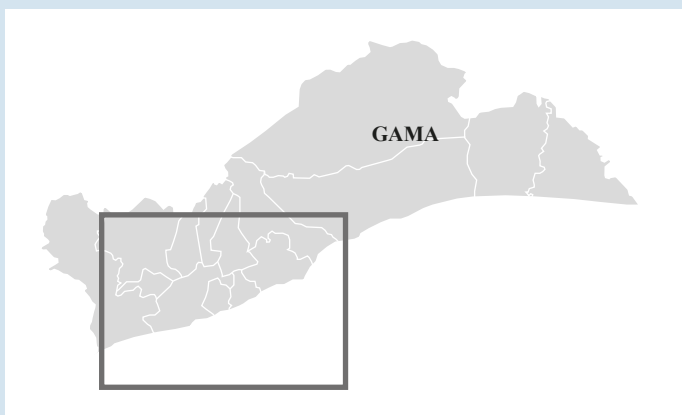
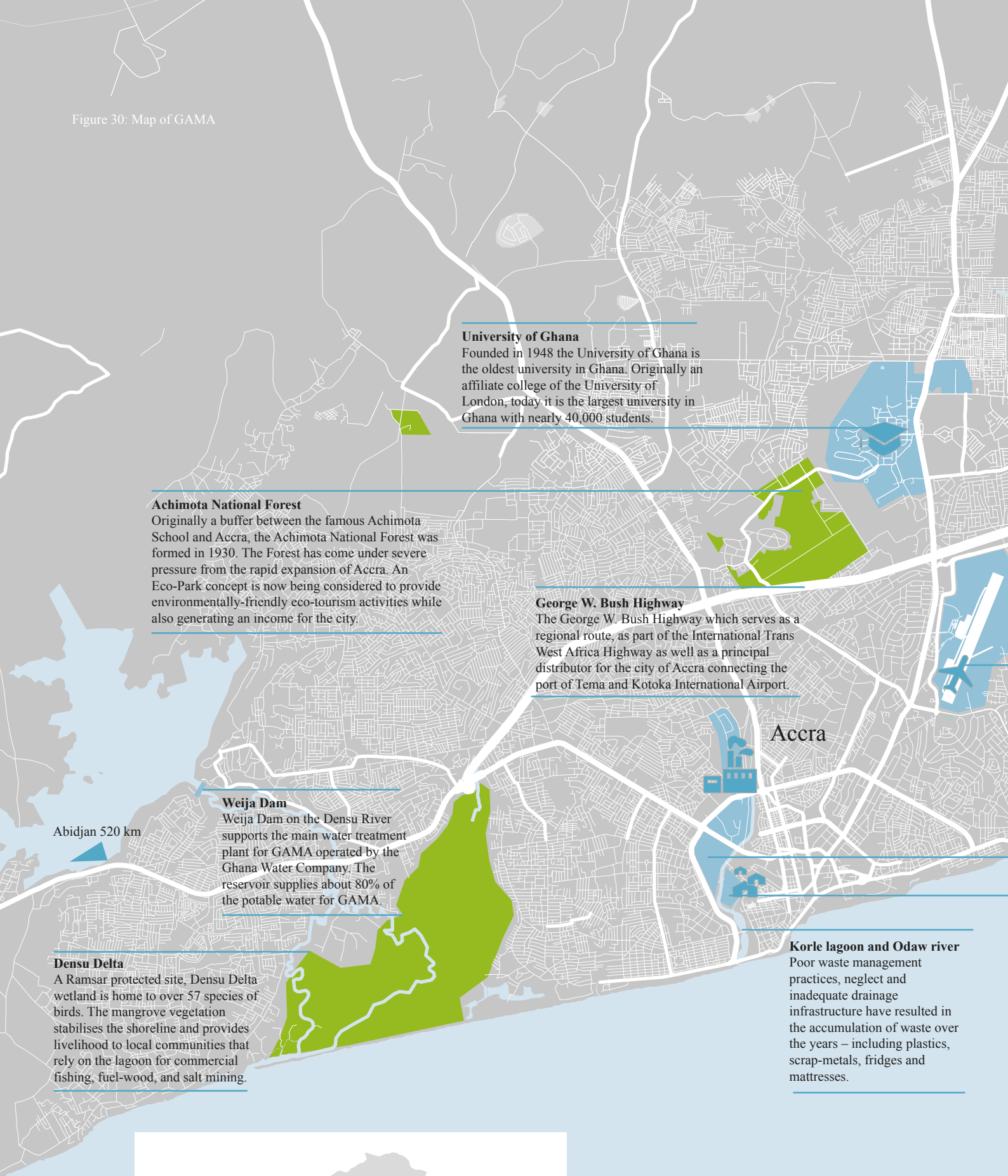
<p>Recent transport improvements</p> <p>Recent investments in road infrastructure within GAMA have improved regional connectivity. The George W. Bush Highway which serves as a regional route, as part of the International Trans West Africa Highway as well as a principal distributor for the city of Accra connecting the port of Tema and Kotoka International Airport.</p>	<p>Sanitation and drainage infrastructure upgrades</p> <p>The city's current system is about forty years old and has developed without adequate maintenance and expansion. The current system covers only 15% of Accra, and what does exist is in a state of disrepair giving rise to environmental pollution and degradation. The situation calls for complete and urgent overhaul.</p>	<p>Declining access to water</p> <p>The proportion of households with access to piped water dropped 20% in the last decade. Toilet facilities have also deteriorated in this same period, most prominently in the peri-urban areas of the city.</p>
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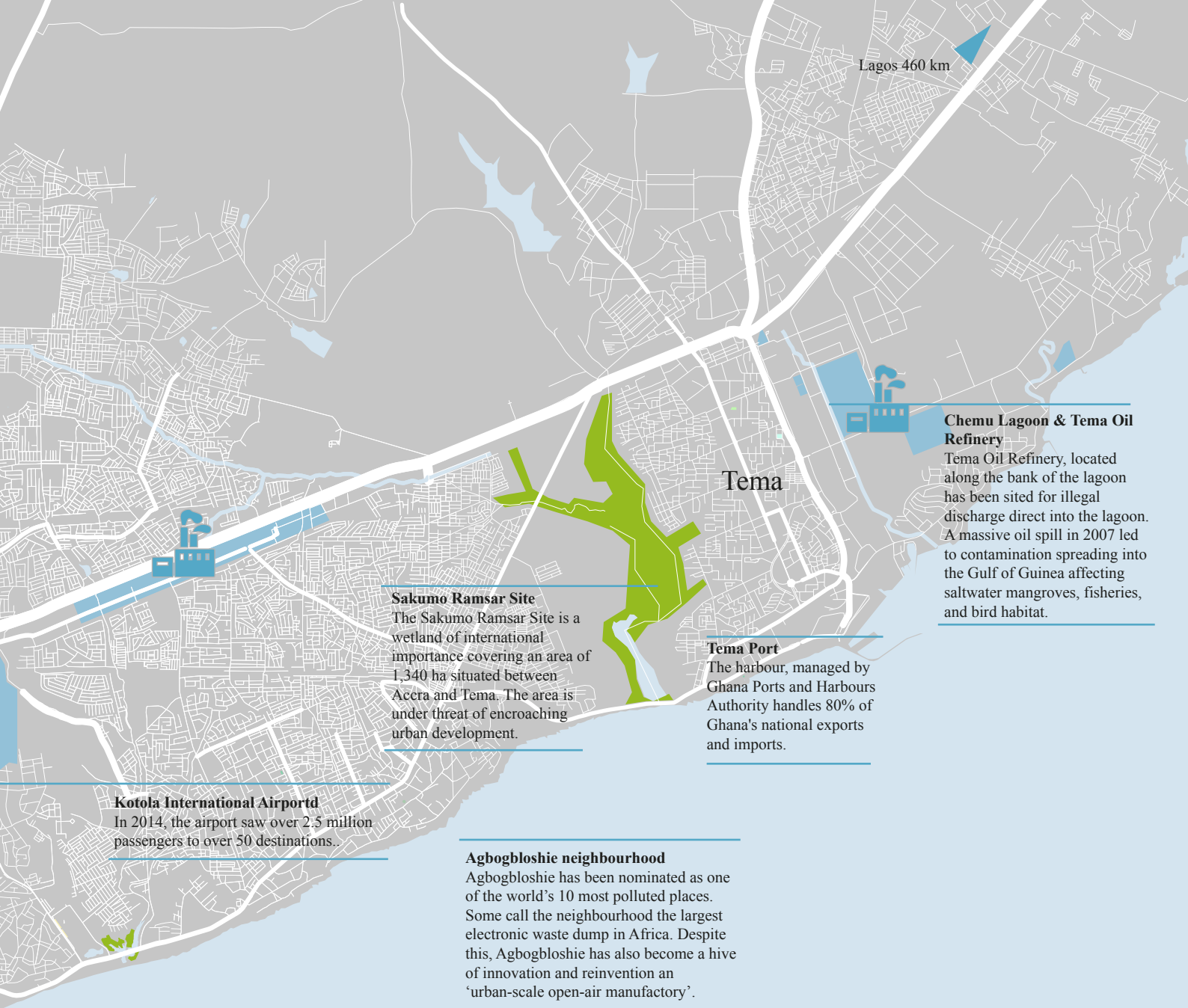


Environment

<p>Climate change</p> <p>Changing rainfall patterns and extreme rainfall events combined with poor drainage infrastructure will have a profound implication for people's livelihoods, especially in informal settlements like Old Fadama, located in a low-lying riverine area in GAMA. Increasing drought risk across the country could also trigger environmental refugees to GAMA.</p>	<p>Natural hazards</p> <p>GAMA is threatened by many natural hazards made worse by expected climate change impacts including surface and coastal flooding, coastal erosion, drought, extreme temperatures, vector-borne disease, as well as seismic hazards from local fault-lines.</p>	<p>Environmental pollution</p> <p>Man-made threats including air, water and soil pollution, depletion of natural resources and related health impacts such as respiratory illness and water-borne pathogens such as Cholera. The neighbourhood of Agbogbloshie in Accra has been nominated as one of the world's 10 most polluted places due to e-waste activities.</p>
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Figure 30: Map of GAMA





Lagos 460 km

Tema

Chemu Lagoon & Tema Oil Refinery

Tema Oil Refinery, located along the bank of the lagoon has been sited for illegal discharge direct into the lagoon. A massive oil spill in 2007 led to contamination spreading into the Gulf of Guinea affecting saltwater mangroves, fisheries, and bird habitat.

Sakumo Ramsar Site

The Sakumo Ramsar Site is a wetland of international importance covering an area of 1,340 ha situated between Accra and Tema. The area is under threat of encroaching urban development.

Tema Port

The harbour, managed by Ghana Ports and Harbours Authority handles 80% of Ghana's national exports and imports.

Kotola International Airport

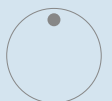
In 2014, the airport saw over 2.5 million passengers to over 50 destinations.

Agbobbloshie neighbourhood

Agbobbloshie has been nominated as one of the world's 10 most polluted places. Some call the neighbourhood the largest electronic waste dump in Africa. Despite this, Agbobbloshie has also become a hive of innovation and reinvention an 'urban-scale open-air manufactory'.

Old Fadama

Old Fadama is an informal settlement originally inhabited by refugees from northern Ghana. The neighbourhood is highly vulnerable to flooding due to low-lying land, poor drainage infrastructure combined with changing rainfall patterns and extreme rainfall events.



0 1 2,5 5 km

Summary of environmental risks

▶ GAMA’s main threat is flash flooding as a consequence of high intensity rainfall, poor water infiltration and urban run-off. This is linked to other local risks including pollution and water-borne disease, notably cholera.

Ghana’s key economic sectors such as agriculture, forestry and energy are sensitive to climate change. Recent observations show an increase in rainfall variability and frequency of extreme weather events nationally. Given that 99% of all agriculture in Ghana relies on rainfall, the predicted impact of climate change on Ghana’s population and economy is significant. To effectively deal with the projected impacts, the government’s strategy is to build climate resilience and sustainably manage natural resources of the country (NCCAS, 2010-2020).

Evidence abounds in Ghana that temperatures in all the ecological zones are rising whereas rainfall levels and patterns have been generally reducing and increasingly becoming erratic. The national economy stands to suffer from the impacts of climate change because it depends on climate sensitive sectors such as agriculture, energy, forestry, among others. Based on a 20-year baseline climate observation, it is forecast that maize and other cereal crop yields will reduce by 7% by 2050. As a coastal city, Accra is vulnerable to the impacts of climate change and sea level rise as mentioned previously, with population growth putting increasing pressure on coastal areas (Steynor et al. 2015).

Three dimensions of environmental risk



Climatic risk

The impact of climatic events on urban populations, infrastructure and economies



Geophysical risk


















The impact of geophysical events on urban populations, infrastructure and economies









Biological and natural resource risk

The impact of scarce or degraded natural resources on urban populations and economies

Types of threat or hazard, with current and estimated future risk rating

<p> Extreme temperature</p> <p>Local officials and urban experts in Accra believe that climate change is contributing to increasingly intense weather events. A significant increase in the temperature of hottest days has been observed in some parts of West Africa (IPCC, 2013).</p>	<p> Storm</p> <p>Rainfall in Accra occurs in the form of intensive storm events (Rain et al., 2011). During the two-day period of October 24-25, 2011, Accra Airport registered a massive 156 mm of rain (UNDP, 2011). In old Fadama nine people died in the storm. (USAID, 2013)</p>	<p> Wildfire</p> <p>The National Disaster Management Plan describes GAMA as low wildfire risk</p>	<p> Drought</p> <p>There was a significant drought in 1998 (New York Times, 1998) In 2012-13 the national crop harvest was impacted by drought conditions. (Bloomberg, 2012) This is predicted to get worse.</p>	<p> Flood</p> <p>Accra's major environmental risk is floods. There is significant coastal flood risk due to low-lying coastal landscapes, lagoons & poor infrastructure (Cities Alliance). There are an estimated 172,000 residents at risk of a 10-year flood. (Rain et al., 2011)</p>
<p> Earthquake</p> <p>Accra is located in an earthquake-prone zone (Amponsah, 2008). The latest tremors occurred on the 14 February and 6 March 1997 and most of the recent seismic activities registered more than 4.0 on the Richter scale.</p>	<p> Mass movement</p> <p>Perceived low landslide risk considering low elevation and topography.</p>			
<p> Air quality degradation</p> <p>According to a 2011 study, roadside locations and commercial sites have high levels of air borne particulates. This can be attributed to road dust, wind blown dust and vehicular exhaust emissions in particular. (EPA/UNEP, 2012)</p>	<p> Contamination or depletion of fresh water</p> <p>The Korle Lagoon has had extremely low levels of dissolved oxygen, as a result of the uncontrolled quantities of domestic and industrial waste being emitted into the water. Loss of fishing in Chemu lagoon is also linked to nearby factories.</p>	<p> Crop disease, infestation or failure</p> <p>Urban Sprawl has already destroyed most significant agriculture areas in Accra and Tema. Continued destruction nationally presents a food security issue.</p>	<p> Degradation or depletion of fisheries</p> <p>Aquaculture has only recently been adopted as an assured way of meeting the deficit in Ghana's fish requirements. In 2003, Ghana produced 51.7% of its fish requirements from its domestic sources and in 2004 achieved 68.1% (FAO, 2016)</p>	<p> Fuel scarcity</p> <p>Major oil and gas fields have been discovered in 2007. Temporary fuel shortage in 2014 due to government debts to Bulk Oil Distribution Companies. Much deforestation for fuel has reduced timber reserves.</p>
<p> Soil contamination and erosion</p> <p>The southern shores of GAMA are vulnerable to floods caused by tidal waves and coastal erosion. 80% of the shoreline is threatened with erosion (Appeaning, 2013). Agbogbloshie is one of the most polluted sites in the world with lead levels in soil 45 times the US limit.</p>	<p> Loss of biodiversity</p> <p>Most Green Space in Accra and Tema has been replaced by buildings in the past 30 years. Widespread environmental destruction is common but still a few protected environmental areas exist.</p>	<p> Vector-borne disease</p> <p>In 13 districts of GAMA a total of 653,112; 968,540; 834,269 and 436,437 cases of malaria infection respectively for the years 2011; 2012; 2013; and 2014. (Cities Alliance, 2015). In Tema there has been a consistent reduction, recording in 2014 half of the incidence in 2011. (Cities Alliance, 2015b).</p>	<p> Water-borne disease</p> <p>The city's worst fear is the threat of a cholera outbreak, driven by polluted floodwaters (100RC). 6.3% of GAMA households are exposed to arsenic pollutants. 40,000 people are consequently exposed to serious health hazards in Agbogbloshie, (Cities Alliance, 2015).</p>	<p> Air-borne disease</p> <p>TB and other diseases are still an issue in Accra and Tema although consistently declining with investment in detection.</p>

Legend

Current risk		Estimated future risk
	Low	
	Medium	
	High	

Future challenges

▶ GAMA is the economic engine of Ghana but limited metropolitan governance means that forming integrated strategies to promote inclusive growth and tackle environmental threats is an increasing concern.

Regional governance

As the GAMA area continues to grow and becomes more closely connected, increased co-ordination would enable joint decision-making by local governments (Andersson, 2012). Presently there are no formal administrative structures within the decentralisation and local governance framework to manage the GAMA metropolitan area, or any other metropolitan area in the country, such as Kumasi. By their nature, environmental issues do not fall neatly into administrative areas, and require co-ordinated regional responses to tackle cross-border matters such as integrated water resource management, waste management

and air or water pollution. However, Sections 12 and 13 of the National Development Planning Law Act 480 outline mechanisms through which two or more adjoining local governments can co-operate upon recommendation by the Minister of Local Government to the President. This is provided the partnering local government shares “special physical or socioeconomic characteristics that necessitate it being considered as a single unit for the purpose of development planning”. This emerging practice of cross-boundary collaboration should be broadened to promote future investment and support integrated planning in areas such as environmental management, inclusive economic development, infrastructure service provision and

transport planning. Finally there is a need for further devolution of political, administrative, and fiscal authority to all Municipal and District Assemblies to encourage local accountability and increase autonomy.



Figure 31. Accra commercial street
Credit: Vevesworld.com

Drivers of environmental risk

Environmental risk is being driven by uncontrolled urban development, combined with a lack of basic infrastructure such as drainage systems, a weak environmental protection regulatory system and climate change. In particular, rapid regional urbanisation over the last 30 years has significantly reduced and polluted the natural environment in the GAMA region. Unregulated urbanisation has also impacted the natural drainage systems within the region, playing a significant role in the unprecedented June 2015 flooding witnessed within Accra. Fig. 32 shows the loss of green space for Accra from 1990 to 2010.

A substantial proportion of green cover has been lost in the urbanisation process. Environmental refugees from the drought-prone regions of northern Ghana into GAMA will continue to stretch the available environmental resources even further.

Finally, at a global level, GAMA will be exposed to the impacts of increased climate change in the future. The coast along the Gulf of Guinea is already battered by strong Atlantic currents. The sea-level is expected to rise a further 80 cm by 2100, affecting low-lying coastal communities, particularly those that make a living off fishing. The mean temperature is also forecast

to increase by 3.9°C by 2080. This presents increased drought risk across the country, potentially triggering secondary impacts such as migration into urban areas as well as further shortages in hydropower-based energy supply.

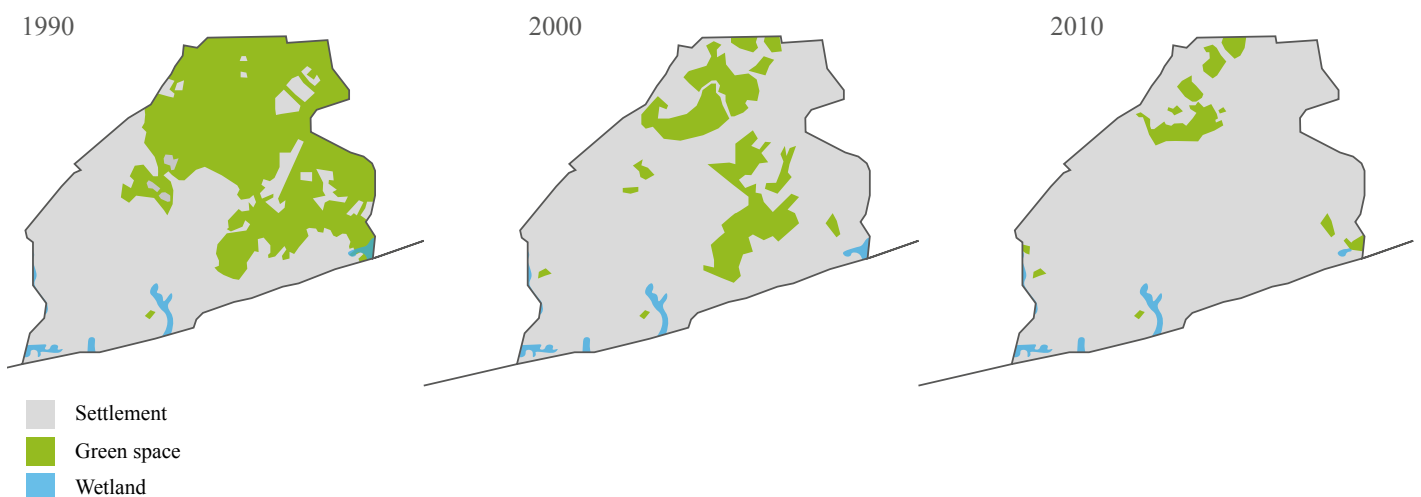


Figure 32: AMA Spatial growth and green cover 1990 - 2010
Based on Rapid City Resilience Assessment Accra (RCA)
Metropolitan Assembly, Cities Alliance, 2015.

Infrastructure deficit

Like other fast growing metropolises in Africa, GAMA is facing a multitude of infrastructure challenges such as sub-standard housing, inadequate solid waste management, sanitation and drainage, and the provision of water over a 3,000 sq. km. area that is expanding and attracting new people every year. Migration from rural areas has also created severe problems of congestion in the city. Sea level rise, combined with non-climatic stressors such as poor drainage infrastructure, will likely worsen the future incidents of flooding in the city. The lack of basic infrastructure is likely to be holding back economic development.

Waste streams

Waste management and the handling of waste streams is a challenge that the city needs to plan for. Within GAMA, Accra accounts for 48% of the total waste generated. Of this waste only 59.4% is collected (GSS, 2014b). The neighbourhood of Agbogbloshie in Accra has been nominated as one of the world's 10 most polluted places. Some call the neighbourhood the largest electronic waste dump in Africa (Al-Jazeera, 2015). Inappropriate handling of e-waste is leading to both water and air pollution. The e-waste also enters the food-chain indirectly through fish. Samples taken from around Agbogbloshie indicate lead levels as high as 18,125 parts per million – as much as 45 times higher

than U.S. standards. As many as 250,000 Accra residents might be at risk (Time, 2013). However, an estimated 6,000 to 10,000 people work directly in the scrap trade, providing a source of livelihood for the urban poor. Agbogbloshie has also become an 'urban-scale open-air manufactory' – a hive of innovation and reinvention (AMP, 2015).

Figure 33: AMP Spacecraft project
Credit: Dezeen.com



Inclusive economic growth

How the informal economy is integrated within the planning system will significantly shape the emerging metropolitan city. The informal economy in GAMA is not clearly understood or described in much detail. Some key challenges remain, despite clear signals from the government that it is trying to include the informal economy in its planning. Challenges to the informal economy include:

- Competitiveness – the informal sector is finding it hard to compete with formal sector traders in similar goods, such as food, as they can negotiate lower wholesale prices;
- Decentralisation – lack of strong oversight or accountable institutions which has often reinforced the power of local elites and worsened spatial inequalities;
- Urban planning and regulations – planning systems view the informal sector as a nuisance that must be done away with, giving rise to heightened insecurity and constant threats of evictions and regulations that do not make provision for the needs of street vendors or hawkers in urban space allocation; and
- Urban governance – posturing of cities’ and official responses to informal traders, coupled with a lack of understanding among city officials of the informal economy dynamics often promotes unnecessary confrontation.

Figure 34: Informal economy in GAMA
Credit: Jason Armstrong / Flickr



Final Thoughts

▶ A key challenge now is to ensure that urbanisation continues to complement growth through improvements in productivity and inclusion.

Improve integrated planning and service delivery

As discussed earlier, the ‘golden triangle’ metropolitan cities of Accra, Kumasi, and Sekondi-Takoradi should pursue strong inter-jurisdictional co-ordination, applying integrated urban planning approaches, and facilitating improved regional planning across jurisdictions. Stronger co-operation will enable crosscutting issues to be resolved, such as waste management, transportation and environmental management (World Bank, 2015). Some specific actions

could include enhancing existing legal provisions to facilitate easier co-ordination.

One of GAMA’s main challenges remains the provision of safe and affordable housing. The increases in housing prices in the centre, along with existing constraints in supply for more affordable units, has significantly deteriorated basic housing fundamentals in Accra, making ownership a reality only for a wealthy minority and condemning an estimated 58% of the population to live in informal housing. Consistent data and revised concepts

of informal housing would give some concrete dimensions to the numbers living in informal housing, their geographical distribution, and economic profile. GAMA should try to understand the total demand for affordable housing and develop a co-ordinated strategy to address this basic need.

Figure 35: George W. Bush highway
Credit: Ghanapedias Channel / Youtube



A strategy that promotes productivity and inclusion

Ghana's key challenge now is to ensure that urbanisation continues to complement growth through improvements in productivity and inclusion, rather than detracting from these goals. Rising problems include: slums, lack of basic services, underdeveloped manufacturing, and insufficient transport infrastructure.

Individuals come to GAMA and Accra specifically to work or to study. This suggests that GAMA is an important regional centre for economic activity and knowledge. Ghana Vision 2020

views the integration of Science and Technology as central to achieving rapid economic growth and sustainable management of natural resources and the environment. Specific policies should be developed to allow GAMA's economy to benefit from the city's regional position as a centre of knowledge and learning.

Developing strategies that can harness the huge potential of the informal sector may improve inclusive economic growth. If the region can plan for the informal sector (70-80% of the workforce) it may improve the liveability of the city and contribute to quality of life.

Figure 36: University of Ghana, founded 1948
Credit: Michael Pollak / Flickr



Environmental management

Maintaining the quality and quantity of green cover, arable land, water, soil, air and fisheries are very important environmental considerations for the future of GAMA. Policy and practice should address environmental impacts in relation to four key items: 1) Environmental pollution, including from significant e-waste imports from Europe and North America; 2) Resource depletion, including the loss of green cover and the depletion of fisheries; 3) Climate change, including direct impacts of coastal erosion and extreme weather events;

and 4) Existing vulnerabilities within the informal sector should be reversed through targeted, inclusive programming that is focused on addressing gender and poverty-based vulnerabilities, and tackling issues such as unequal access to education for street children.

“Every economic activity has an environmental impact and so environmental protection is not just for mining but for all industry, it’s for everything we do. If we recognise this we will take impact assessments seriously.”

*Joyce Aryee
CEO, Ghana Chamber of Mines*



Figure 37: Urban sprawl in Accra
Credit: Jason Armstrong / Flickr

Low carbon development

GAMA dominates Ghana’s economic landscape and has been a key contributor to its economic success over the last thirty years. With nearly 20% of the country’s population, and generating over 80% of its foreign direct investment and 25% of its GDP, initiatives to promote low-carbon emission development in GAMA can help mainstream this form of development across the country. An Overseas Development Institute (ODI) supported study analysed economic and environmental factors in sub-Saharan Africa, and identified twenty long-term cross-sector transitions (or initiatives) that can promote a move to a low carbon development pathway in

Sub-Saharan Africa (Hogarth et al, 2015). Based on our research we have found that some of these initiatives are more applicable to GAMA than others. We have summarised the most relevant initiative in Fig. 38. A full list of these initiatives is included in Appendix B.

GAMA has seen substantial growth in population and sprawl over the last twenty years, but lacks an area-wide comprehensive planning process. A number of key low-carbon initiatives for this metropolitan area emerge from the need for better urban planning – an effective mass transit system will provide a low-carbon transportation alternative, while integrated rural land-use planning can help slow the

growth of sprawl. Removal of fossil fuel subsidies will help staunch the growth and use of private cars.

In many cases, the national government has already formulated policies that support low-carbon development. A national levy on petroleum products has been proposed to establish a renewable energy fund that can spur the transition to solar energy. A Bus Rapid Transit System has been introduced in GAMA which, if fully implemented, can constitute a viable public transportation system. A GAMA-wide, comprehensive planning process can help translate these national policies into sustainable low-carbon development.

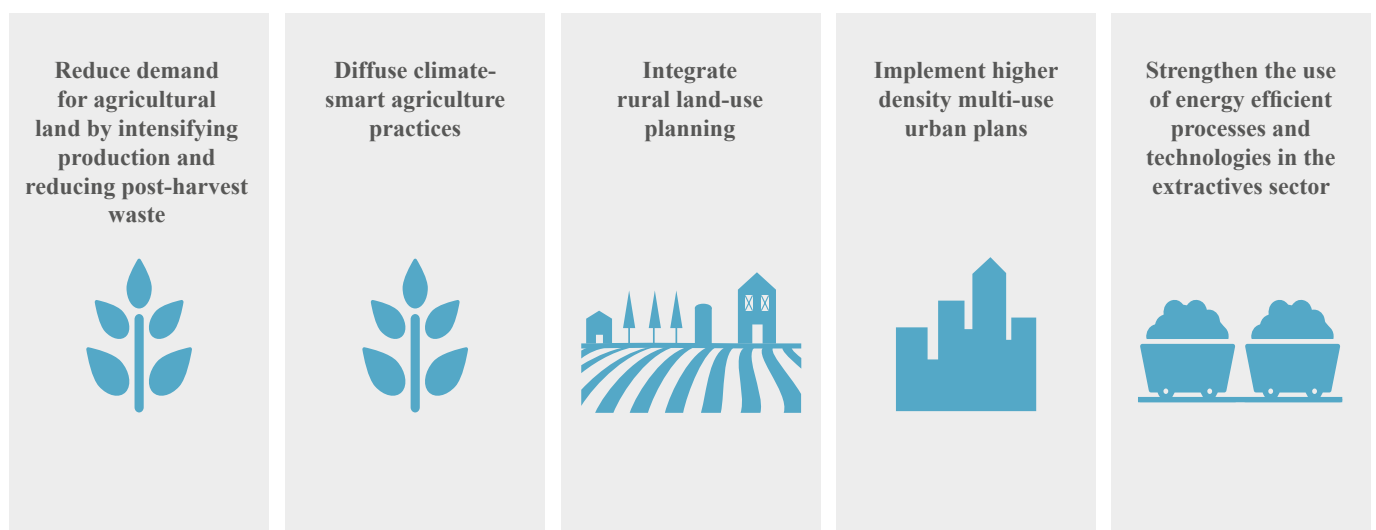


Figure 38: Key initiatives for low-carbon development in GAMA

Appendix

A. Information mapping

We followed a subjective process to assess the information that was immediately available for each city. Information was supplied by Cities Alliance and Future Cities Africa teams. Arup carried out a global information scan to identify whether any gaps could be readily filled with open-source information. We applied a rating to this information according to quality and availability of data or information on each sub-dimension within the revised normative framework.

The GAMA region has a wealth of information on the local economic and governance issues, although a greater understanding of what constitutes the region’s informal economy is required.

There also appears to be a lack of information on local disaster risk reduction activities within the GAMA region at both government and community level. Information on local emergency service capacity is also lacking.

	Accra	Tema	Overall
<i>Citizenship</i>			
Participation	■	■	■
Social capital	■	■	■
Community awareness and preparedness	■	■	■
Civil rights and justice	■	■	■
<i>Economy</i>			
Human capital	■	■	■
Institutional environment	■	■	■
External macro environment	■	■	■
Industry	■	■	■
Outputs	■	■	■
<i>Governance</i>			
Enabling environment	■	■	■
Municipal finance	■	■	■
Representation and accountability	■	■	■
Municipal capacity	■	■	■
Risk management	■	■	■
Planning	■	■	■
<i>Services</i>			
Social services	■	■	■
Basic services	■	■	■
Economic services	■	■	■
Emergency services	■	■	■
<i>Environment</i>			
Protective ecosystem services	■	■	■
Regulating ecosystem services	■	■	■
Natural resources	■	■	■
Cultural ecosystem services	■	■	■

Legend

- High A substantial amount of information that is sufficiently detailed enough to use in further analysis work.
- Moderate An average amount of information of adequate detail. Information may require interpretation for further analysis work. Additional research is suggested.
- Low A limited amount of information, or information of low quality or partially available information. More research is recommended.
- No data No data was initially supplied by Cities Alliance or Future Cities Africa team. A reasonable amount of time was spent looking for additional open-source information and none was readily available for the city.





















B. Low-carbon development initiatives mapping











Building on the in-depth sector analysis, ODI identified 20 long-term cross-sector transitions (or initiatives) that can be undertaken to promote low-carbon development in Sub-Saharan Africa (SSA). To rank and score these initiatives, they developed a preliminary methodology using a set of four criteria: (1) the level of GHG emissions that they could avoid; (2) the risk of lock-in that they could avert; (3) their contribution to increased productivity; and (4) their contribution to poverty reduction. These initiatives were scored as having high, medium or low potential in promoting low-carbon development. Based on research carried out for this report we have provided a qualitative comparative score based on country specific knowledge.

Legend
 Potential for supporting low-carbon economic development

- High
- Medium
- Low

Cross-sector transitions / initiatives	SSA	Ghana	Why is it relevant in Ghana?	What is the opportunity in Ghana?
<i>Agriculture</i>				
Reduce demand for agricultural land by intensifying production and reducing post-harvest waste	Medium	High	Large part of rural GAMA depends on agriculture for livelihoods and local food production. This is in competition with rapid urban sprawl outwards from Accra.	Isolated studies on tomato farming in GAMA revealed significant post-harvest loss for local farmers due to poor practices. It suggested a lack of support with only 12% of farmers part of an association / farmers group.
Reduce emissions from livestock	High	Medium	No evidence of relevance	No evidence of opportunities
Diffuse climate-smart agriculture practices	High	High	Rural areas within Greater Accra show high reliance on agriculture. The occurrence of drought, exacerbated by climate change patterns, is expected to reduce agricultural productivity over the next 50 years. Low farm productivity is a key driver of rural-urban migration.	At the national level, agricultural policies recognise the need for environmental sustainability and integrated programmes for drought-prone areas in Greater Accra. These policies emphasise environmental sustainability and the application of science and technology to improve practices.
<i>Forestry</i>				
Integrate rural land-use planning	Medium	Low	"There is a lack of regional level planning within the GAMA region. Urban sprawl is rapidly reducing the rural area of GAMA at the expense of the environment and environmental livelihoods. A key source of population growth in cities is rural-urban migration."	Better land management practices can help reduce environmental degradation, rural-urban migration, and pressure on already stretched urban services. Whilst much planning powers have been decentralised to district governments, more effective coordination between districts is required for regional level planning.
Capture the value of forests' ecosystems services	Medium	High	In Dangme West and Dangme East, more than half of households use wood as cooking fuel. In the face of depleting forest and little reforestation, cutting down trees to produce charcoal exacerbates the deforestation and land degradation problems.	District Assemblies should initiate and implement a vigorous tree planting exercise in their areas of jurisdiction, alongside incentives that encourage the shift from wood- to non-wood-based fuel.

<i>Energy</i>				
Formalise the charcoal industry, and promote efficient charcoal kilns and biomass cook-stoves, and fuel switching			Accra (with Kumasi), accounts for 57% of all charcoal consumed in the country. The demand for wood puts Ghana's forests under tremendous pressure and has severe consequences for the ecosystem as a whole.	Switching to more efficient and reliable sources of energy will reduce environmental damage in urban and rural areas.
Generate on-grid electricity from renewable sources and prevent lock-in of coal power			Ghana already depends significantly on Hydro-electric power, alongside thermal energy.	The country's hydropower production is at risk due to low rainfall caused by climate change. National policy recognises that hydropower will need to be augmented by other sources (particularly thermal) and is exploring consumption and production subsidies for this purpose.
Promote electricity access from off-grid and mini-grid systems in rural areas			Mini grids being supplied to Lake Volta island communities just north of Greater Accra.	Within GAMA, rural areas have significantly low connectivity to the electricity grid than urban areas. Off-grid and mini-grid systems can make up gaps in grid coverage, and help improve electricity access for these areas.
<i>Transport</i>				
Remove fossil fuel subsidies for consumption			Since 2005, there has been significant progress in removing fossil fuel subsidies for consumption accompanied by measures to support poorer citizens (e.g. cash transfers). However, removal of subsidies has also caused the poorest to use wood and charcoal as fuel, leading to deforestation and air pollution.	Reforms over the past decade have been largely successfully but the country appears to be at a crucial point where subsidisation needs to be effectively managed and reduced against socio-economic needs and volatile oil prices. The government also proposed a levy on petroleum products to establish a renewable energy fund that would enable residents and "micro enterprises" to install solar panels.
Shift to a low-carbon automobile fleet and fuels			GAMA has almost 20% of Ghana's population but 42% of its private vehicles. Automobile repair is a key source of employment in Accra and Tema.	Improving and augmenting public transport would be a critical measure to enable a shift to a low-carbon automobile fleet. Age limits have been planned for automobiles, which should increase fuel efficiency and reduce emissions in the automobile fleets. A number of national policies have been planned to reduce emission from automobiles including incentivising and increasing production of low-carbon gasoline.
Implement higher density multi-use urban plans			A majority of urban households live in dense and poorly serviced informal settlements. National policy sees urban centres of Accra and Kumasi continue to grow. The current standard Medium Term Development Plans (undertaken by all districts) are not differentiated for urban districts, and do not support effective spatial planning.	Effective planning and implementation will help Ghana widely deliver the benefits of economic growth to communities in informal settlements, as well as provide improved living conditions for future urban migrants
Promote mass transportation systems			Urbanisation and urban sprawl are continuing in the Greater Accra municipality. At present privately owned minibuses are a main source of public transportation. Whilst routes are highly organised through local unions there are limitations in vehicle and service quality. Greater Accra has by far the biggest share own privately owned vehicles within Ghana.	The introduction of a Bus Rapid Transit system is underway in GAMA but this has not been fully implemented and mobility is still poor. Reports suggest Gov't plans US\$30 billion Accra-Kumasi high speed rail which would improve mobility between Ghana's two major cities. Quality affordable public transport options would help to slow the trend of private car ownership.
<i>Extractives</i>				
Strengthen the use of energy efficient processes and technologies in the extractives sector			Mining is not focused in Greater Accra, most is situated in Ashanti and Central regions. Mining regulations could have indirect benefits for GAMA.	
Switch to lower carbon fuel sources and renewable energy in the extractives sector			Mining is not focused in Greater Accra, most is situated in Ashanti and Central regions. Mining regulations could have indirect benefits for GAMA.	
Remove and avoid subsidies for fossil fuel production			Oil one of Ghana's biggest growing industries with significant reserves recently confirmed viable. The government recently suggested it would use the windfall from the low price of crude oil to settle debts of country's Bulk Oil Distribution Companies, (from earlier subsidies), and respond to consumers' demand for a 10% drop in prices.	Ghana's new found oil wealth can help drive development but needs to be responsibly managed.

<i>Construction</i>				
Reduce emissions from construction materials and methods			High economic growth has been accompanied by a construction boom in Accra	Voluntary building code schemes, such as the Green Star Building Rating System in Ghana, can help stakeholders adapt their behaviours over time and incorporate processes that lead to more efficient building practices over time, often transforming into mandatory codes after a few years.
Reduce emissions from buildings operations			High economic growth has been accompanied by a construction boom in Accra	Voluntary building code schemes, such as the Green Star Building Rating System in Ghana, can help stakeholders adapt their behaviours over time and incorporate processes that lead to more efficient building practices over time, often transforming into mandatory codes after a few years.
<i>Manufacturing</i>				
Increase use of energy efficient processes and technologies and clean energy in heavy manufacturing			Heavy manufacturing is not situated in Accra, Tema has some heavy industry including a shipyard and an oil refinery.	Tema oil refinery is government operated. UNEP presentation suggests activities for cleaner energy production including Hydrotreaters to be installed to handle distillates and Hydrocracker to be incorporated. As Ghana's only Refinery, the Tema plant has a core role cleaner fuel production, security and sustainability.
Drive growth in light manufacturing			Industrialisation is picking up in Accra and other cities. Light manufacturing is already a key industry in Accra. Need to ensure not at the expense of environmental livelihoods.	Light manufacturing, while being a low-emission option, can be a significant contributor to inclusive growth for the primarily agriculture-reliant economy
Develop low-carbon products			Industrialisation is picking up in Accra and other cities. Light manufacturing is already a key industry in Accra. Need to ensure not at the expense of environmental livelihoods.	One of the main sources of livelihoods in Accra is automobile servicing and repairs. With additional training there is the potential workforce for the production of low carbon products such as hybrid and electric cars. There are a number of car manufacturers with operations in Ghana, and the Indian car manufacturer Mahindrahas recently begun electric car production in Ghana.

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